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16. Abstract

The Texas Department of Transportation (TxDOT) sought the services of a public institution of higher education to conduct a study of TxDOT's professional services contracting program through an Interagency Contract (IAC). The Request for Proposal (RFP) stated that it had come to TxDOT's attention that certain small firms feel disadvantaged under its professional services contracting program. While small firms enjoy success as sub-providers under the program, comparatively few are selected as prime providers. TxDOT wished to enhance the success of small firms in this regard.

Two central questions were addressed in the study:

1) Relative to large firms, why are more small firms not awarded prime contracts?
2) What are the measures that can be implemented to improve the success rate of small firms, such that more small firms are awarded prime contracts?

The key deliverable for the study was this Final Report.

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Small Business Inclusion: A Study of TxDOT's Consultant Procurement Program

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Table of Contents

List of Figures

List of Tables

Executive Summary: TxDOT Small Business Inclusion Study

Introduction

In a letter dated June 14, 2012, the Texas Department of Transportation (TxDOT) issued a Request for Proposal (RFP) to public institutions of higher education to conduct a formal study of key aspects of TxDOT's professional services contracting program. The RFP stated that some small firms felt disadvantaged when competing in TxDOT's professional services contracting program, and that, while small firms enjoy success as sub-providers in the program, comparatively few are selected as prime providers ("prime" is the lead role in the contract, and "sub" is a supporting role).

The Center for Transportation Research (CTR) at the University of Texas at Austin was awarded this study through an Interagency Contract (IAC). TxDOT had laid out a work plan for an interview-based approach, and bi-weekly meetings were held with TxDOT during the course of the project. As the interviews progressed it became clear that the opinions being gathered had to be investigated through detailed analyses of TxDOT contract data.

This Executive Summary provides findings from the interviews and from analysis of TxDOT data, and recommendations. The Final Report includes much more detail.

Study Goals

TxDOT requested that the study address two central questions:

1) Relative to large firms, why are more small firms not awarded prime contracts?
2) What are the measures that can be implemented to improve the success rate of small firms, such that more small firms are awarded prime contracts?

For the purpose of this study, TxDOT defined "small firm" as a business entity that 1) provides engineering, architecture, or surveying services and 2) generates $14.0 million or less in gross annual receipts. TxDOT stated that all firms certified as Historically Underutilized Businesses (HUB) or as Disadvantaged Business Enterprises (DBE) are small firms.

Background

TxDOT contracts with private sector firms for engineering, architecture, and land surveying services. Under federal and state laws, government agencies procuring such services must do so through a Qualifications-Based Selection (QBS) process.

QBS involves a two-step process. First, the agency selects the most qualified provider. Second, the agency and the provider commence negotiations to establish a fair and reasonable fee. If such a fee cannot be agreed upon, the agency terminates negotiations with the provider and commences negotiations with the next most-qualified provider.

QBS comes in a variety of configurations. TxDOT's professional services contracting program utilizes a Notice of Intent/Letter of Interest/Interview structure. Proposals are sometimes

incorporated in the interviews. This process is detailed in the Texas Administrative Code, Rules §§9.30–9.42.

Research Team

The research team was a joint venture consisting of faculty and staff from these institutions:

- The Center for Transportation Research (CTR) at The University of Texas at Austin.
- The University of Texas at Arlington (UTA).

In addition, three engineering firms were sub-contracted to assist the research team:

- RJ RIVERA Associates, Inc., with offices in San Antonio and Austin.
- Lina T. Ramey & Associates, with an office in Dallas.
- Nathelyne A. Kennedy & Associates, with an office in Houston.

Study Tasks

For this study, TxDOT laid out a work plan consisting of six tasks with deliverables as shown in Table ES.1.

Table ES.1: Work Plan and Deliverables

Task	Deliverables
1. Project Management	Semi-monthly meetings and status reports
2. Ensure Representative Participation	Sub-contract with at least three small firms
3. Program Familiarization and Data Analysis	*Program description; interview plan*
4. Interviews	*Interview findings*
5. Final Report	Quality management plan; *30%, 60%, 95%, 100%, and Final Reports*
6. Final Report Support	Researchers available to answer questions on Final Report

The italicized deliverables are incorporated in the Final Report.

Interviews and Data Analysis

A questionnaire was developed for interviewing consultants (Tasks 3 and 4). From a list of HUBs and DBEs in each region, the three sub-contractor partners identified firms to be contacted for interviews. In addition, CTR identified firms in El Paso and Austin for interviews.

The selected consultants were all contacted by telephone, followed by email confirmation. Of those contacted, about 50% responded positively to being interviewed, but all requested one-on-one interviews and confidentiality regarding their identity. The rest either declined or did not reply to messages. Given that the interviews were donations of the consultants' time and travel, 50% is a good response rate.

Of 40 interviews scheduled, there were 15 last-minute cancellations, no-shows, or requests to re-schedule. From the original contact list, 25 consultants were interviewed in that round. Most interviews ranged from 1 to 3 hours, averaging about 90 minutes.

After a review of the HUB class representation in the interviewed group, some additional consultants were contacted. Ultimately, the research team was able to interview about 30 firms (35 individuals) within the study's time frame. Table ES.2 shows the number of interviewees contacted and interviewed by region.

Table ES.2: Number of Interviewees by Region

Region	Initial Contact	Agreed to Interview	Interviewed Round 1	Interviewed Total
Houston	18	10	6	8
San Antonio	22	9	7	8
Dallas/Ft Worth	25	14	8	13
El Paso	6	4	3	3
Austin	10	3	1	3
Totals	**81**	**40**	**25**	**35**

All the firms interviewed were HUBs or DBEs. Table ES.3 gives the percentage of interviewees by firm ownership HUB status. In addition, the researchers interviewed 5 TxDOT staff members involved in consultant procurement, for a total of 40 interviews. Key findings from the interviews are included in this Executive Summary. More detail is in the Final Report.

Table ES.3: Percentage of Interviewees by Firm Ownership HUB Status

Firm Ownership HUB status	Number of Interviewees	Percentage
African American	7	20%
Asian American	4	11%
Hispanic	14	40%
Native American	1	3%
Anglo American	9	26%
Women-owned[1]	11	31%

In parallel with the interviews, the researchers obtained data from TxDOT on the makeup of the pool of pre-certified consultants and the consultant contracts awarded by TxDOT. This data was analyzed, and key findings are included here. Detailed findings are included in the Final Report.

[1]Women owned category spans various HUB groups.

Findings from Data Analysis

To identify trends and issues in TxDOT's program, CTR analyzed TxDOT contracts and pre-certification data. Some inconsistencies were found in the data, such as variations in firm names and HUB status. The main findings are presented here. For the purposes of this analysis, the research team used TxDOT's definition that all firms certified as HUB or DBE are small firms.

1. TxDOT Contracting Volume Decreased and Competition Increased Since 2008

Figure ES.1 shows the total dollars in TxDOT consultant work awarded each year since 2003. The chart indicates that the amount of consultant work decreased by over 60%, from an average of $549 million per year in Fiscal Years (FY) 2004–2007 (September–August) to $211 million per year in FY 2008–2011. Note that award amounts are not the same as expenditures each year.

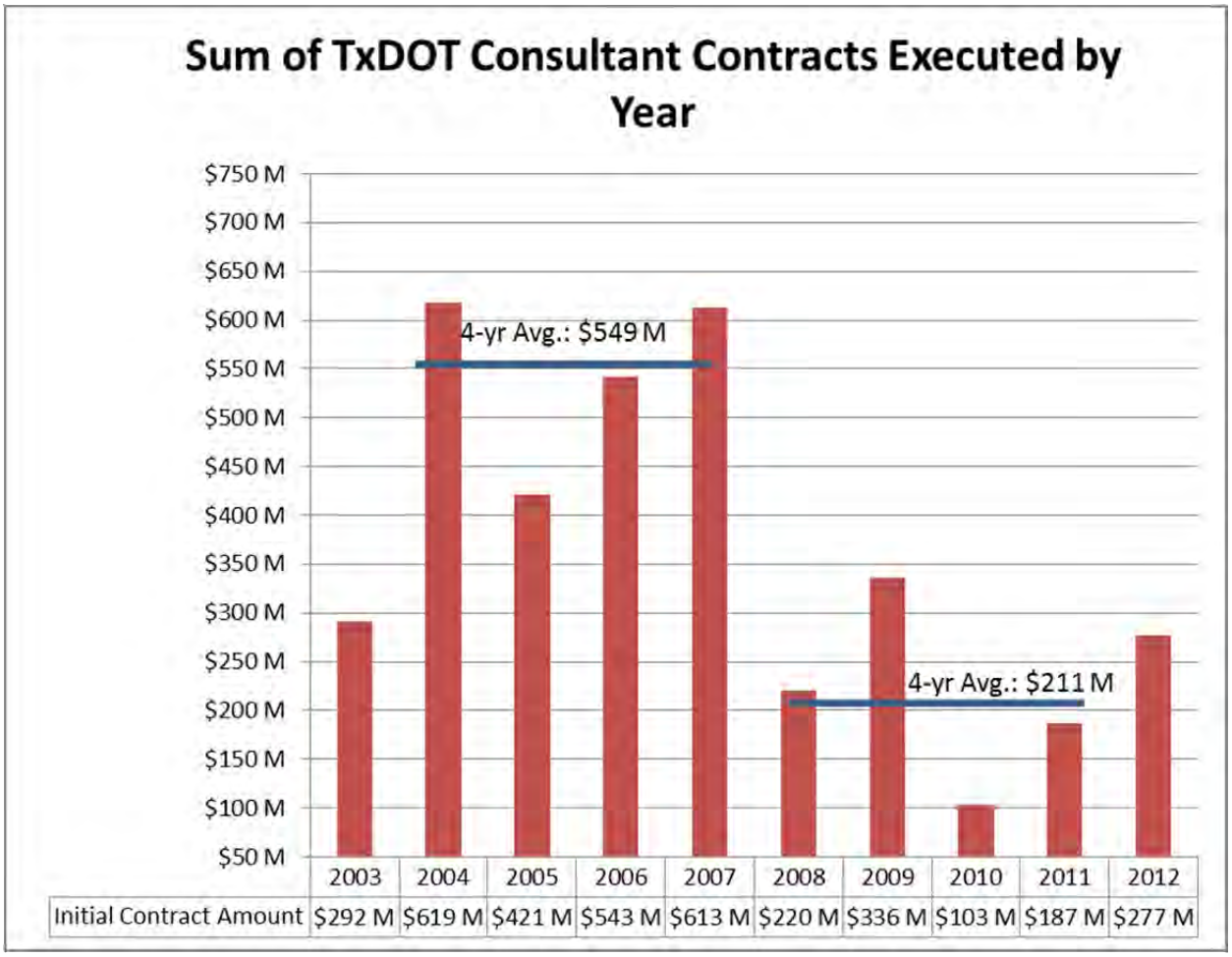


Figure ES.1: Annual and Average Dollars in TxDOT Consultant Contracts 2003–2012

As work decreased in 2008–2011, competition increased. TxDOT now receives up to 50 Letters on Interest (LOI) on routine projects, and large firms are pursuing and winning relatively small contracts, as low as $150,000.

2. Small Firms More Likely to Win State-Funded Contracts than Federally Funded; Share of Work Remained Stable

Figure ES.2 summarizes the percentage of dollars on state-funded contracts awarded to HUB and non-HUB primes and subs over the period 2005–2011, and comparable numbers for DBEs on federally funded contracts. On state contracts HUB primes won 13%, while non-HUB primes won 53%. Overall, primes took 66% of contract dollars. HUB subs were awarded 19% of total dollars, while non-HUB subs got 15%. Overall, HUBs got 32% of contract dollars. However, State Comptroller rules only count HUB sub-contracting dollars toward HUB goals.

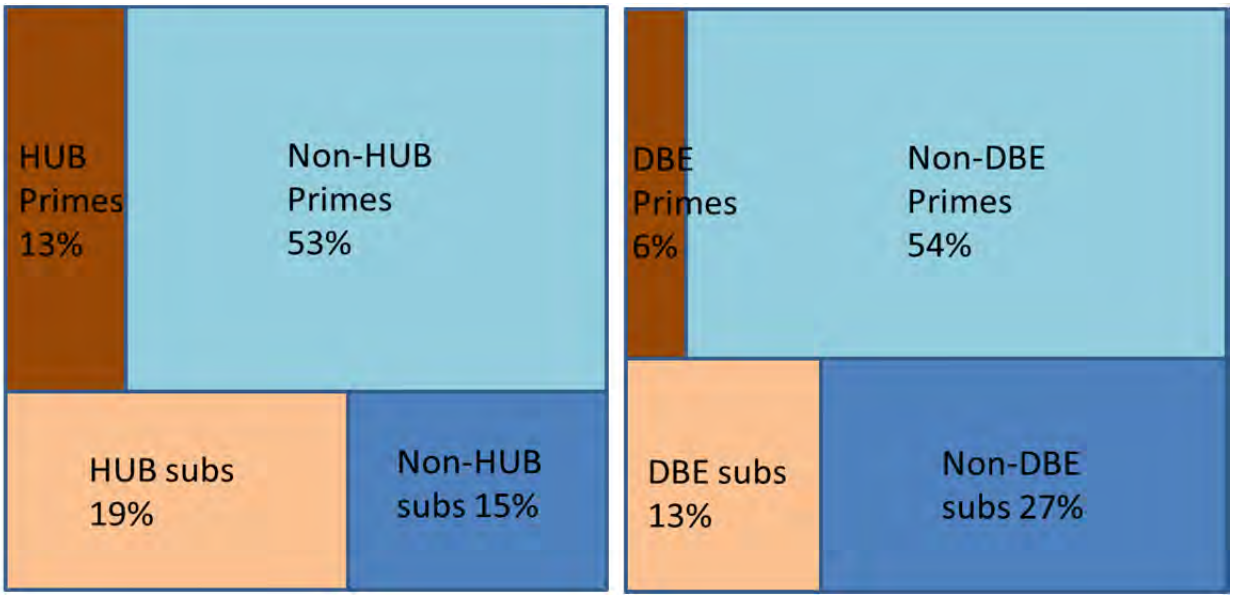


Figure ES.2: HUB and non-HUB Share of Dollars on State Funded TxDOT Consultant Contracts 2005–2011, and Comparable Figures for DBEs on Federally Funded Contracts

On federally funded contracts DBE primes won 6%, while non-DBE primes won 54%. Overall, primes took 60% of contract dollars. DBE subs were awarded 13% of total dollars, while non-DBE subs got 27%. Overall, DBEs got 19% of federal dollars. Compared to the federal DBE program, a higher percentage of dollars in the state-funded program go to small firms. Small businesses are therefore more likely to win state-funded contracts than federally funded contracts, both as primes and as subs.

Figure ES.3 shows the percentage of state contracts and dollars won by HUB primes and subs and non-HUB primes and subs in the two 4-year periods of 2005–2008 and 2009–2012. Note that HUB percentages were virtually unchanged over the two 4-year periods, with HUBs maintaining a share of about 32% of state dollars awarded and about 50% of state contracts. These results show that there was no disproportionate impact on smaller firms due to reduced TxDOT contracts and greater competition.

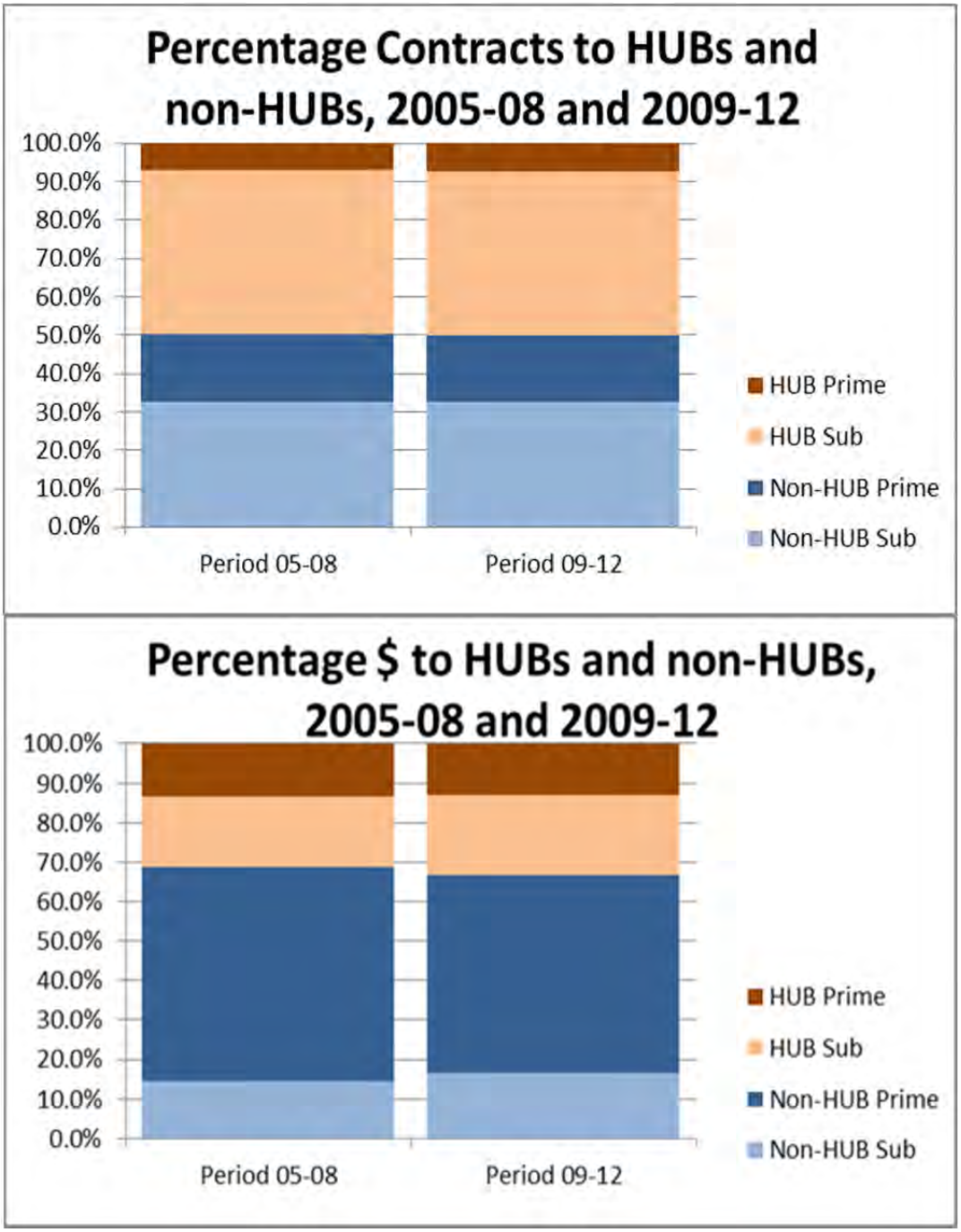


Figure ES.3: Percentage of State Contracts to HUBs and non-HUBs in 2005–08 and 2009–12

3. Small Firms Had Access to Suitably Sized TxDOT Contracts

In interviews, small firms said that their ideal contract range is up to $2 million. Figure ES.4 gives the total number of TxDOT consultant contracts awarded since 2005, segmented by contract size. Out of 1,319 contracts, 86% were for less than $2 million (HUBs awards were 50%).

In terms of dollars in each range, the picture is a little different. Of $2.6 billion in contracts, 49% was in contracts less than $2 million. Thus, slightly less than half of TxDOT consultant contract dollars were in small firms' stated range (HUBs awards were 32%). Overall, the data shows a fair proportion of TxDOT contracts fall in the comfort zone of small firms.

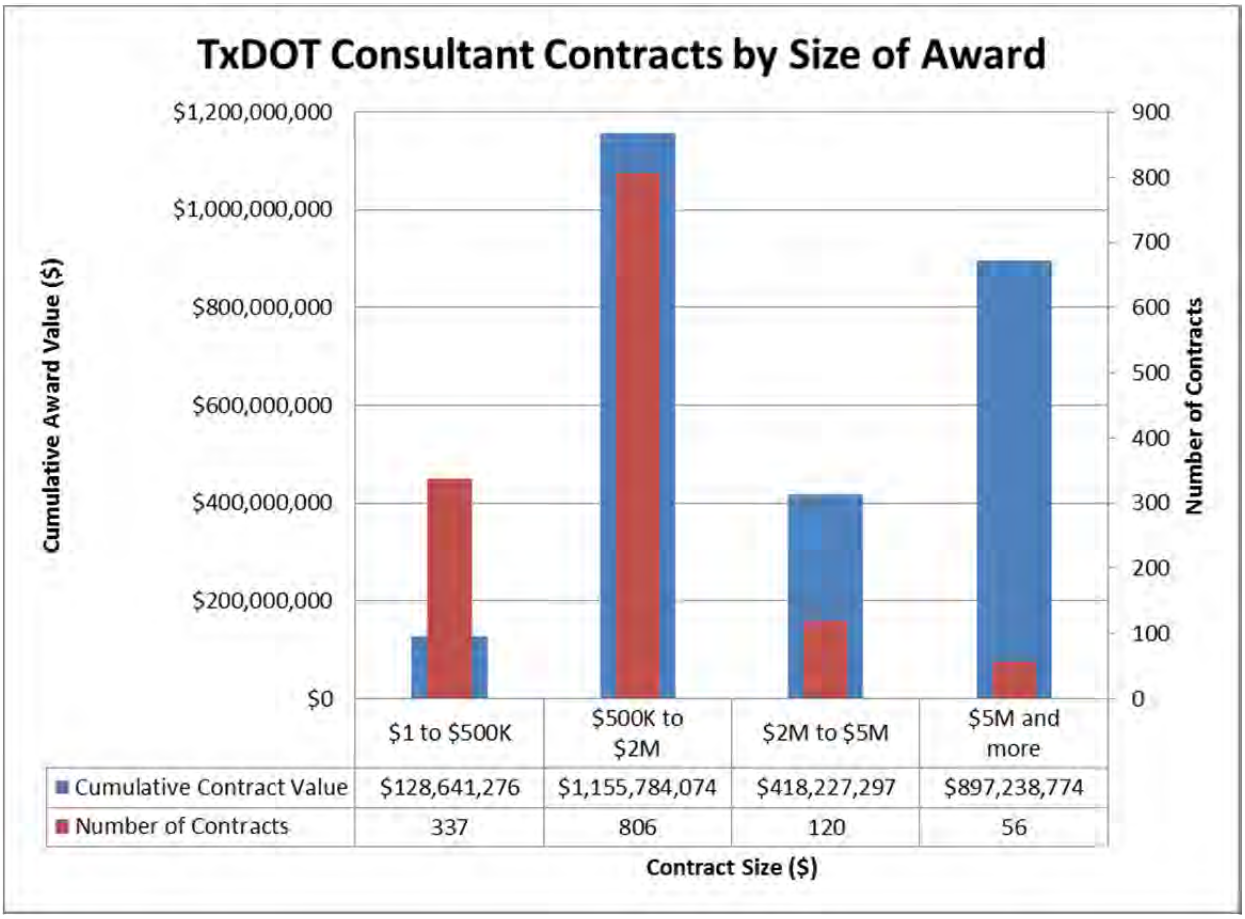


Figure ES.4: TxDOT Consultant Contract Numbers and Sizes Since 2005

4. Small Firms' Focus Areas Are a Factor in Their Success

Table ES.4 shows the percentages of state dollars and awards that went to HUB firms, by work type. Overall, HUBs gain 32% of the dollars for the work types listed, and 50% of the awards. In terms of dollars, they do better than their average in these areas:

- Construction Engineering and Inspection (CE&I),
- Geotechnical,
- Materials Engineering,
- Schematic/Environmental,
- Surveying, and
- Traffic Engineering.

They do worse than their average in these areas:

- Architecture,

- Bridge Inspection,
- Environmental, and
- Hydraulics.

Table ES.4: HUB Percentages on State Funded Contracts by Work Type

Contract Discipline Type	Total Dollars	Awards (prime & sub-contracts)	HUB $	HUB Awards (prime & sub-contracts)
Architecture	$550,000	5	0.5%	20.0%
BRG On/Off Replacement	$2,000,000	5	20.0%	40.0%
Bridge Inspection	$1,500,000	1	0.0%	0.0%
CE&I	$2,999,880	6	89.0%	66.7%
Engineering	$1,582,283,869	3223	29.3%	55.3%
Environmental/Hazmat	$3,100,000	27	4.2%	37.0%
Geotechnical	$17,987,012	57	36.7%	31.6%
Hydraulic	$4,000,000	29	12.0%	41.4%
Materials Engineering	$58,222,000	134	45.3%	38.1%
Schematic/Environmental	$13,000,000	47	35.3%	61.7%
Surveying	$332,405,706	850	43.2%	32.2%
Traffic Engineering	$10,950,000	76	34.9%	59.2%
Utility Engineering	$87,850,000	197	27.3%	47.2%
Total	**$2,116,848,467**	**4657**	**32%**	**50%**

Yellow cells: worse than average Blue cells: better than average

In terms of percentages of awards, HUBs do better than average in

- CE&I,
- Engineering,
- Schematic/Environmental, and
- Traffic Engineering.

They fall below their average on Architecture and Bridge Inspection contracts.

Table ES.5 shows the comparable DBE firm percentages of federal dollars and awards by work type. Overall, DBEs gain almost 20% of the dollars for the work types listed, and 30% of the awards. In terms of dollars, they do better than their average in Architecture and Bridge Replacement.

They do worse than their average in dollars and contract counts in these areas:

- Bridge Inspection,

- Geotechnical,
- Materials Engineering,
- Surveying, and
- Utility Engineering.

Table ES.5: DBE Percentages on Federally Funded Contracts by Work Type

Contract Discipline Type	Total Dollars	Awards (prime & sub-contracts)	DBE $	DBE Awards (prime & sub-contracts)
Architecture	$15,000,000	56	38.0%	32.1%
BRG On/Off Replacement	$13,500,000	34	40.6%	44.1%
Bridge Inspection	$73,543,000	251	10.4%	10.0%
CPM Scheduling	$2,500,000	13	15.2%	46.2%
Engineering	$355,020,453	448	21.3%	40.6%
Geotechnical	$919,500	1	0.0%	0.0%
Materials Engineering	$9,565,000	20	6.0%	10.0%
Surveying	$6,770,000	13	0.0%	0.0%
Utility Engineering	$6,000,000	6	0.0%	0.0%
Total	**$482,817,953**	**842**	**20%**	**30%**

Yellow cells: worse than average Blue cells: better than average

They do better than their average in Bridge Replacement, Critical Path Method (CPM) Scheduling, and Engineering contract count.

Actual TxDOT expenditures on professional contracts were then studied. CTR obtained Finance Division data for FYs 2010, 2011, and 2012. The total expenditures for those years were respectively $230.1 million, $189.6 million, and $197.8 million. The largest expenditures were in Route Studies, Environmental, Right-of-Way, Surveys, and Roadway activities. Thus, HUB/DBE work focus areas relative to TxDOT focus areas could be a factor in their success.

The team also studied expenditures for consultant work by TxDOT districts and divisions in FY 2010, 2011, and 2012. Among districts, Brownwood, Childress, San Angelo, and Wichita Falls are the lowest. Dallas, Fort Worth, Houston, and Waco were the highest (although Waco had an unusual period with widening projects on Interstate Highway 35). Austin, San Antonio, and El Paso form a second tier of active districts. Location could be a factor in a firm's success.

5. Small Firms Have Less Depth and Breadth of Resources Than Large Firms

TxDOT's QBS process requires pre-certification of individuals, and a person can be pre-certified in any of 78 TxDOT work categories. The number of pre-certified individuals in a firm influences its ability to compete for TxDOT work. TxDOT maintains a Consultant Contracts Information System (CCIS) of pre-certified individuals and their firms. CTR analyzed a CCIS dataset downloaded on July 26, 2012. That data consisted of 836 firms, with 5,621 pre-certified individuals working for 803 of those firms (33 firms had zero pre-certified employees).

As shown in Figure ES.5, about 39% of firms are classified as HUB while the remaining 61% are non-HUB firms.

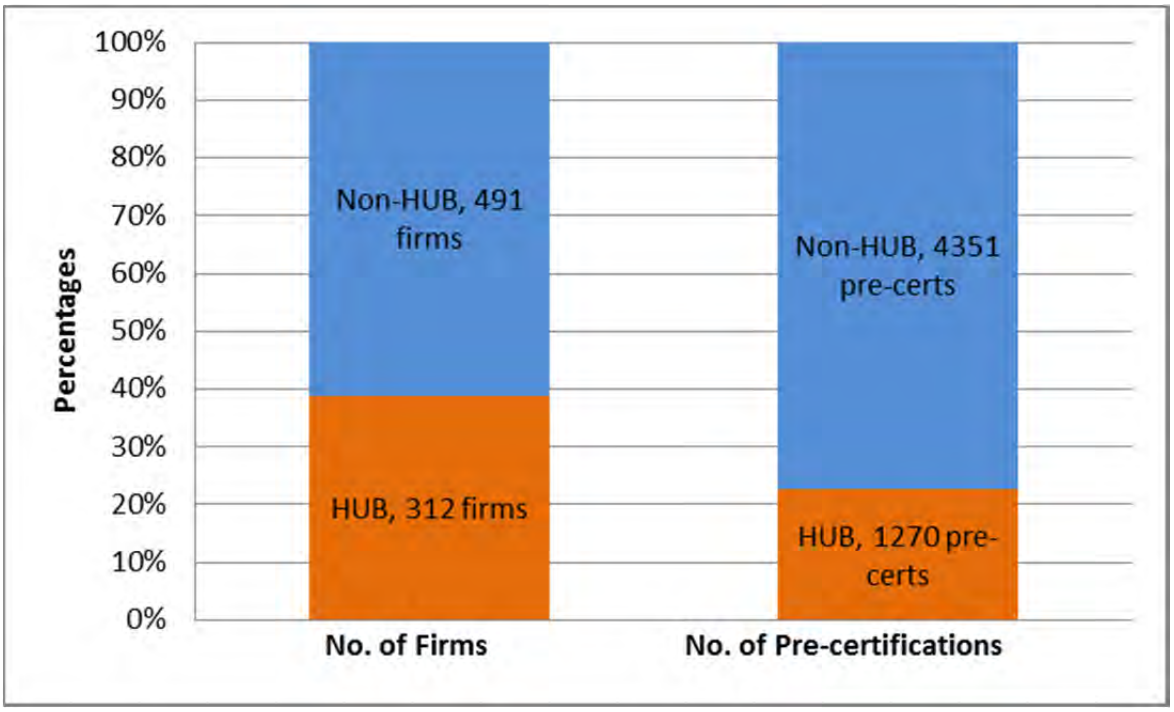


Figure ES.5: Number of Pre-Certified Professionals Employed by HUB/Non-HUB Firms

A large majority (almost 77%) of pre-certified professionals work for non-HUB firms. The average number of pre-certified individuals for HUB and non-HUB firms is 4.07 and 8.86, respectively. Therefore, a non-HUB firm employs more than twice as many pre-certified professionals as a HUB firm, indicating that HUB firms have less depth of resources.

Many professionals are pre-certified in multiple (as many as nine or more) categories. Multiple pre-certifications portray broader and more diverse past experience and increase an individual's chance of being a project manager and/or task leader on TxDOT consulting contracts.

Figure ES.6 shows the number of individuals with multiple pre-certifications, and the HUB status of their employers. For example, at the left end of the spectrum, of 2701 professionals with pre-certification in only one group of work categories, 21% (568) are employed by HUB firms. At the right end, of the 67 professionals that are pre-certified in nine or more groups of work categories, 34% (23) are employed by HUB firms.

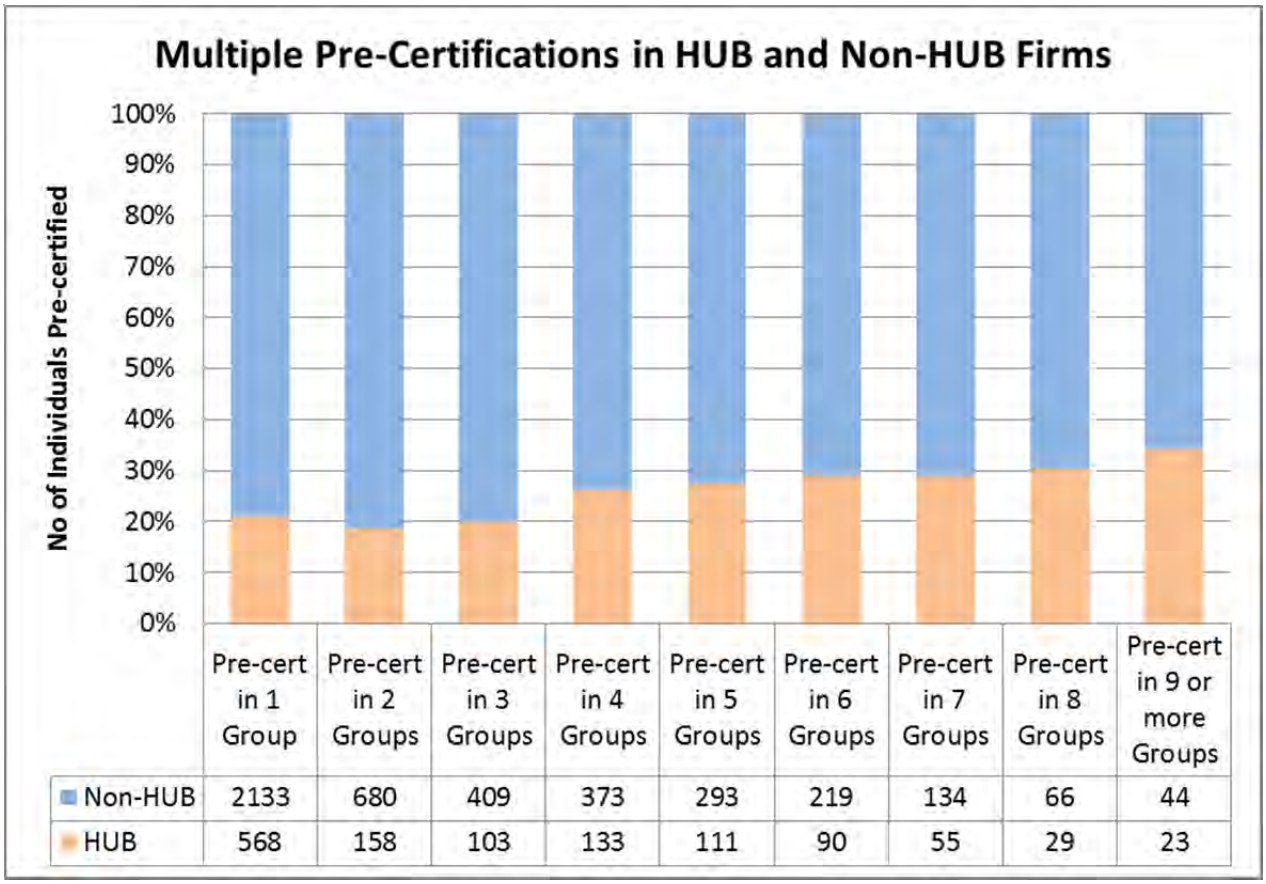


Figure ES.6: Number of Individuals with Multiple Pre-certifications in HUB and non-HUB Firms

While the percentages for the HUB firms increase from left to right, the absolute numbers are decreasing. This may be because HUB firms have difficulty attracting highly pre-certified individuals, or that highly pre-certified individuals start their own HUB firms. Either way, the number of widely experienced professionals employed by HUB firms tends to be lower than the number in non-HUB firms, indicating that HUB firms have less breadth of resources. Having less depth and breadth of resources impacts a firm's ability to compete as a prime consultant.

6. TxDOT Pre-Certifications Show No Ethnic Bias

The dataset from CCIS provided an ethnicity identifier for each firm's ownership. The following ethnicity identifiers are included in the database.

1. **AI:** Native Americans, including persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians.
2. **AS:** Asian Pacific Americans, including persons whose origins are in Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Samoa, Guam, the U.S. Trust Territories of the Pacific, the Northern Marianas, and Subcontinent Asian Americans, (persons whose origins are in India, Pakistan, Bangladesh, Sri Lanka, Bhutan, or Nepal).
3. **BL:** Black Americans (African Americans), including persons having origins in any of the black racial groups of Africa.
4. **HI:** Hispanic Americans, including persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race.
5. **WO:** American women, which includes all women of any ethnicity not specified above.

Table ES.6 provides a breakdown of pre-certified persons in CCIS by firm ownership ethnicity, along with 2010 Census Texas ethnicity breakdown and 2012 data from the Texas Board of Professional Engineers on Professional Engineer (PE) licensees by ethnicity and gender. Note that the pre-certification figures are for firm ownership ethnicity, not pre-certified individuals' ethnicities.

As the yellow-highlighted cells emphasize, the results show fewer Hispanic, African American, and female PEs compared to the general population. Comparing pre-certifications by firm ownership to the PE population, Native Americans and females are slightly under-represented, but there appears to be no bias by ethnicity or gender in granting PEs TxDOT pre-certification.

Table ES.6: Ethnicity Breakdown of Texas Population, PE Population, and TxDOT Pre-Certifications by Firm Ownership Ethnicity

Group	Texas Population 2010 Census	Texas Registered PEs by Ethnicity	Texas Registered PEs by Gender	TxDOT Pre-Certifications by Firm Ownership
Hispanic	37.6%	6%		8%
African American	11.5%	2%		3%
Asian	3.8%	5%		5%
Native American	0.3%	5%		<1%
White or Other	46.8%	81%		78%
Female			8%	6%

Findings from Interviews

The work plan established by TxDOT required that the research team solicit opinions from consultants through voluntary participation (versus random selection). The research team interviewed 35 small business enterprise (SBE) employees to elicit feedback on the ability of their firms to compete and win as prime consultants. Generally, it was found that interviewees had outdated information on TxDOT's programs, and misperceptions regarding its rules and processes. No significant differences across geographic areas were found in the responses, and none of the respondents mentioned any issues regarding ethnic bias in TxDOT consultant procurement.

Based on the interviews, 18 findings of SBE opinions are presented here. These findings address the two central questions of the study: 1) Relative to large firms, why are more small firms not awarded prime contracts? 2) What measures can be implemented to improve the success rate of small firms, such that more small firms are awarded prime contracts?

1. State Contracting Goals Impact SBE Ability to Compete as Primes

State rules that a HUB prime consultant's portion of the work does not count toward the project HUB contracting goal are seen as a significant barrier to HUBs winning as primes. SBEs say that new state rules—e.g., separate goals for HUBs, SBEs, and women-owned businesses—might spur more SBEs to pursue prime consultant contracts.

2. Regionalization May Have Affected SBE Competitiveness

TxDOT's regionalization of consultant selection was identified as a factor in SBE's perceived loss of competitiveness on TxDOT projects. Most SBEs would prefer divestment of at least a portion of TxDOT's consultant procurement back to lower levels of TxDOT.

3. SBEs Would Like More and Earlier Information on TxDOT's Program

Several SBEs said that the information in the TxDOT 6-month work program posted on its website is insufficient for them to make early decisions on proposing or teaming. Teaming is critical for SBEs.

4. TxDOT Could Be More Proactive on Contracting Goals

SBEs said that TxDOT is not proactive enough on HUB goals, but instead passes the responsibility on to prime consultants to meet those goals. One SBE suggested awarding extra points in the selection process for teams that exceed HUB goals.

5. TxDOT Could Improve its SBE Outreach Efforts

Most SBEs had the impression that TxDOT's SBE outreach programs did not provide much information on professional services contracts. SBEs need more training on LOI preparation and interviewing, and targeted outreach programs.

6. TxDOT's Pre-Certification Process Could Be Improved

Most SBEs said that the computer interface for TxDOT's pre-certification system is archaic. They feel that pre-certification is a pass-fail gateway before TxDOT will even look at a team's LOI, and the process needs to be improved.

7. Administrative Qualification (AQ)

AQ requires an approved audit, but SBEs said that audits are expensive for them ($5,000–$25,000). Even though the alternative 1.45 Overhead (OH) rate offered by TxDOT may be less than a firm's actual OH, in some cases it is more cost-effective for them to accept it than to pay for an audit.

8. TxDOT Process Favors Larger Firms

SBEs who rated TxDOT's process "Above Average" mentioned the simplicity of the LOI and the use of HUB goals. Those who rated it "Below Average" felt that TxDOT selection panels prefer larger firms and those with PMs who either worked for TxDOT or had a close relationship with TxDOT staff. No SBEs reported any indication of ethnic bias in TxDOT consultant selection.

9. SBEs Are at a Competitive Disadvantage

SBEs are at a competitive disadvantage versus large firms in terms of geographic reach, name recognition, and marketing ability, among other factors. SBEs would like to see counterbalancing measures to reduce competition from larger firms.

10. SBEs Would Like More Opportunities to Interact with TxDOT Staff

SBEs say that there are very few opportunities such as workshops and pre-proposal meetings for them to interact with TxDOT staff or larger firms and to form relationships.

11. SBEs Would Like to See Changes in TxDOT's Innovative Contract Packaging

Innovative contracting mechanisms are taking up an increasing share of TxDOT funding. SBEs have a realistic chance only as sub-consultants on such projects, but the prime consultants prefer to use their in-house staff, and sub-consultants get only 'fetch and carry' work. Designating a portion of engineering work for subs would be helpful.

12. SBEs Would Like to See Changes in TxDOT Project Scoping

Traditional contract packages have also been trending towards large projects. However, the number of pre-certifications required on many projects is discouraging SBEs from seeking the prime consultant roles. In indefinite deliverable ("evergreen") contracts, SBEs say that the types of work seem to favor specialized firms over general PS&E firms.

13. Selection Process is a Ranking System Rather Than a Qualifications-Based System

Some SBEs feel that the existing selection process is not truly qualifications-based, but instead is a ranking system. As a result, the same firms are always in the top tier, and SBEs have difficulty getting in.

14. SBEs Say TxDOT's Notice of Intent (NOI) Deadline is Too Short for Them to Team

SBEs said that TxDOT's 21-day response deadline on a NOI is too short for them to form or join teams. Furthermore, SBEs said that TxDOT has told consultants they want to see new teams for each project.

15. TxDOT's LOI Screening Affects SBEs

SBEs said that LOIs are rejected for minor errors, or for not using certain TxDOT key words. Only the consultant's project manager (PM) and the Task Leaders are scored, not the entire team. One SBE said that limiting LOIs to five pages favors large firms who are better known.

16. Interview Participation Limits Are a Barrier to SBE Success

SBEs said that TxDOT imposes limits on interview participation. This is a barrier to SBEs, because they are restricted in their teaming to the number of task leaders they have on staff. One SBE suggested using a firm's interview score for every team they are on.

17. Post-Elimination Debriefings Come Too Late

The majority of SBEs said that TxDOT debriefing sessions are delayed so long after the LOI or interviews that 'mistakes' would have been repeated on other proposals in the interim.

18. Non-TxDOT Programs Could Suggest Enhancements

Federal: Several SBEs mentioned the federal 8(A) program as a set-aside program for DBEs. One said that some federal agencies use a tiered goal approach—awarding work first to veteran-owned firms, then to DBEs, then to SBEs, etc.

State: The Oklahoma DOT's program was mentioned as one that is SBE-focused and very approachable. They publish an 8-year work plan with good detail. The Florida DOT was also cited as a good example.

Cities: The City of Houston and the City of San Antonio were cited as excellent for SBEs, with good outreach programs, training and help during proposal preparation, and generally favoring local firms. The City of San Antonio has a goal that 51% of its work should be done by SBEs. The City of Dallas is said to be "very minority-focused."

Others: The North Texas Tollway Authority has a mentor program called ROADS in which points are awarded to prime consultants for being more inclusive. The Dallas Area Rapid Transit organization has a similar program. Houston Metro allows a sub-consultant on up to four teams.

Recommendations

In general, this research found many positives in TxDOT's consultant procurement program. The data analysis showed that the system has been even-handed to SBEs, despite significant reduction in contracting in the last 4 years. No evidence of ethnic bias in the program was found, either through data analysis or in the interviews. Interviewees praised TxDOT standards and the reliability of the program. Of the negative comments captured in the interviews, most involve tweaks to procedures.

The following recommendations address the second central question of the study (what measures can be implemented to improve the success rate of small firms, such that more small firms are awarded prime contracts?). Therefore, these recommendations seek mainly to provide more opportunities and access for SBEs. Thirteen recommendations are presented.

The recommendations are organized in three groups:

- Group 1 includes items that can be implemented by TxDOT directly.
- Group 2 consists of items that will require legislative/State Comptroller and/or TxDOT policy changes, and may go beyond the scope of this study, but have the potential to benefit SBEs.
- Group 3 includes items that were identified during the interviews and are being addressed by TxDOT with rules adopted effective February 21, 2013 in the Texas Administrative Code, Title 43, Subchapter C, Sections 9.34(b), 9.35(b), and 9.36.

Group 1: Can Be Implemented by TxDOT Directly

1. Highlight TxDOT SBE Outreach and Training Programs

Many SBEs have outdated information about TxDOT's small business outreach and training programs and need to educate themselves on TxDOT processes. However, Texas Government Code Section 2161.066(e) stipulates that "each state agency that has a HUB coordinator shall aggressively identify and notify individual HUBs regarding opportunities", so TxDOT could increase its efforts to highlight these programs. TxDOT could also explore ways to persuade consultants to 'refresh' themselves by attending a TxDOT workshop every few years.

2. Enhance Pre-Certification and LOI Screening Process

TxDOT's pre-certification system computer interface should be updated to be more user-friendly. The Letter of Interest (LOI) screening checklist should be posted online. TxDOT should also consider a web-based application for submitting and screening LOIs.

3. Track Additional Data

Data from TxDOT's CCIS database proved useful to the researchers in checking some of the findings from the SBE interviews. However, some inconsistencies were found in the CCIS database. TxDOT should review QC procedures for CCIS data quality. TxDOT could also consider some CCIS enhancements such as tracking the number of LOIs for various contracts/disciplines and the actual usage of sub-consultants post-contract award. LOI statistics may help SBEs target their efforts more effectively. Global tracking of sub-contracts would

promote the visibility of that experience and aid SBE sub-consultants in transitioning to prime roles. Sub-contract tracking is currently managed at the project level.

4. Scope Additional Projects Targeted to SBEs

The data showed that even though 86% of TxDOT contracts are less than $2 million, these cover just under 50% of total dollars awarded. SBEs are more successful in under-$2 million contracts. TxDOT could develop more contracts of that size and use them in creative ways, for example, to develop a running 6-month stock of small ready-to-let projects in case large projects are delayed.

5. Study Non-TxDOT Programs for Enhancements

Due to time limitations for this study, it was not possible to investigate non-TxDOT consultant programs. The research team strongly recommends that the examples cited in the SBE interviews, as well as others identified in a broad review, be investigated for features that could benefit TxDOT's consultant program and are permissible by the Texas Administrative Code.

Group 2: Requires Legislative or Policy Changes

6. Request Modifications to State Contracting Goals

Currently, the Texas State Comptroller sets rules determining state agency HUB sub-contracting goals. Revised rules regarding contracting goals could benefit SBEs. The HUB sub-contracting goal could be replaced with a HUB contracting goal, i.e., total dollars awarded to HUB firms. A HUB prime consultant should be allowed to self-satisfy a project's HUB requirements, as is the case for DBEs on federal contracts.

In addition to HUB goals, SBEs suggested that separate contracting goals for SBEs and women-owned businesses could be considered. The available data was insufficient to verify if this is an issue. In any case, TxDOT's Office of General Counsel would need to review this idea to see if it is compliant with state and federal law and with recent case law.

7. Provide More and Earlier Program Information

Teaming is an important issue for SBEs. TxDOT could consider posting a 2-year look-ahead of potential consultant work on its website, with progressively more detail in the 1-year and 6-month plans so that SBEs would be able to develop potential teams and proposals for projects. In interviews TxDOT Regional staff indicated that posting look-ahead information is feasible.

8. Consider Implementing a Policy on Consultant Access to TxDOT Staff

SBEs feel they are at a disadvantage in gaining access to TxDOT staff. TxDOT could consider implementing a uniform policy on meetings between TxDOT staff and consultants, including quarterly and pre-proposal meetings. Pre-proposal meetings would help SBEs to raise their profiles. TxDOT is addressing these concerns to some degree with the recently-implemented "pre-NOI meetings", which are advertised on the TxDOT website in advance of the actual NOIs. TxDOT has conducted some of these meetings via the internet to save attendees time and travel expenses.

9. QBS—Consider a Roster System of Pre-Qualified Firms

SBEs differ from TxDOT in their interpretation of the term 'Qualifications Based Selection', saying that TxDOT's selection process is "a ranking system" in which a few top firms always win, and well-qualified firms are runners-up. Currently, according to federal and state rules for a competitive negotiation/qualification based process, rankings are to be based only on capabilities and qualifications. TxDOT might consider a roster system with pre-qualified firms and a project-to-firm matrix matching process, perhaps along the lines of the system used for TxDOT indefinite deliverable contracts.

10. Improve Opportunities for SBEs when using Innovative Project Delivery Methods

As TxDOT increases its use of innovative project delivery methods for mega projects, SBEs are affected in two ways. First, due to the inclusion of federal funding, the Design-Build operation uses federal rules which stipulate a lower DBE percentage as compared to state HUB rules. Second, the Design-Builder can elect to meet the entire DBE percentage goals by contracting out non-engineering tasks. Since SBEs are largely DBEs, TxDOT could help them increase their success rates by reviewing innovative contracts to foster SBE participation in engineering work on those contracts.

Group 3: Being Addressed by TxDOT with February 2013 Rules

11. Review Interview Format, Participation, and Debriefing

SBEs said they would have a better chance of winning contracts if interview questions were available in advance, and if the interviews are open to a representative from each sub-consultant in addition to the PM and task leaders. The latter provision would also give the SBEs who are subs the opportunity to learn the skills they will need to become a prime consultant. The February 2013 rules now allow sub-consultants to attend more than one interview.

SBEs said that TxDOT's debriefing of losing proposers should be completed as soon as possible after elimination. TxDOT could use this as a training opportunity. TxDOT has recently reconfigured the schedules to conduct debriefing as soon as possible. However, short-listed firms cannot be debriefed until after contract execution. In addition, TxDOT might consider publishing and maintaining a bank of interview questions and answers as a training tool for SBEs.

12. Review Administrative Qualification Requirements

In the interviews SBEs indicated they had difficulty with TxDOT's AQ requirements, notwithstanding the exemptions available for state-funded contracts (approximately 90% of TxDOT's program). The June 2011 rules exempted a number of service types, including bridge inspection, materials inspection and testing, geotechnical services, surveying and mapping, and architecture. Notably, these service types are commonly performed by SBEs. The February 2013 rules maintained these exemptions, while further providing a self-certification option for administrative qualification. Self-certification may provide a cost-savings value to SBEs. SBE response to this rule change should be monitored by TxDOT to gauge the benefits.

13. Monitor New Small Contract Process

In the interviews SBEs requested more opportunities to win as prime providers. The February 2013 rules established the Small Contract Process for single, specific deliverable contracts that are state-funded and $750,000 or less in total value. Compared to TxDOT's conventional process, the Small Contract Process is simplified. It has no short list phase, i.e. interviews are not conducted. Selections are based entirely on the firms' qualifications as stated in their LOIs. Thus, the time and cost of preparing for and participating in interviews is eliminated. Non-SBE firms are not excluded from the Small Contract Process; such restrictions are not permitted under the applicable laws and rules. In implementing the Small Contract Process, TxDOT should monitor the success of SBEs, particularly in the prime provider role.

Conclusion

This study examined reasons why small firms are not winning more TxDOT contracts as prime consultants. Generally, it was found that interviewees had outdated information on TxDOT's programs, and misperceptions regarding its rules and processes. Analysis of TxDOT contract data showed that, even though TxDOT funding for consultant contracts has shrunk significantly, SBEs have not been disproportionately impacted. During the course of the study (in February 2013), TxDOT issued some new rules regarding its program, and these were reviewed in the Final Report.

This executive summary presents a number of findings and recommendations. Additional details are included in the accompanying Final Report. One of the main objectives of the study was to identify measures that can be implemented to improve the success rate of small firms as prime consultants. As such, the recommendations seek to provide more opportunities and access for small firms.

Chapter 1. Introduction

1.1 Project Goals

In a letter dated June 14, 2012, the Texas Department of Transportation (TxDOT) sought the services of a public institution of higher education to conduct a formal study of TxDOT's professional services contracting program through an Interagency Contract (IAC).

The Request for Proposal (RFP) stated that it had come to TxDOT's attention that certain small firms feel disadvantaged under its professional services contracting program. While small firms enjoy success under the program as sub-providers, comparatively few are selected as prime providers. TxDOT wished to enhance the success of small firms in this regard. The requested services involved conducting a formal study of TxDOT's professional services contracting program. Two central questions were to be addressed in the study:

1) Relative to large firms, why are more small firms not awarded prime contracts?
2) What are the measures that can be implemented to improve the success rate of small firms, such that more small firms are awarded prime contracts?

The key deliverable for the study was a Final Report, to be delivered by December 21, 2012.

1.2 Background for This Study

TxDOT contracts with private sector firms to obtain engineering, architecture, and land surveying services. Under federal and state laws, government agencies procuring such services must do so through a Qualifications-Based Selection (QBS) process.

QBS involves a two-step process. First, the agency selects the most qualified provider. Selection is based exclusively on the provider's qualifications. Price is not a factor in selection. Second, the agency and the provider commence negotiations to establish a fair and reasonable fee. If such a fee cannot be agreed upon, the agency terminates negotiations with the provider and commences negotiations with the next most-qualified provider. This process continues until a fair and reasonable fee is established.

QBS comes in a variety of configurations. The specificities vary, depending on the agency. TxDOT's professional services contracting program utilizes a Notice of Intent/Letter of Interest/ Interview structure. Proposals are sometimes incorporated, either in lieu of or addition to the interviews. This process is detailed in the Texas Administrative Code, Rules §§9.30–9.42.

1.3 Work Scope and Tasks

As stated in the RFP, TxDOT wanted the focus of this study to be on small businesses. For the purposes of this study, TxDOT specified the U.S. Small Business Administration's *Table of Small Business Size Standards Matched to North American Industry Classification System Codes* (2012) as the defining basis for "small firm." Accordingly, "small firm" was defined as a business entity that 1) provides engineering, architecture, or surveying services and 2) generates

$14.0 million or less in gross annual receipts. TxDOT stated that all firms certified as Historically Underutilized Businesses (HUB) under its Business Category 05, Engineering and Architecture, are small firms. Similarly, all firms certified as Disadvantaged Business Enterprises (DBE) under NAICS Work Code 541330, Engineering Services, are small firms.

TxDOT established a work plan consisting of six tasks for this study; following is the original text describing those tasks. In the work plan, the "Receiving Agency" is TxDOT, and the "Performing Agency" is the research institution.

Task 1.0: Project Management
The Performing Agency shall participate in a series of meetings over the course of the study. These include one (1) project kickoff meeting and up to twelve (12) semi-monthly status meetings. The status meetings may be conducted by telephone. The Performing Agency may be requested to participate in other meetings as set forth under Task 6.0.

Deliverables for Task 1.0
Status Reports. This deliverable consists of up to twelve (12) semi-monthly status reports to accompany the status meetings. Each Status Report shall serve as the basis of discussion for the present status meeting and summarize the progress made since the previous status meeting. The Status Reports may be structured in bullet form and delivered by email.

Task 2.0: Ensure Representative Participation
The Performing Agency shall employ subcontractors or vendors as necessary to ensure full, fair, and open participation by all diverse groups with an interest or a potential interest in the procurement process for engineering, architecture, and surveying contracts.

Task 3.0: Program Familiarization and Data Analysis
The Performing Agency shall familiarize itself with the Receiving Agency's professional services contracting program. To assist the Performing Agency, the Receiving Agency will provide an Information Packet. The Information Packet will include the following items:

- A description of the Receiving Agency's selection process, including written summary and flow chart.
- A copy of the Receiving Agency's organization chart.
- A list of contacts for the Receiving Agency's District Offices.
- A list of contacts for certain public entities in Texas, including local agencies and metropolitan planning organizations.
- A table of the Receiving Agency's professional services contracting history.
- A list of firms pre-certified to provide professional services for the Receiving Agency.
- A list of firms HUB-certified under Business Category 05, Engineering and Architecture, including breakdown by race/ethnicity, sex, and service description.

- A list of firms DBE-certified under NAICS Work Code 541330, Engineering Services, including breakdown by race/ethnicity, sex, and service description.
- A copy of Texas Government Code §2254.
- A copy of Texas Administrative Code Rules §§9.30–9.42.
- A copy of the *State of Texas Disparity Study* (2009).
- Other materials deemed useful by the Receiving Agency in assisting the Performing Agency with the familiarization.

Upon familiarization, the Performing Agency shall analyze the data in the Information Packet. The Performing Agency may compile, organize, and format the data as it deems necessary. In its analysis, the Performing Agency shall categorize four types of entities, described as follows.

- Category 1. Small and large firms that have been awarded prime contracts by the Receiving Agency
- Category 2. Small firms that have pursued prime contracts with the Receiving Agency in the past, but have yet to be awarded prime contracts
- Category 3. Receiving Agency District Offices that have evaluated Letters of Interest submitted by small and large firms that were proposing to be prime providers
- Category 4. Public entities in Texas that have awarded prime contracts to small firms.

Using these parameters, the Performing Agency shall identify potential interviewees and solicit these entities accordingly. The entities' physical locations and markets served shall comprise a sample that is representative of the state overall and the Receiving Agency's professional services contracting program as a whole.

The Performing Agency may assume that between five (5) and ten (10) interviews will be required for each Category, for a maximum of forty (40) interviews.

The Performing Agency shall develop questions for each interview and establish the appropriate format and venue. The formats may include questionnaires, group sessions, individual interviews, or a combination as appropriate. The venues may include online communications, telephone conversations, physical meetings, or a combination as appropriate.

The interview questions shall seek to identify, to the extent possible, the following information.

- The scenarios in which small firms are typically awarded prime contracts and those in which they are not.
- The impediments to small firms in pursuing prime contracts.
- The types of selection processes most conducive to enabling small firms as prime providers.

- Other information deemed useful in addressing the Central Questions of the study.

The Performing Agency shall not collect new information for Task 3.0. The Performing Agency shall limit its analysis to the materials in the Information Packet.

Deliverables for Task 3.0

3.1: Program Description. This deliverable consists of a written summary describing the Receiving Agency's professional services contracting program. The Performing Agency understands that the Program Description, as developed, shall be incorporated into the 30% Report.

3.2: Interview Plan. This deliverable consists of a written summary describing the interview strategy for Categories 1–4, including the specific entities to be interviewed; interview formats and venues; and interview questions. The Performing Agency understands that the Interview Plan, as developed, shall be incorporated into the 30% Report. The Receiving Agency will review the Interview Plan and provide comments.

Task 4.0: Interviews

The Receiving Agency will issue a Notice to Proceed (NTP), by which the Performing Agency shall execute the Interview Plan. The Performing Agency shall not commence the interviews prior to receiving the NTP.

In conducting the interviews, the Performing Agency's approach and manner shall be proactive and searching. The Performing Agency must glean the insight requisite to addressing the Central Questions of the study. Post-interview verifications and clarifications may be conducted as required.

Deliverables for Task 4.0

4.1: Interview Findings. This deliverable consists of a written summary describing the outcomes of the interviews. The Performing Agency understands that the Interview Findings, as developed, shall be incorporated into the 30% Report.

Task 5.0: Final Report

The Performing Agency shall produce a Final Report addressing the Central Questions of the study. The Final Report shall offer, to the extent possible, recommendations for enhancing the success rate of small firms, such that a higher percentage of small firms are awarded prime contracts.

The Final Report shall be of high quality, such that it may serve as an official reference for the State of Texas. The Performing Agency understands that the Report will be referenced in the 83rd Legislative Session and studied in committee. The Report may serve as a basis to implement statutory changes.

The Final Report shall be directed to the non-scientific community. The language shall be constructed for ease-of-understanding. The Performing Agency understands that the applicable standard of readership is an individual who is unfamiliar with the intricacies of public contracting for engineering, architecture, and surveying services, but must inform him- or her-

self posthaste, in order to establish a firm basis for sound decision-making.

The Performing Agency shall create and implement a Quality Management Plan (QMP) for the Final Report. The QMP shall provide a systematic approach for checking accuracy and completeness of the following items: 1) body text, including spelling, grammar, and style; 2) citations; 3) format, margins, headers, footers, tables, figures, and 4) supporting documentation, including appendices. The QMP shall also provide a systematic approach for addressing the Receiving Agency's review comments.

Deliverables for Task 5.0

5.1: QMP. This deliverable shall consist of a written plan describing the Performing Agency's strategy for quality assurance/quality control. The QMP shall identify the key individuals to be involved and the specific tools to be used. Such tools may include checklists; style guides; Microsoft Word TRACK CHANGES; and Microsoft Excel for capturing, itemizing, addressing, and closing out review comments. The Receiving Agency will review the QMP and provide comments.

5.2: 30% Report. This deliverable shall build upon the Deliverables for Tasks 3.0 and 4.0. The 30% Report shall consist of developed body text in paragraph form. The 30% Report shall substantially address the first Central Question of the study: Relative to large firms, why aren't more small firms awarded prime contracts? The Receiving Agency will review the 30% Report and provide comments.

5.3: 60% Report. This deliverable shall build upon the 30% Report. The 60% Report shall consist of developed body text in paragraph form and most, if not all, of the supporting tables and charts. The 60% Report shall represent a rough draft of the 100% Report. The 60% Report shall substantially address the second Central Question of the study: What are the measures that can be implemented to enhance the success rate of small firms, such that more small firms are awarded prime contracts? The 60% Report shall address the Receiving Agency's review comments from the 30% Report. The Receiving Agency will review the 60% Report and provide comments.

5.4: 95% Report. This deliverable shall build upon the 60% Report. The 95% Report shall consist of refined body text, all supporting tables and charts, executive summary, table of contents, list of definitions, and index. The 95% Report shall address the Central Questions of the study and shall be functional and usable for all intents and purposes. The 95% Report shall address the Receiving Agency's review comments from the 60% Report. The Receiving Agency will review the 95% Report and provide final review comments.

5.5: 100% Report. This deliverable shall finalize the 95% Report. The 100% Report shall consist of finished body text and all appendices. The 100% Report shall address the Receiving Agency's final review comments. In addition to the 100% Report, this deliverable shall include the products of the QMP, including completed checklists and finalized documentation verifying that all review comments have been addressed.

5.6: Final Report: This deliverable shall include six (6) hardcopies of the 100% Report. Each

hardcopy of shall be printed on new, non-recycled, high quality 8 ½" x 11" bond paper. Each hardcopy shall utilize spiral binding, clear plastic facing, and vinyl backing. The Receiving Agency may require the hardcopies to be tabbed for ease-of-reference. This deliverable shall also include an electronic copy of the 100% Report on compact disc. The Performing Agency shall submit one (1) cover letter, formally introducing the Final Report to the Receiving Agency's Deputy Executive Director.

Task 6.0: Final Report Support
The Performing Agency shall support the Final Report prior to and during the 83rd Legislative Session. The Performing Agency shall designate a responsible charge for supporting the Final Report from January 2, 2013 to May 28, 2013. The responsible charge shall expect to receive, and be prepared to answer, questions from the Receiving Agency's Deputy Executive Director. The responsible charge shall be available by both telephone and email. The responsible charge may be required to meet with the Director in person. The Performing Agency understands that time is of the essence in communications with the Director.

1.4 Other Requirements for the Study

1.4.1 Teaming

To qualify for consideration, TxDOT required that the study proposal include one or more persons with at least 5 years of experience in the private sector as a consultant engineer, architect, or land surveyor who has competed for TxDOT contracts as a small firm. Also, TxDOT preferred a joint effort by two or more institutions, and encouraged proposers to contact other institutions to discuss possible teaming efforts.

1.4.2 Proposal Evaluation

The proposals were to be evaluated according to the following criteria.

1. Experience as a small firm in pursuing TxDOT contracts through the QBS process, including marketing engineering, architecture, or land surveying services; evaluating solicitations, such as notices of intent, requests for qualifications, and requests for proposals; and preparing responses, such as letters of interest, statements of qualifications, and proposals
2. Knowledge of applicable laws, rules, and policies, including Texas Government Code §2254 and Texas Administrative Code Rules §§9.30–9.42
3. Innovative approaches to addressing the two Central Questions of the study
4. Ability to team with other institutions
5. Ability to meet schedule
6. Cost

1.4.3 Proposal Format and Deadline

TxDOT requested that the proposal be structured as follows:

1. Cover letter;

2. Main body, addressing criteria 1–5, listed above;
3. Cost segment.

The main body of the proposal was not to exceed five letter-size (8 1/2" x 11") pages, single-sided, single-stapled in the upper left-hand corner. Formal binding was neither required nor desired. Proposals were due in 15 days, by 5:00 PM on Friday, June 29, 2012.

1.4.4 RFP Summary

The details of the TxDOT RFP are provided because in some ways it resembles a typical Notice of Intent for a TxDOT professional services contract. Meeting the proposal and contract requirements gave the research team some insight into issues consultants encounter when seeking and working on TxDOT professional services contracts.

1.5 Chapter Summary and Report Outline

This chapter introduced the goals of the project, background, and work scope and presented TxDOT's requirements. Chapter 2 describes the study methodology. Chapter 3 is a review of TxDOT procurement procedures and previous studies related to issues in state and TxDOT contracting. Chapter 4 describes the legal framework for TxDOT's consultant procurement program and minority contracting goals. Chapter 5 presents an analysis of TxDOT contracts, certifications, and other data related to this study. Chapter 6 is a detailed write-up of the findings from interviewing a number of consultants. Chapter 7 contains the findings and recommendations. Several appendices provide additional supporting material.

Chapter 2. Project Methodology

2.1 Research Approach

The research team generally followed the Work Plan as detailed by TxDOT. Figure 2.1 is the original schedule included in the RFP. Note that a new Task 2 was subsequently inserted by TxDOT before contract execution. The contract was executed on August 23, 2012, instead of by July 30. Despite the late start, the research team was able to meet the overall target date.

2.1.1 Research Team

The research team was a joint venture consisting of

- The Center for Transportation Research (CTR) at The University of Texas at Austin; and
- The University of Texas at Arlington (UTA).

Three sub-contractors who are engineering firms were also part of the team:

- RJ RIVERA Associates, Inc. (RJR), with offices in San Antonio and Austin;
- Lina T. Ramey & Associates (LTR), with an office in Dallas; and
- Nathelyne A. Kennedy & Associates (NAK), with an office in Houston.

2.1.2 Categorization of Firms

TxDOT provided a list of firms certified as Small Business Enterprises (SBE). Because the TxDOT panel wanted broad geographic coverage of different regions of the state, the list was categorized by region, and shared with the sub-contract partners. In parallel, data was obtained from TxDOT on contracts awarded to various firms. The results of that analysis are in Chapter 5.

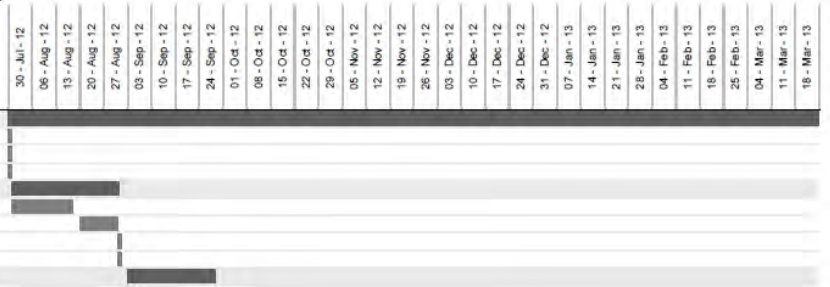
Attachment D: Draft Project Schedule
Contract #48-2XXIA001
Small Business Inclusion Study

Today's Date: 6/13/2012 Wednesday
(vertical red line)

Project Lead: MD
Start Date: 7/30/2012 Monday

First Day of Week (Mon=2): 2

WBS	Tasks	Task Lead	Start	End	Duration (Days)	% Complete	Working Days	Days Complete	Days Remaining
1	**Contract Management**		7/30/12	5/28/13	301	0%	215	0	301
1.1	Project Kickoff		7/30/12	7/30/12	1	0%	1	0	1
1.1.1	Hold Kickoff Meeting		7/30/12	7/30/12	1	0%	1	0	1
1.1.1.1	Submit Information Package to Performing Agency (PA)		7/30/12	7/30/12	1	0%	1	0	1
2	**Program Familiarization and Data Analysis**		7/31/12	8/31/12	32	0%	24	0	32
2.1	PA to Familarize and Develop Program Description		7/31/12	8/17/12	18	0%	14	0	18
2.2	PA to Analyze Data and Develop Interview Plan		8/20/12	8/30/12	11	0%	9	0	11
2.3	PA to Deliver Program Description		8/31/12	8/31/12	1	0%	1	0	1
2.4	PA to Deliver Interview Plan		8/31/12	8/31/12	1	0%	1	0	1
3	**Interviews**		9/03/12	9/28/12	26	0%	20	0	26
3.1	Review Interview Plan and Issue NTP		9/03/12	9/04/12	2	0%	2	0	2
3.2	PA to Conduct Interviews for Categories 1-4		9/05/12	9/27/12	23	0%	17	0	23
3.3	PA to Develop Interview Findings		9/05/12	9/27/12	23	0%	17	0	23
3.4	PA to Deliver Interview Findings		9/28/12	9/28/12	1	0%	1	0	1
4	**Final Report**		10/01/12	12/21/12	82	0%	60	0	82
4.1	QMP		10/01/12	10/05/12	5	0%	5	0	5
4.1.1	PA to Develop QMP		10/01/12	10/03/12	3	0%	3	0	3
4.1.2	PA to Deliver QMP		10/04/12	10/04/12	1	0%	1	0	1
4.1.3	Review QMP and Approve		10/05/12	10/05/12	1	0%	1	0	1
4.2	30% Report		10/08/12	10/26/12	19	0%	15	0	19
4.2.1	PA to Develop 30% Report		10/08/12	10/25/12	18	0%	14	0	18
4.2.2	PA to Deliver 30% Report		10/26/12	10/26/12	1	0%	1	0	1
4.2.3	Review Report and Submit Comments to PA		10/29/12	11/02/12	5	0%	5	0	5
4.3	60% Report		10/29/12	11/16/12	19	0%	15	0	19
4.3.1	PA to Refine Report/Address Comments		10/29/12	11/15/12	18	0%	14	0	18
4.3.2	PA to Deliver 60% Report		11/16/12	11/16/12	1	0%	1	0	1
4.3.3	Review Report and Submit Comments to PA		11/19/12	11/23/12	5	0%	5	0	5
4.3.3.1	Brief JB on 60% Submittal		11/20/12	11/20/12	1	0%	1	0	1
4.4	95% Report		11/19/12	12/07/12	19	0%	15	0	19
4.4.1	PA to Refine Report/Address Comments		11/19/12	12/06/12	18	0%	14	0	18
4.4.2	PA to Deliver 95% Report		12/07/12	12/07/12	1	0%	1	0	1
4.4.3	Review Report and Submit Comments to PA		12/10/12	12/11/12	2	0%	2	0	2
4.5	100% Submittal		12/10/12	12/14/12	5	0%	5	0	5
4.5.1	PA to Finalize Report		12/10/12	12/13/12	4	0%	4	0	4
4.5.2	PA to Close Out QMP		12/10/12	12/13/12	4	0%	4	0	4
4.5.3	PA to Deliver Final Report		12/14/12	12/14/12	1	0%	1	0	1
4.5.4	PA to Deliver QMP Final Products		12/14/12	12/14/12	1	0%	1	0	1
4.5.5	Verify 100% Submittal		12/14/12	12/14/12	1	0%	1	0	1
4.6	Final Report		12/17/12	12/21/12	5	0%	5	0	5
4.6.1	PA to Bind Final Report and Appendices		12/17/12	12/19/12	3	0%	3	0	3
4.6.2	PA to Submit Final Report		12/20/12	12/20/12	1	0%	1	0	1
4.7	Submit Final Report to JB		12/21/12	12/21/12	1	0%	1	0	1
4.8	Float		12/24/12	1/01/13	9	0%	7	0	9
5	**Final Report Support**		1/02/12	5/28/12	148	0%	106	0	148
5.1	PA to Provide Support Through End of Legislative Session		1/02/12	5/28/12	148	0%	106	0	148



Gantt Chart Template by Vertex42.com

Figure 2.1: Original Work Schedule from RFP

2.1.3 Interview Plan

A questionnaire was developed for interviewing consultants, reviewed by TxDOT, and approved at a bi-weekly meeting on October 5, 2012. Appendix A provides this questionnaire. The following interview plan was submitted to TxDOT and also approved on October 5, 2012:

1. Interview process:
    a. Start with a pilot. Have Sub-contractors help identify consultants who are willing to participate in the pilot.
        i. Target: 40 participants.
        ii. Format: Offer a choice of a group session, one-on-one interviews, or phone interview.
        iii. Venues: Houston (NAK office), Dallas/Ft Worth (LRA office/TxDOT office/UTArlington office), San Antonio (RJR office), Austin (CTR office), [**El Paso added]**.
        iv. Evaluate responses from pilot.
    b. If responses are consistent and yield sufficient data, proceed to analysis.
    c. ***[Was not necessary]*** *If results are variable, proceed to second phase. Solidify questionnaire. Identify more consultants to participate.*
        v. Target: another 15-20 interviews
        vi. Format: phone interviews
2. Entities to be interviewed:
    a. Selected from List of Certified Providers
    b. Organized by region: Houston, Dallas-Fort Worth, San Antonio, El Paso, and Austin.
    c. Separately: Consultant contracts managers from metro districts.
    d. If time permits: Consultant managers from other entities identified during interviews as having better programs. ***[Was not possible. Strongly recommended as follow-up]***
3. Group 1: Houston Area Consultants Identified for Pilot Phase (18), Scheduled Oct 11 and 12.
4. Group 2: San Antonio Area Consultants Identified for Pilot Phase (22), Planned Oct 17 and 18.
5. Group 3: Dallas/Ft Worth Area Consultants for Pilot Phase (25), Tentatively Oct 24 and 25.
6. Group 4: El Paso Consultants (6), Oct 29-30 **[added]**
7. Group 5: Austin Area Consultants for Pilot Phase (10), Nov 1-10.
8. ***[Was not necessary]*** *Second phase—phone interviews, Nov 4-15.*

Notes:

1. Need to target more participants than needed, because response rate is always less than 100%.

2. Companies want to remain anonymous (i.e., not be identifiable to TxDOT as participants).
3. Venues and formats subject to change.

2.1.4 Interviews

TxDOT issued the research team a Notice to Proceed (NTP) with the interview plan on October 5, 2012. The sub-contracted partners identified consultants in each region to be contacted for interviews. Those from Austin and El Paso were selected by CTR. The numbers of consultants selected in each region were as follows:

- Houston area: 18;
- San Antonio area: 22;
- Dallas/Ft Worth area: 25;
- El Paso: 6; and
- Austin area: 10.

The selected consultants were all contacted by telephone, followed by email confirmation. Of those contacted, about 50% responded positively to being interviewed, but all requested one-on-one interviews and anonymity. Given that this was a donation of their precious time and travel, 50% is a good response rate. The rest either declined (in some cases citing fear of retribution as a factor) or did not reply to messages.

With about 40 positive responses in hand, interviews were scheduled in the respective locations. However, of these 40, there were about 15 last-minute cancellations, no-shows, or requests to re-schedule. In most cases, the reason was a tight deadline for a proposal. Where possible, interviews were re-scheduled. In all, 25 consultants from the original contact list were interviewed in that round. Each interview lasted about 90 minutes.

After a review of the HUB class representation in the initial group, some additional consultants were contacted and interviewed. Ultimately, the research team was able to interview 30 firms (35 individuals) in the study's time frame. In addition, five TxDOT staff members involved in consultant procurement were interviewed.

2.1.5 Analysis of Interview Results

The findings from the interviews are provided in Chapter 6. The responses to each question were compiled and sorted. For numerical responses, maximum, minimum, and median values were computed. For categorical responses, percentages in each category were computed. For other responses, a narrative was constructed to encompass the consensus viewpoint. Counter views were also included. An initial summary of responses was submitted in the 30% report on November 16, 2012. The final set of responses was submitted in the 60% report on November 30, 2012, along with the preliminary draft findings. A briefing on findings and recommendations was given to TxDOT Deputy Executive Director John Barton on December 12, 2012. The 95% report was submitted on December 14, 2012, with conclusions and recommendations in Chapter 7. An Executive Summary was also included.

Chapter 3. TxDOT Procedures Review

3.1 Information Packet Review

TxDOT provided the research team with an Information Packet, as listed in Section 1.3. The research team reviewed these documents and incorporated materials as necessary in this report.

3.1.1 TxDOT Consultant Selection Process

This chapter describes the TxDOT procurement process for professional services. After submission of the draft report, TxDOT updated the material originally in the Information Packet; the following is a revised version provided in December 2012. Figure 3.1, a flow chart of TxDOT's consultant procurement process, was provided in the original packet. The remainder of Section 3.1.1 presents the original text on the selection process as provided by TxDOT.

Qualifications-Based Selection

The federal Brooks Act and state Professional Services Procurement Act govern TxDOT's professional services contracting program. These laws require government entities to utilize a qualifications-based selection (QBS) process in procuring engineering, architecture, and surveying services.

Fundamentally, QBS requires government entities to follow a two-step process. First, providers are evaluated strictly on the qualifications to perform the required services and summarily ranked. The highest-ranked, or most qualified, provider is then selected. Second, the government entity and the provider negotiate to establish a fair and reasonable price for the services. If such a price cannot be agreed upon, the government entity terminates negotiations with the provider and commences negotiation with the next most-qualified provider. This process continues until a fair and reasonable price is agreed upon.

Thus, cost is not a factor in selecting a provider. Rather, cost is a negotiable component, post selection.

TxDOT's professional services contracting program is detailed in Title 43 of the Texas Administrative Code, §§9.30–9.43 (TAC Rules). Recently proposed changes to the TAC Rules are scheduled for adoption at the January 2013 commission meeting. Some of the information below is subject to change upon adoption of the revised rules.

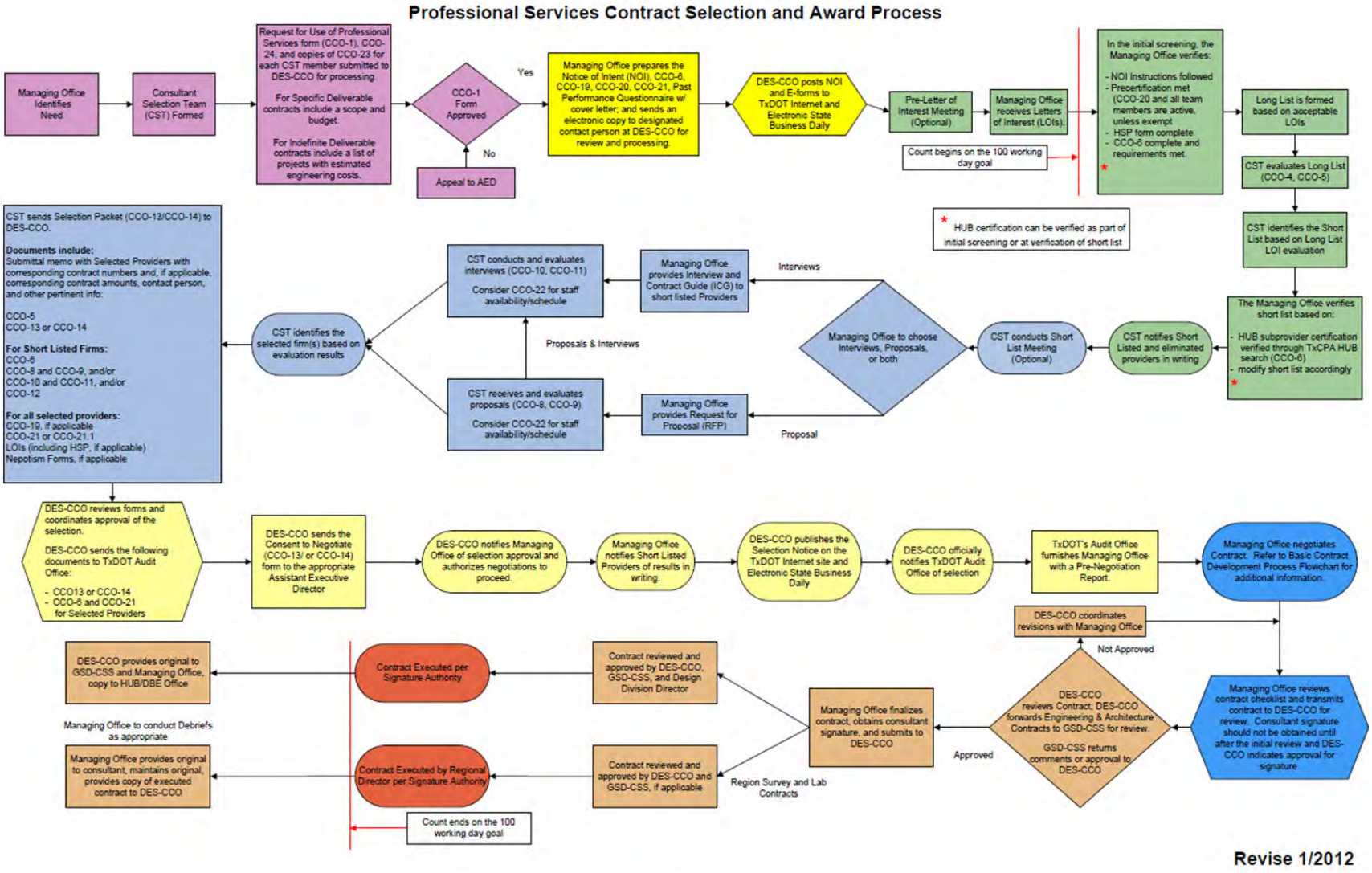


Figure 3.1: TxDOT's Professional Services Contract Selection and Award Process

Source: TxDOT

Pre-certification

TxDOT pre-certifies consultants to ensure they meet the minimum qualifications to provide a given service. This pertains specifically to task leaders proposed to perform the work categories identified for a given contract. Pre-certification is not used to evaluate the level of qualifications above the minimum requirements. Evaluation of and differentiation among provider's qualifications occurs during the selection process based on a provider's response to a particular advertisement as described in the sections below.

To manage the pre-certifications, TxDOT maintains an online database, known as Consultant Contracts Information System, or CCIS. There are 16 general work groups: Transportation Systems Planning, Environmental Studies, Schematic Development, Roadway Design, Bridge Design, Traffic Engineering and Operations Studies, Traffic Operations Design, Bicycle and Pedestrian Facilities, Hydraulic Design and Analysis, Construction Management, Materials Inspection and Testing, Geotechnical Services, Surveying and Mapping, and Architecture. Each of these work groups includes one or more work categories, for a total of 78 work categories.

TxDOT pre-certifies individuals, as opposed to firms. A change in employment is not a factor in one's pre-certification status. There is no expiration date for pre-certification and there are no continuing education requirements. Once an individual is pre-certified in a given work category, he or she will remain pre-certified in that work category indefinitely. This is assuming the individual maintains his or her professional registration with the applicable licensing board, as required.

An individual seeking pre-certification must submit an application. There is no application fee or processing charge required. TxDOT's subject matter experts will review the applicant's experience and work history to determine whether he or she meets the required qualifications. This approval process is typically completed within 60 days. In the case of a rejection, the applicant may amend his or her application. The applicant may also submit a new application.

For atypical work outside the context of a specific work category, TxDOT creates "Non-Listed Categories," (NLCs) and the minimum qualifications required to perform them, are written and developed by TxDOT's subject matter experts on a project-by-project basis. If the Notice of Intent (see below) designates an NLC, the consultants' Letter of Interest (LOI) (see below) must include an attachment that demonstrates that the proposed NLC task leader meets the minimum qualifications. LOIs that fail to demonstrate this are disqualified. Thus, TxDOT uses the NLC attachments to "pre-certify" the NLC task leaders, in a manner of speaking.

Administrative Qualification

The administrative qualification requirement serves as a risk control measure and a basis for negotiating fees. Administrative qualification, as defined, is a TxDOT process that determines whether a provider has an indirect cost rate audit that meets TxDOT's requirements; has a job cost accounting system adequate for segregating direct and indirect costs; and is aware of federal cost eligibility and documentation requirements. The administrative qualification requirement applies to both prime providers and subproviders.

A firm's indirect cost rate audit is typically conducted by an accounting firm. The audit itself is governed by the standards in the AASHTO's *Uniform Audit and Accounting Guide* and TxDOT's Indirect Cost Rate Guidance. A core aspect of the audit is identifying the provider's bona fide indirect cost rate, or "audited overhead rate."

TxDOT's Audit Office maintains the list of administratively qualified firms.

The lack of administrative qualification does not necessarily prohibit a provider from contracting with TxDOT. Non-engineering firms are exempt from administrative qualifications, as are engineering firms providing certain types of services, including bridge inspection, materials inspection and testing, geotechnical services, surveying and mapping, and architecture. Also, TxDOT may contract with a provider lacking an audited overhead rate if: 1) the provider EITHER has been organized for less than a year, AND it accepts an overhead rate developed by TxDOT (145%); OR 2) after selection, the provider certifies that it does not have an audited overhead rate and will accept an overhead rate developed by TxDOT (145%).

Solicitation and Response

To solicit providers, TxDOT posts an online advertisement known as a "Notice of Intent." The Notice serves to inform providers that TxDOT has a contracting opportunity and instructs them on how to prepare their responses. The Notice provides, among other information, the project description, the work categories, the major work categories, the selection process, and the evaluation criteria.

The evaluation criteria includes three standard criteria, common to every Notice: 1) Project Understanding and Approach; 2) the Project Manager's Experience with Similar Projects; and 3) Project-Related Experience of the Task Leaders. The provider's QA/QC program may also be an evaluation criterion. If it is not, then this criterion must be addressed at the short list phase. Finally, the Notice may include specific criteria that address the unique needs of the project. All evaluation criteria must be strictly qualifications-based.

Providers respond to the Notice by submitting letters of interest. The body of the LOI ranges from three to five pages, as specified in the Notice. In the LOI, the provider demonstrates its ability to perform the contract in terms of the proposed staff's qualifications. The LOI also includes a number of attachments, including the project team's org chart, list of references, forms demonstrating the proposed breakdown of work between the prime provider and subproviders. Typically, the LOI also includes the HUB Subcontracting Plan (HSP) if state funded.

Consultant Selection Team

Providers are selected by the appropriately named "Consultant Selection Team." The CST includes at least three individuals, although four to five are common. Each member of the CST must be a TxDOT employee.

The CST must include a designated Chair and the TxDOT project manager. For contracts to be used by districts, the chair is typically a region contracting staff member. The balance of the team typically includes one or more subject matter experts from a district, as appropriate for the work types involved.

The CST must also include at least one licensed professional. For engineering contracts, the CST must include at least one Professional Engineer. Similarly, for architecture contracts, the CST must include at least one Registered Architect. For survey contracts, the CST must include either one Professional Engineer or one Registered Professional Land Surveyor.

Screening and Identifying the Long List

Each LOI is screened against an itemized checklist based on the NOI instructions. Providers that satisfy these requirements are considered "responsive" and commensurately "long-listed." Firms that fail to meet one or more of the requirements are disqualified and removed from further consideration.

LOI screening may be conducted by either a CST member or contract support staff. In the interest of consistency, TxDOT policy is that one person should conduct all of screening.

TxDOT tries to give the providers the benefit of the doubt. Screening staff do not actively seek to disqualify LOIs. TxDOT prefers to long-list each LOI and allow the actual evaluation to determine the outcome. Only when an LOI has clearly and convincingly failed on one or more of the screening requirements is disqualification warranted.

The CST Chair reviews each of completed screening checklists. Each disqualification is subject to his or her approval.

Evaluating the Long List and Identifying the Short List

The CST evaluates the long-listed LOIs against the evaluation criteria stated in the Notice. Points are assigned using sub-criteria previously established by the TxDOT project manager and the subject matter experts. At this point, the sub-criteria and their relative weights are set in stone, so to speak. CSTs are prohibited from altering the sub-criteria at this point, once the formal evaluation of the LOIs begins.

Upon the completion of the LOI evaluations, the providers' scores are compiled. The highest-ranked LOIs, indicating the most qualified providers, are "short-listed."

For a single contract selection, the short list must include at least three firms. For a multiple contract selection, the minimum number of short-listed firms is the number of contract plus three. Thus, if a selection involves ten contracts, at least thirteen firms must be short-listed.

Typically, more than the minimum number of firms is short-listed. The CST will look for a clean break in the scores, indicating an obvious dividing line between the higher- and lower-ranked providers.

Evaluating the Short List and Selecting the Provider(s)

The short-listed firms are invited to interviews, requested to submit proposals, or both. The most common method of evaluation is the interview.

The interviews are structured to address the three standard criteria, described above, as well as Schedule Management and Past Performance. The provider's QA/QC Program may or may not be evaluated, depending on whether it was evaluated in the long-list stage, i.e. in the LOIs. Finally, the interview may utilize specific criteria that address the unique needs of the project. As with the LOI evaluations, the short-list evaluation criteria are strictly qualifications-based.

Source of Past Performance Information

For a given contract, under which a project is active and ongoing, the TxDOT project manager assesses the provider's through a performance evaluation. This evaluation consists of 14 criteria: 11 for the provider project manager and three for the firm. The provider project manager is evaluated for Accuracy and Completeness of Deliverables, Deliverable Presentation and Format, Schedule Management, Responsiveness to Review Comments, Level of TxDOT Oversight, Project Manager Responsiveness/Availability, Coordination and Communication, Reliability/Responsibility, Subconsultant Management, Scope Management-Supplemental Work, and Contract Administration. The firm is evaluated for Responsiveness, Resource Management, and Invoicing.

The performance evaluation must be conducted annually, at a minimum. They may be conducted as often as deemed necessary, for there are a number of scenarios in which an evaluation is useful. For example, the consultant project manager may request an evaluation for feedback purposes; or, either the consultant project manager or the TxDOT project manager may leave the project, at which time it is appropriate to evaluate the consultant project manager; or, the TxDOT project manager may be compelled to conduct a series of evaluations in order to target specific problem areas and measure performance.

The TxDOT project manager enters the performance evaluation into the CCIS database. Once entered, it becomes a Past Performance Evaluation (PPE). PPEs remain in the database indefinitely and do not "drop out" after a set period.

For firms with limited TxDOT experience, the selection process accommodates outside references from non-TxDOT sources, such as local governments, MPOs, toll authorities, etc. The non-TxDOT reference form utilizes the same 14 criteria as the PPE form; fundamentally, there is no difference between the two. For a given selection, a blank non-TxDOT reference form is posted with the Notice. The consultant, while preparing its LOI, requests the non-TxDOT source— a municipality, for example— to complete the reference form. The municipality completes the form and mails it to the CST.

Upon the completing the interviews, the providers' scores are compiled. The highest-ranked firm, indicating the most qualified provider, is selected for the contract. A provision for breaking tie scores is set forth in the TAC Rules.

Recall that the selection may involve multiple contracts. In this case, the highest-ranked provider is assigned the highest dollar contract; the second-highest ranked, the second-highest dollar value contract; and so on.

Negotiations

Upon selection, TxDOT enters into negotiations with the firm or firms. For any selection, the negotiable components consist of scope, budget, and schedule.

As a basis for negotiating scope, the TxDOT project manager will develop a draft scope of services and deliver this document to the provider. For ID contracts, the scope is more or less standard. For specific deliverable contracts the scope is specific to the project and subject to more negotiation in the refinement with the provider.

As a basis for negotiating budget, the TxDOT project manager will develop an independent cost estimate. Subject matter experts are consulted to establish the level of effort (hours) required for each job category or staff classification. Also, TxDOT's Audit Office compiles a Pre-Negotiation Report for the firm. As discussed above, administrative qualification may or may not apply to the firm. If the firm is administratively qualified, the Pre-Negotiation Report will provide the firm's audited overhead rate, typically used as is. For indefinite deliverable contracts, in place of a project budget, the staffing rates are negotiated for use in developing project budgets at the work authorization level.

Similar to the draft scope of services and the independent cost effort, the TxDOT project manager will develop a draft schedule as a basis for negotiations. The main priority is for the parties to mutually agree that the schedule is realistic and workable. In most cases this is easy enough to achieve.

If the parties cannot reach a fair and reasonable price for the services, TxDOT will formally terminate negotiations with the firm and commence negotiations with the next most-qualified provider. TxDOT rarely exercises this option, although it has happened.

Upon completing negotiations, the contract is finalized and executed. After execution, TxDOT will debrief the non-selected firms to discuss their LOIs and/or interviews, identify issues and problem areas, and offer suggestions for improving their chances of success in the future.

3.2 Review of Previous Studies

Two previous studies on issues in Texas state agency contracting were reviewed for relevancy, findings, and recommendations. The first was a study of HUB disparity in overall state contracting, by MGT of America, Inc. (MGT), published in March 2010. The other was a study of DBE usage in all state contracts, by BWA Diversity Consulting Services (BWA), published in May 2011. Neither of those studies focused specifically on procurement of professional services, but they do provide some insights into HUB and DBE issues in general state contracts.

3.2.1 MGT of America, Inc. HUB Disparity Study of State Contracting, March 2010

This study was commissioned by the Texas State Comptroller in September 2008 to review the utilization of HUBs in all state contracts. The main objectives were to

- Examine what disparities exist in state contracting between the proportion of ready, willing, and able HUBs, and the actual utilization of HUBs.
- Determine the extent to which any identified disparities might be impacted by discrimination.
- Make recommendations to reduce or eliminate barriers that adversely affect the contract participation of such HUBs.

The study team collected data from 210 state agencies and institutions of higher education for fiscal years (FY) 2006–2008. Their analysis included

- Anecdotal evidence review from four public hearings.
- 102 interviews with contractor firms.
- Web survey with 142 responses.
- Policy interviews with 60 HUB procurement staffers at state agencies.
- Review of private sector disparities based on census data, local building permits, survey responses, and a national survey of small business finance.

Through interviews, the study team found that the biggest concern for HUBs was the difficulty of competing with large firms. In addition, HUBs said that

- HUB programs are inadequately enforced. HUBs listed in HUB subcontracting plans were dropped after contract award, and 'good faith effort' submissions were not reviewed or enforced.
- Qualifications were a barrier, with excessive requirements or poorly defined project requirements.
- They felt that some companies are favored over other companies.

MGT found that African American, Asian American, Hispanic American, nonminority woman, and Native American firms all had Availability/Utilization Ratios of less than 80% for construction contracts in the state of Texas for FY 2006–2008. Analyzing TxDOT data, MGT found that HUBs submitted 16% of the 222,000-plus construction bids received by TxDOT in the 3-year study period, and received 4.5% ($835.4 million) of TxDOT construction work. Hispanic-owned firms won about 45% of that amount, followed by non-minority women-owned firms with 40%. The study noted that only 18% of the HUB/DBE certified firms actually bid on those contracts.

The study had a number of recommendations to alleviate disparity in usage of HUBs on state contracts:

1. Outreach: State agencies should consider more consistent feedback, debriefing, and sharing of scoring methodologies with interested prime and subcontractors.
2. Contract sizing: State agencies should adjust contract size to facilitate procurement by smaller firms.
3. SBE program: Possible initiatives included SBE set-asides, incentives for utilizing SBEs, e.g., in joint ventures, and increased business development assistance.
4. Aspirational HUB goals: Agencies should use a weighted average of HUB availability and HUB utilization to keep moving the latter figure closer to the former.
5. Certification: The state should consider changes to HUB certification: (1) adopt a two-tier standard for HUB and SBE certification, covering large and small firms; (2) add socially and economically disadvantaged firms to the definition of HUBs; and (3) allow for federally certified DBE, HUB Zone, and Small Disadvantaged Businesses (SDBs) located in Texas to automatically qualify for HUB status.
6. Contract rotation: Rotate contract awards to pre-qualified firms.
7. HUB program data: While Texas has one of the more detailed HUB programs in the U.S., the study recommended that state agencies should verify HUB-related payments.

3.2.2 BWA Diversity Consulting Services Study, May 2011

This study was commissioned by TxDOT in December 2010 and released in May 2011. The objective was to analyze the status of TxDOT's HUB/DBE programs, and identify effective elements as well as opportunities for improvements. To do this, BWA examined four areas of TxDOT's programs for construction contracting:

- Outreach
- Solicitation
- Program monitoring
- HUB/DBE participation level tracking and verification

Surveys were conducted of HUB/DBE vendors and major contractors. BWA also interviewed TxDOT division and section directors.

The surveys found considerable frustration regarding TxDOT's programs. Issues identified by the major contractors included the following:

- Established goals were too high
- Reporting documentation was too extensive
- Lack of available HUB/DBEs
- Low performance of HUB/DBEs
- Inconsistency across district offices

Issues identified by the HUB/DBEs included the following:

- Bid packages too large
- Insurance and bonding requirements
- No response from majority companies
- Slow and/or no pay
- Good faith effort not monitored
- Unfair treatment by majority groups
- Little assistance from TxDOT to help HUB/DBEs with majority groups

The outreach process review found that while the majority of TxDOT outreach programs did include activities to assist HUB/DBEs on typical technical deficiencies and concerns, they did a poor job on performance metrics. Also noted as a deficiency was the fact that TxDOT did not provide project-specific technical support. It was recommended that TxDOT develop policies/procedures and systems to make those services available to all HUB/DBEs.

The solicitation process review found that this was an opportunity to create conditions to increase participation by HUB/DBEs. The solicitation and program monitoring processes were found to require revisions, additions, or adjustments:

- DBE program versus HUB program: These programs have considerable similarities, and the study recommended that TxDOT combine policies/procedures for tracking and verification.
- HUB participation on construction projects: While HUB participation goals on construction projects are not required, they are not prohibited. Change orders are an opportunity to increase HUB participation.
- Payments: Prompt payment is critical to HUB/DBE vendor performance and their ability to be competitive on new projects. Even though TXDOT was in compliance with minimum requirements as laid out in federal and state law, those policies and structures were not helpful to HUB/DBEs.
- Performance monitoring: TxDOT has no program to monitor HUB/DBE performance.

Finally BWA reviewed TxDOT's organization culture, and noted that, while every level showed commitment to the principles of HUB/DBE programs, no set of standard operating procedures was in place. BWA recommended that the department's HUB/DBE program be formalized and assigned to a single division/section for management, monitoring, and implementation.

3.2.3 Summary of Studies

These studies were found to apply to general state contracting and to TxDOT construction procurement, not to professional services procurement. Some of the findings relate to how TxDOT can provide the conditions for SBEs to succeed in winning prime and sub-contract roles:

- Improve and customize outreach programs for each aspect of TxDOT procurements.

- Review contract sizing and tailor more contracts towards smaller firms.
- Examine minority participation goals and add flexibility when the prime contractor is a HUB/DBE/SBE. Monitor compliance throughout contracts.
- Review qualification requirements for projects and rotate awards among qualified firms.

Chapter 4. Legal Framework for Professional Services Procurement

4.1 Introduction

TxDOT's professional services contract procurement is guided by both federal and state regulations that have been developed over the past 40 years.

4.2 Federal Regulations

At the federal level, engineering- and design-related projects that are use federal funds follow the Brooks Act at 40 United States Code (USC) Chapter 11, Section 1101–1104 (Pub. L 107-217, Aug 21, 2002, 116 Stat. 1129) (and 23 CFR Section 172), which sets out the requirements for engineering services contracts. The Brooks Act, in general, requires agencies such as TxDOT to follow competitive negotiation/qualifications-based selection procedures when procuring engineering/design-related services using federal funds, where those services are directly related to a construction project (23 USC 112(b)(2)(A) and 23 CFR 172.5(a)(1)). The Act requires agencies to encourage companies to submit annual statements of qualifications and performance data (§1103 (b)). These will be then used for each proposed project to evaluate a company's competence to perform the proposed project.

Part of the policy rationale is to ensure that a qualified consultant is obtained through an ***equitable selection process.***

The Brooks Act requires contracts to be based on demonstrated competence and qualification for the type of professional services required. Figure 4.1 shows the major elements in the competitive negotiation/qualifications-based procurement process, after issuance of the RFP for each proposed project, as set out by the Brooks Act.

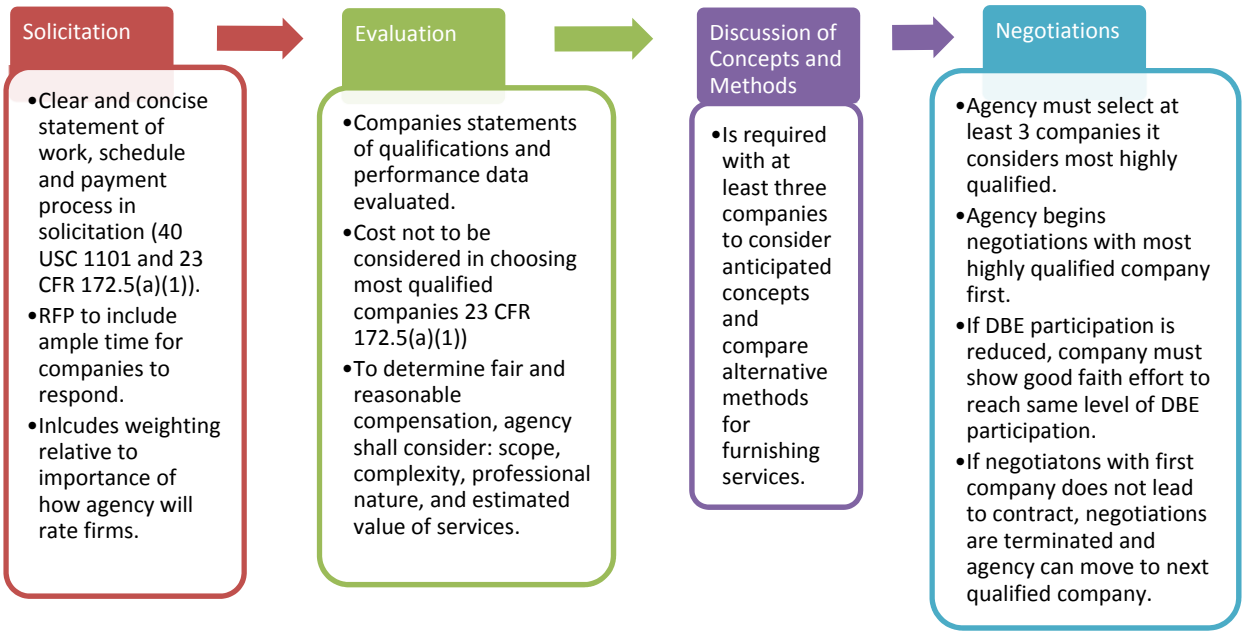


Figure 4.1: Elements in Competitive Negotiation/Qualifications Based Procurement

The use of in-state preference as an evaluation criterion is prohibited, although a local office presence can be utilized as nominal evaluation criteria, if it adds value to the quality/efficiency of the project, but doesn't impact the ability to compete for the project. Agencies can also use the participation of DBEs in their evaluation criteria (23 USC 112(b) (2)) in the procurement of engineering- and design-related service contracts (49 CFR part 26.39 and 26.51 (a)).

To ensure integrity of the competitive negotiation process, the total of *all allowable* non-qualifications based evaluation criteria (e.g., local office, DBE participation) must not exceed 10% of total evaluation criteria. No exclusive set aside contracting amounts for DBE participation are allowed (49 CFR 26.43).

Agencies can set DBE participation goals on engineering/design-related services contracts that have sub-contracting opportunities. Agencies are not allowed to disqualify a consultant for failing to meet the contract DBE goal if the consultant made good faith efforts to meet the goal (49 CFR 26.53). The most highly qualified (top-ranked) firm would be required to demonstrate how the firm would meet the contract goal at the negotiation phase of the procurement process. If they cannot meet the goal or demonstrate a good faith effort, agencies may terminate negotiations and initiate negotiations with the number two-ranked company. Further, 49 CFR 26.55 (a)(3) allows a DBE that subcontracts part of the work to another DBE company to count the value of this work towards DBE goals, along with its participation as a DBE itself.

Some small-purchase procedures can be utilized for engineering/design-related services with federal funding that do not have to follow the Brooks Act. Non-competitive procurement under 23 CFR 172.5(a) (3)) involves small acquisitions that are set under a threshold at $150,000 (41 USC 403(11)) under a set of very limited conditions, for prime contracts. Justification is required, as is approval from the Federal Highway Administration (FHWA), before using this type of contracting.

Circumstances under which a contract may be awarded by non-competitive negotiation are strictly limited to the following:

- Service is available only from a single source;
- Emergency doesn't allow time to conduct competitive negotiations; or
- After solicitation, competition is determined to be inadequate.

Costs are also set out for procurement within 48 CFR Part 31, Contract Cost Principles and Procedures. Known as being *administratively qualified* (AQ), this process is used to verify that a provider has an indirect cost rate that can meet federal or department requirements. In 2006[2], some changes were made to how indirect cost rates were determined and rates applied. Agencies procuring engineering/design service contracts directly related to construction must now use indirect cost rates established by a cognizant agency audit (under 23. CFR §172.7). Note that Texas allows self-certification for overhead rates, and small agencies can use an overhead rate of 145%, which TxDOT has adopted. In recently authorized rules, TxDOT set up a new federal process within its procurement rules and amended the rules so that providers can become AQ through self-certification under FHWA regulations. Smaller business enterprises

[2] The Transportation, Treasury, Housing and Urban Development, the Judiciary, the District of Columbia, and Independent Agencies Appropriations Act (119 Stat. 2396; Public Law 109– 115).

will still have to be AQ prior to submitting their Letter of Interest for any engineering- and design-related contracts.

4.3 State Regulations

At the state level, the Texas Government Code, the Texas Transportation Code, and the Texas Administrative Code have governed the development, implementation, and administration of the procurement process.

4.3.1 Relevant Codes

The major section of Texas Government Code (TGC) for procurement is in Title 10 Subtitle F, State and Local Contracts and Fund Management, Chapter 2254 regarding Professional and Consulting Services. Much like the Brooks Act, TGC Section 2254.003 requires selection on the basis of demonstrated competence and qualifications to perform services for a fair and reasonable price. TGC also requires an agency to select the most highly qualified provider, and then attempt to negotiate with that provider (§2254.004 (1) and (2)). If a satisfactory contract cannot be negotiated, negotiations are terminated. The agency must then choose the next most-qualified provider and conduct the same negotiation process (§2254.004 (b)).

TGC Title 10, Subtitle D, State Purchasing and General Services, Chapter 2161 sets out procedures for Historically Underutilized Businesses (HUB) participation. Each state agency is required to have a HUB plan (Section 2161.123(a)). For subcontracting, under Section 2161.252 (a) state agencies considering letting a contract for an expected value of $100,000 or more shall determine any subcontracting opportunities before the agency solicits bids, proposals, offers, or other applicable expressions of interest for the contract. If it is determined that there is probability, the agency shall require each bid, proposal, offer, or other applicable expression of interest for the contract to include a HUB subcontracting plan.

Texas Transportation Code Title 6 Roadways, Subtitle B State Highway System, Chapter 223 Subchapter B Contract Provisions governs engineering and design contracts. Section 223.041 requires TxDOT to use private sector engineering-related services to provide transportation projects including highway improvements, right-of-way acquisition, and aviation improvements. Section 223.041(b) requires that TxDOT shall attempt to make expenditures for engineering-related services with private sector providers with HUBs consistent with applicable provisions of the TGC.

Texas Administrative Code Title 43 Transportation, Part I Chapter 9, Contract and Grant Management, Subchapter C Contracting for Architectural, Engineering and Surveying Services sets out the policies for procurement of contracts in accordance with TGC Chapter 2254.

4.3.2 Process

The major elements within the current TxDOT process are described in Figure 4.2.

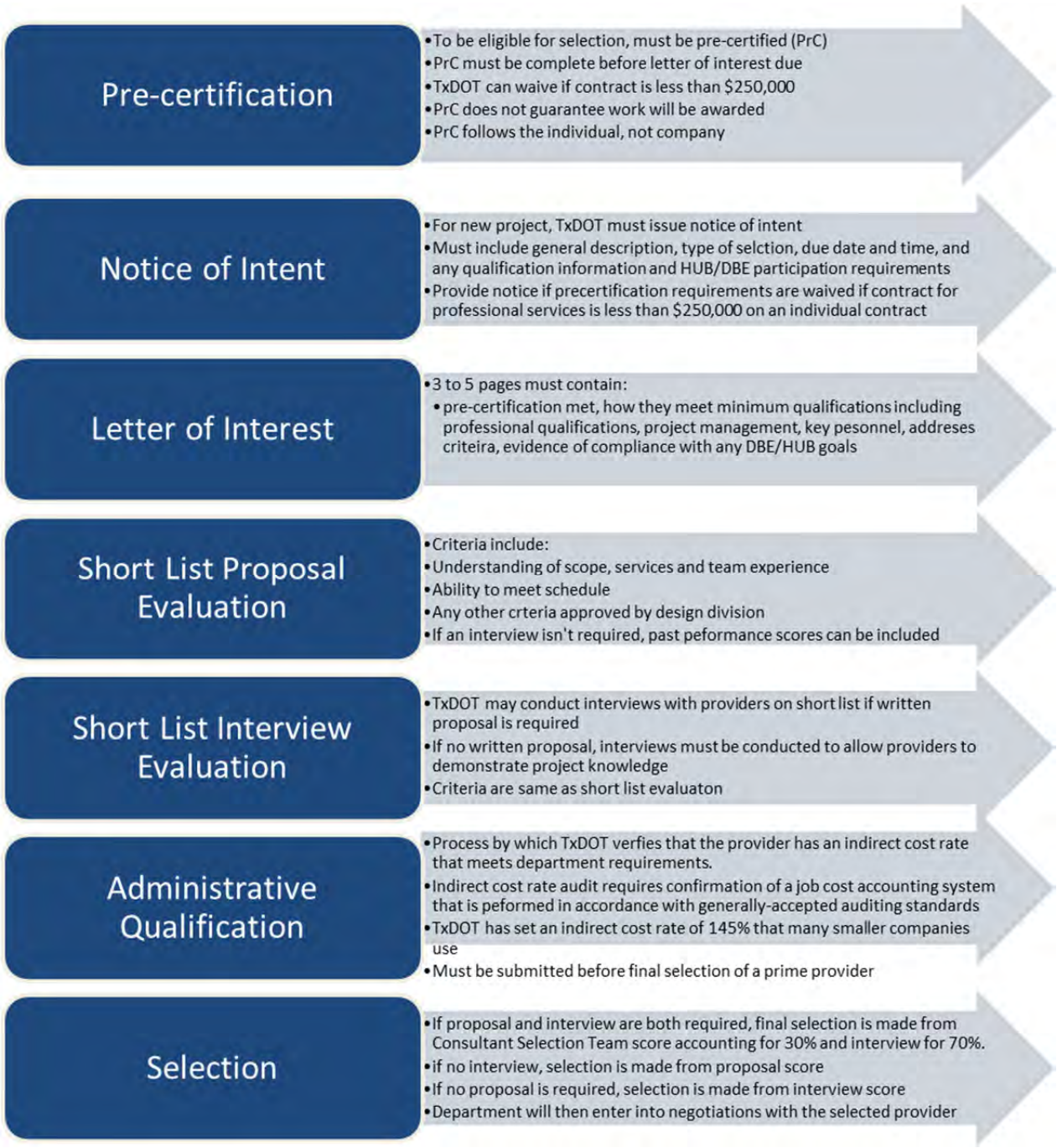


Figure 4.2: Current TxDOT Procurement Selection Process

4.3.3 January 2013 Changes

In January 2013, TxDOT repealed and replaced parts of the Texas Administrative Code regarding administrative procedures for engineering and architectural services procurement. This includes some clarifications and reorganization of the sections to make it easier to follow. Table 4.1 highlights the most substantive changes.

Table 4.1: Changes to Texas Administrative Code for Contracting for Engineering and Architectural Services Procurement

New Section	Major changes
9.30	• Pre-certification text has been moved to new section 9.33. Citations for applicable federal laws included for cross reference to new 9.35, which establishes a provider selection process for federally reimbursed contracts.
9.31	• Some terms sufficiently defined elsewhere have been removed and seven new terms included.
9.32	• Introduces the new selection types established by the department, standard, federal, small contract, and emergency processes.
9.33	• Includes a new section 9.33 (c)(3) that clarifies pre-certification status is applicable only to the business entity that employs an individual, and that the precertification status does not extend to subsidiaries, affiliates or parents.
9.34	• Sets out the department's core standard process for non-federally funded projects. • New Section 9.34 (b)(2) clarifies that indirect cost rates are based on entire incorporated entities. New provision in 9.34 (b)(3) establishes new provisions for administrative qualification by self-certification. This only applies to incorporated businesses on which indirect cost rate is based, and does not extend to subsidiaries, affiliates or parents. • New 9.34 (i)(1)(A) clarifies that interview attendance requirements will be specified in the NOI. • The previous requirement for a 70/30 split in scoring interviews and proposals has been removed to provide greater flexibility.
9.35	• Establishes a new provider selection process for federally reimbursed contracts. • While substantially similar to the previous section 9.34, new section 9.35 has an exception that, firms providing engineering- and design-related services must be administratively qualified in accordance with FHWA regulations.
9.36	• Sets a new selection process for contracts that are not subject to the federal process and the contract does not exceed $750,000 in total and is for a single contract that is a specific deliverable. • Process incorporates elements of standard process, including administrative qualification. • One key distinction is that the small contract process does not utilize a short list phase. TxDOT will issue a request for qualification (solicitation) and the provider will submit a statement of qualification—there is no interview or proposal submission. The provider is evaluated solely on information presented in the statement of qualification.
9.37	• Emergency process has been reorganized to improve understandability.

Substantive changes were made in two areas: AQ and provider selection. Overall, the new Subchapter C follows a more logical sequence, and permits easier location of and access to information. One substantive change allows providers to become AQ, in accordance with FHWA regulations. The department also separated out the selection processes and created a new federal process and small contract process along with the standard and emergency processes that were already in place.

Chapter 5. Quantitative Analysis of TxDOT Program

5.1 Introduction

For this study TxDOT provided an Information Packet that included

- A list of firms pre-certified to provide professional services for the Receiving Agency, i.e., TxDOT.
- A list of firms HUB-certified under Business Category 05, Engineering and Architecture, including breakdown by race/ethnicity, sex, and service description.

In addition, during the course of the study, CTR requested and obtained the following additional data:

- A list of the number of individuals in each pre-certified firm who had TxDOT pre-certifications, and the number of pre-certifications in each firm
- A list of the number of professional service contracts awarded by TxDOT since 2005, dollar values of the contracts[3], and HUB/DBE status of the firms winning those contracts
- A breakdown of the dollar values in each contract among primary consultants (primes) and sub-consultants (subs)
- A list of dollars expended[4] in each district and each PS&E function in FY 2010, 2011, and 2012

This chapter presents key results of analyses of this data. Additional results are included in the appendices.

5.2 Contracts Data

To identify trends and issues in TxDOT's professional services program, CTR obtained and analyzed TxDOT contracts data. Some inconsistencies were found in the data, such as variations in firm names and HUB status. As a result, some detailed analyses could not be included in this report. The identified data inconsistencies were shared with TxDOT for cleanup.

5.2.1 Contract Dollars Awarded Since 2003

Figure 5.1 gives the total dollars in consultant work awarded each year since 2003. The chart indicates that the amount of consultant work awarded by TxDOT decreased by over 60%, from an average of $549 million per year in FY 2004–2007, to $211 million per year in FY 2008–2011. Note that award amounts are not the same as expenditures each year.

[3] The dollar figures used in various charts and tables in this chapter represent the values at the time of contract execution, which are subject to modification, and sometimes contract termination, without spending any or all dollars (in case of indefinite deliverable contracts) stipulated in the contract. The research team did not have access to the final contract values, since a significant number of contracts in this dataset are currently in progress and won't be terminated for many more years, due to the nature of the *Project Development* process.

[4] These are actual expenses, incurred by TxDOT as a result of *Project Development* activities.

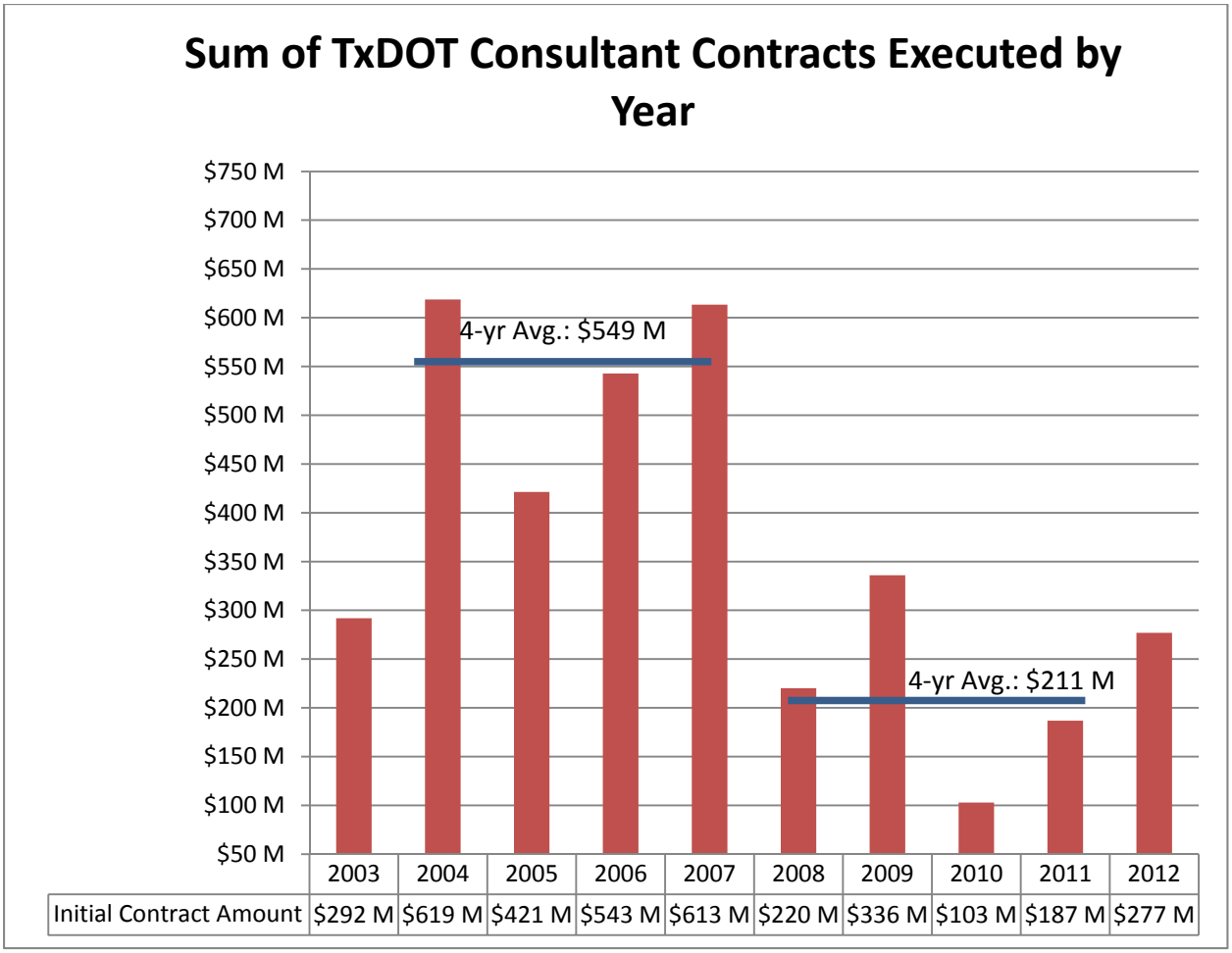


Figure 5.1: Total Dollars in TxDOT Consultant Contracts 2003–2012

During FY 2004–2007, existing firms grew larger, and new firms entered the pool. However, as work decreased in 2008–2011, competition increased. TxDOT now receives up to 50 Letters of Interest on routine projects, and large firms are pursuing relatively small contracts.

Table 5.1 shows the top 10 firms over the period 2005–2012 in terms of state dollars contracted. None of them were HUBs. The largest firms won awards as low as $150,000. This increased competition for TxDOT work would be expected to have a disproportionate impact on small firms.

Table 5.1: Top Ten Firms on State Consultant Contracts, 2005–2012 in Prime Role

State-Funded Contracts Only		Using Firm Dollar Amounts ONLY				
Top 10 Firms, All Categories of Work	**No. of Contracts**	**Total Dollars**	**Average Award**	**Max. Award**	**Min. Award**	**HUB**
HNTB Corporation	22	$140,070,953	$6,366,862	$29,588,363	$300,000	N
Jacobs Engineering Group Inc.	36	$72,566,207	$2,015,728	$11,632,469	$336,000	N
URS Corporation	17	$60,316,133	$3,548,008	$19,125,000	$228,000	N
HDR Engineering, Inc.	20	$52,787,875	$2,639,394	$10,963,997	$275,000	N
Atkins North America, Inc.	12	$49,741,301	$4,145,108	$19,250,000	$150,000	N
Halff Associates, Inc.	31	$34,569,137	$1,115,133	$3,038,230	$212,500	N
CH2M Hill, Incorporated	10	$31,018,994	$3,101,899	$17,000,000	$700,000	N
Brown & Gay Engineers, Inc.	29	$30,052,518	$1,036,294	$5,351,722	$225,000	N
Kimley-Horn And Associates, Inc.	25	$29,653,997	$1,186,160	$2,758,531	$246,000	N
AECOM Technical Services, Inc.	15	$26,706,499	$1,780,433	$6,400,000	$360,000	N

5.2.2 HUB Share of Work

Figures 5.2 and 5.3 respectively show the percentage of state dollars and contracts won by HUB primes and subs and non-HUB primes and subs in the two 4-year periods of 2005–2008 and 2009–2012. The percentages were virtually unchanged, and HUBs maintained a share of about 32% of state dollars awarded.

Figure 5.3 shows that HUBs have maintained a share of about 50% of state contracts over the two 4-year periods. These results show no disproportionate impact on smaller firms due to reduced TxDOT awards and greater competition.

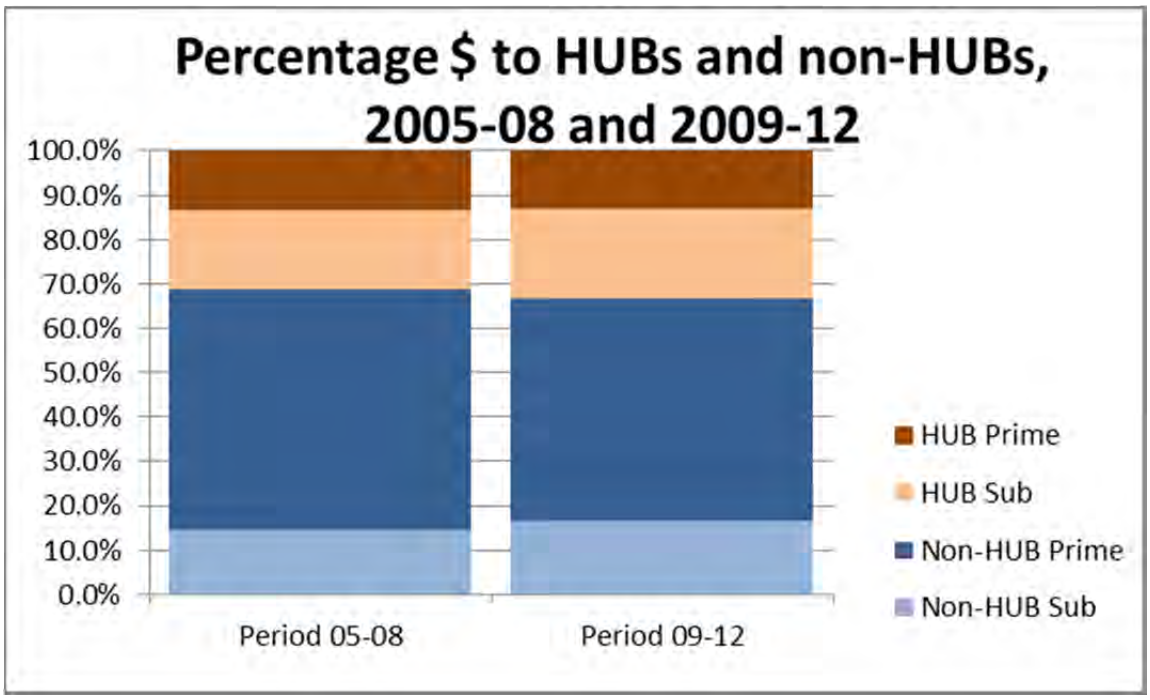


Figure 5.2: Percentage of State Dollars to HUBs and non-HUBs in 2005–08 and 2009–12

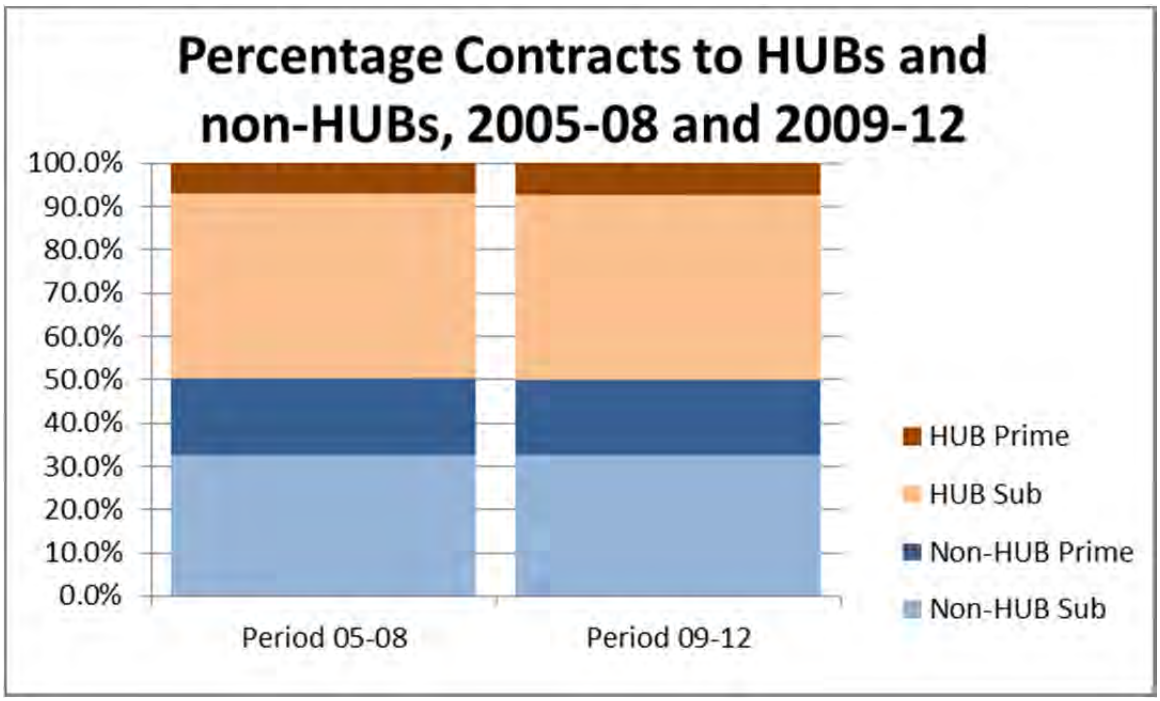


Figure 5.3: Percentage of State Contracts to HUBs and non-HUBs in 2005–08 and 2009–12

Figure 5.4 summarizes the percentage of dollars on state-funded contracts awarded to HUB and non-HUB primes and subs over the period 2005–2011. HUB primes won 13%, while non-HUB primes won 53%. Overall, primes took 66% of contract dollars. HUB subs were awarded 19% of

total dollars, while non-HUB subs got 15%. Overall, HUBs got 32% of contract dollars. However, State Comptroller rules count only HUB sub-contracting dollars toward HUB goals.

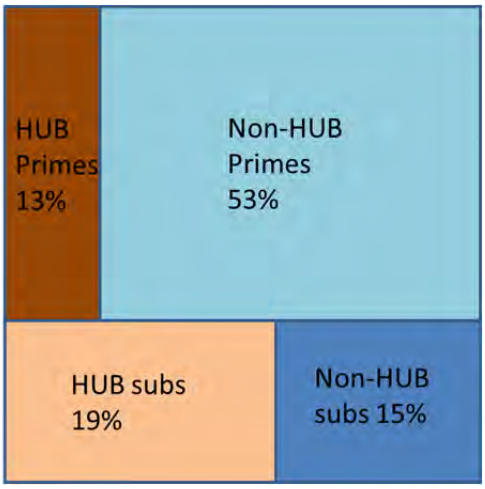


Figure 5.4: HUB and non-HUB Share of State-Funded TxDOT Consultant Contracts 2005–2011

Figure 5.5 shows the percentage of dollars on federally funded consultant contracts awarded to DBE and non-DBE primes and subs over the period 2005–2011. DBE primes won 6%, while non-DBE primes won 54%. Overall, primes took 60% of contract dollars. DBE subs were awarded 13% of total dollars, while non-DBE subs got 27%. Overall, DBEs got 19% of federal dollars.

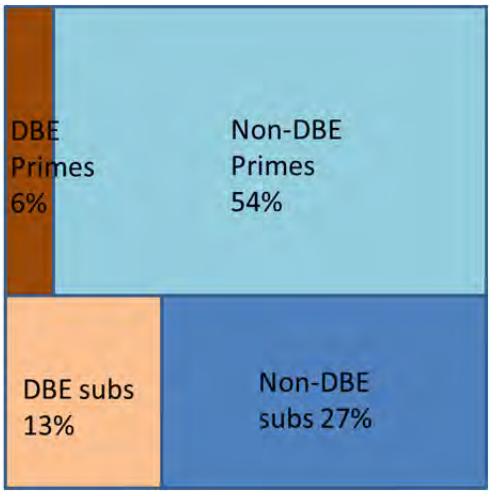


Figure 5.5: DBE and non-DBE Share of Federally Funded TxDOT Consultant Contracts 2005–2011

Compared to the federal DBE program, in the state-funded program more dollars go to small firms, as Figure 5.5 illustrates. Disadvantaged businesses are more likely to win state-funded contracts than federally funded contracts, both as primes and as subs.

5.2.3 Contract Numbers and Sizes Awarded Since 2005

In interviews, small firms said that their ideal contract range is up to $2 million. Figure 5.6 gives the total number of TxDOT consultant contracts awarded since 2005, segmented by contract size. Out of 1,319 contracts, 25% were for less than $500,000, 61% for $0.5 million to $2 million, 9% for $2–5 million, and 4% of contracts were for above $5 million.

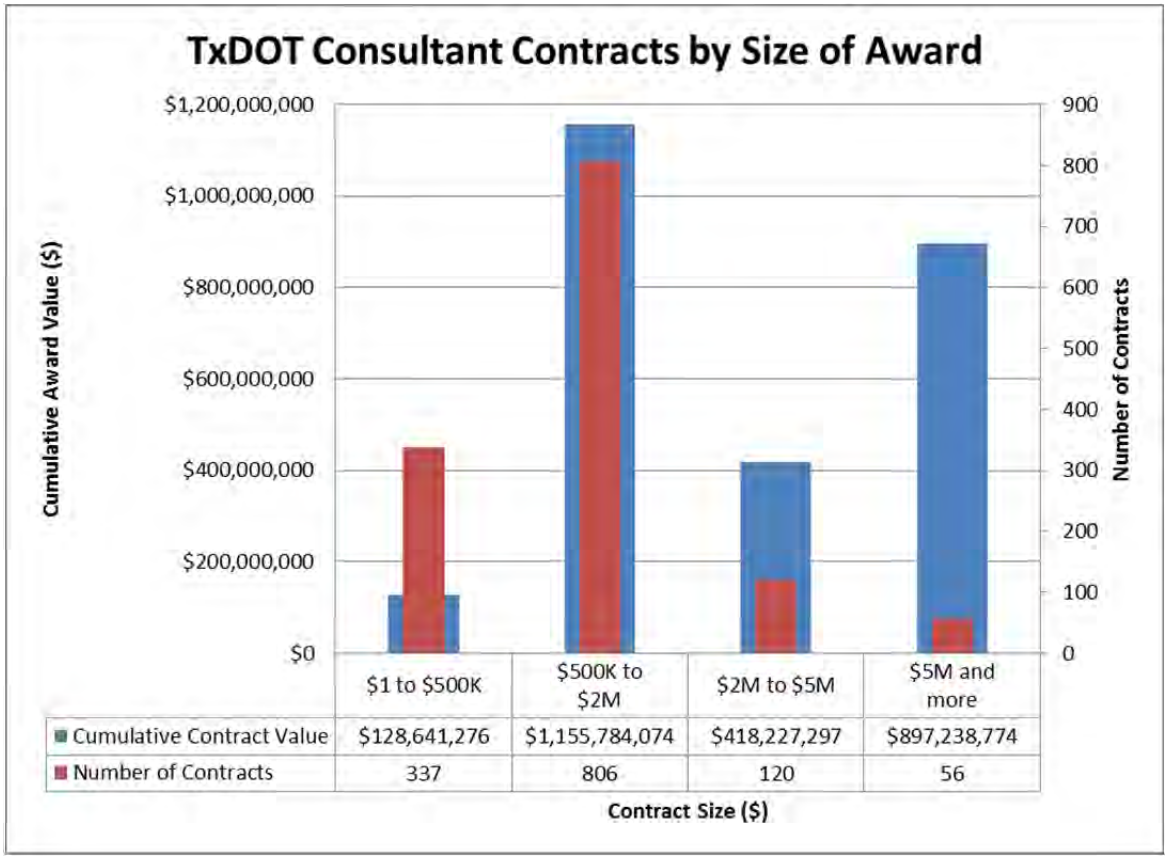


Figure 5.6: TxDOT Consultant Contract Numbers and Sizes Since 2005

This chart shows that 86% of TxDOT contracts awarded since 2005 were for less than $2 million, so they were in the comfort zone of small firms. In terms of dollars in each range, the picture is somewhat different. Of $2.6 billion in contracts, 5% was in contracts less than $500,000, and 44% was in contracts for $0.5 million to $2 million. Thus, slightly less than half of TxDOT consultant contract dollars were in small firms' stated range. Overall, the data shows that a fair proportion of TxDOT contracts fell in the comfort zone of small firms.

5.2.4 HUB Success Areas

Table 5.2 shows the HUB firm percentages of state dollars and awards by work type. Overall, HUBs gain 32% of the dollars for the work types listed, and 50% of the awards. It is useful to see how HUBs fare in each work type compared to the overall statistics.

Table 5.2: HUB Percentages on State-Funded Contracts by Work Type

Contract Discipline Type	Total Dollars	Awards (prime & sub-contracts)	HUB $	HUB Awards (prime & sub-contracts)
Architecture	$550,000	5	0.5%	20.0%
BRG On/Off Replacement	$2,000,000	5	20.0%	40.0%
Bridge Inspection	$1,500,000	1	0.0%	0.0%
CE&I	$2,999,880	6	89.0%	66.7%
Engineering	$1,582,283,869	3223	29.3%	55.3%
Environmental/Hazmat	$3,100,000	27	4.2%	37.0%
Geotechnical	$17,987,012	57	36.7%	31.6%
Hydraulic	$4,000,000	29	12.0%	41.4%
Materials Engineering	$58,222,000	134	45.3%	38.1%
Schematic/Environmental	$13,000,000	47	35.3%	61.7%
Surveying	$332,405,706	850	43.2%	32.2%
Traffic Engineering	$10,950,000	76	34.9%	59.2%
Utility Engineering	$87,850,000	197	27.3%	47.2%
Total	**$2,116,848,467**	**4657**	**32%**	**50%**

Yellow cells: worse than average Blue cells: better than average

In terms of dollars, they do worse than average in Architecture, Bridge Inspection, Environmental, and Hydraulics. They do better than average in Construction Engineering and Inspection (CE&I), Geotechnical, Materials Engineering, Schematic/Environmental, Surveying, and Traffic Engineering. In terms of percentages of awards, HUBs fall below average on Architecture and Bridge Inspection contracts. They do better than average in CE&I, Engineering, Schematic/Environmental, and Traffic Engineering.

5.2.5 DBE Success Areas

Table 5.3 shows the DBE firm percentages of federal dollars and awards by work type. Overall, DBEs gain 20% of the dollars for the work types listed, and 30% of the awards. It is useful to see how they fare in each work type compared to the overall statistics.

Table 5.3: DBE Percentages on Federally Funded Contracts by Work Type

Contract Discipline Type	Total Dollars	Awards (prime & sub-contracts)	DBE $	DBE Awards (prime & sub-contracts)
Architecture	$15,000,000	56	38.0%	32.1%
BRG On/Off Replacement	$13,500,000	34	40.6%	44.1%
Bridge Inspection	$73,543,000	251	10.4%	10.0%
CPM Scheduling	$2,500,000	13	15.2%	46.2%
Engineering	$355,020,453	448	21.3%	40.6%
Geotechnical	$919,500	1	0.0%	0.0%
Materials Engineering	$9,565,000	20	6.0%	10.0%
Surveying	$6,770,000	13	0.0%	0.0%
Utility Engineering	$6,000,000	6	0.0%	0.0%
Total	**$482,817,953**	**842**	**20%**	**30%**

Yellow cells: worse than average Blue cells: better than average

In terms of dollars, they do worse than average in Bridge Inspection, Geotechnical, Materials Engineering, Surveying, and Utility Engineering. They do better than average in Architecture and Bridge Replacement. In terms of percentages of awards, DBEs fall below average on Bridge Inspection, Geotechnical, Materials Engineering, Surveying, and Utility Engineering contracts. They do better than average in Bridge Replacement, CPM Scheduling, and Engineering contracts.

5.2.6 Expenditures by PS&E Function

TxDOT's actual expenditures on professional contracts were also studied. The Finance Division tracks expenditures on consultant contracts, and generates a report at the end of each fiscal year (September–August). The amounts are tracked by PS&E function code, as listed in Table 5.4.

Table 5.4: PS&E Function Codes for Which Consultant Expenditures Are Tracked

Code	PS&E Function
102	Feasibility Studies
110	Route and Design Studies
120	SEE and Public Involvement
126	Donated Items or Services
130	Right of Way Data
145	Managing Advance PE
146	Rework Consultant Plans
150	Field Survey and Photogrammetry
160	Roadway Design
161	Drainage
162	Signing, Pavement Marking, Signalization (Permanent)
163	Miscellaneous (Roadway)
164	Managing PS&E Services
165	Traffic Management Systems Permanent
166	Rework of Consultant PS&E
170	Bridge Design
180	District Design Review and Processing
181	Austin Office Processing (State Prepared PS&E)
182	Austin Office Processing (Consultant Prepared PS&E)
190	Other Pre-letting Date Charges, Not Otherwise Classified
191	Toll Feasibility Studies
192	Comprehensive Development Agreement Procurement
193	Toll Collection Planning
195	Rail-PE (195)
715	Design on Comprehensive Development Agreements

Figure 5.7 gives the actual expenditures for consultant work in each PS&E function in FY 2010, 2011, and 2012, as reported by the Finance Division. The totals for those 3 years are respectively $230.1 million, $189.6 million, and $197.8 million. Note that the bar for Design on Comprehensive Development Agreements (Function 715) for FY 2010 is truncated. The actual value is $67.5 million.

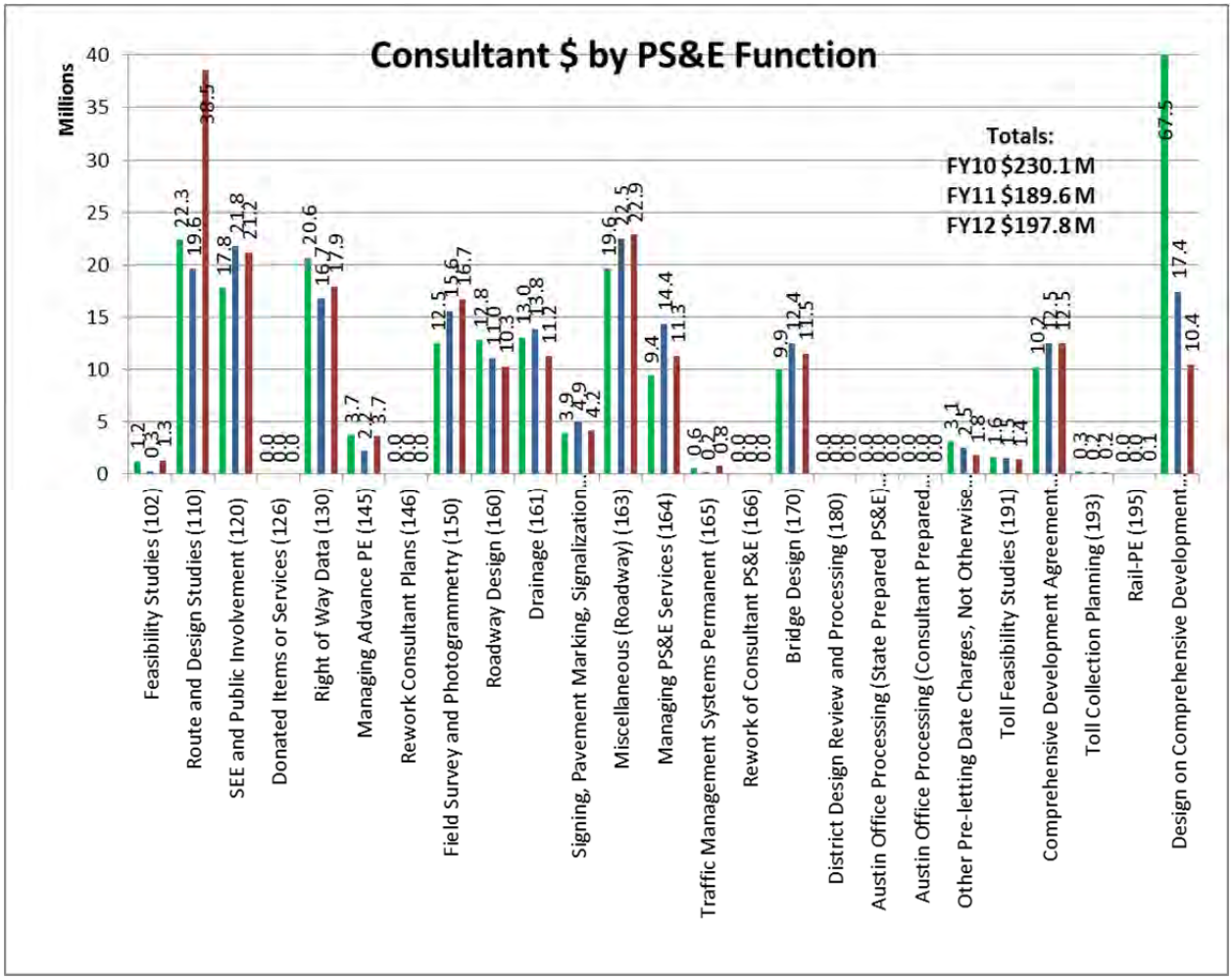


Figure 5.7: Actual Expenditures for Consultant Work by PS&E Function, FY 2010–12

Several functions that are not for consultant charges (namely, 126, 146, 166, 180, 181, and 182) are zero. Some others, such as Feasibility Studies, Traffic Management Systems, Toll-related and Rail-related activities, have low amounts. The largest expenditures are in Route Studies, Environmental, Right-of-Way, Surveys, and Roadway activities. This chart indicates the work categories that produce the most work for consultants.

5.2.7 Expenditures by Districts and Divisions

Figure 5.8 gives the actual expenditures for consultant work in FY 2010, 2011 and 2012, in each TxDOT district and central division. Note that some bars are truncated. The actual values are shown on the bars.

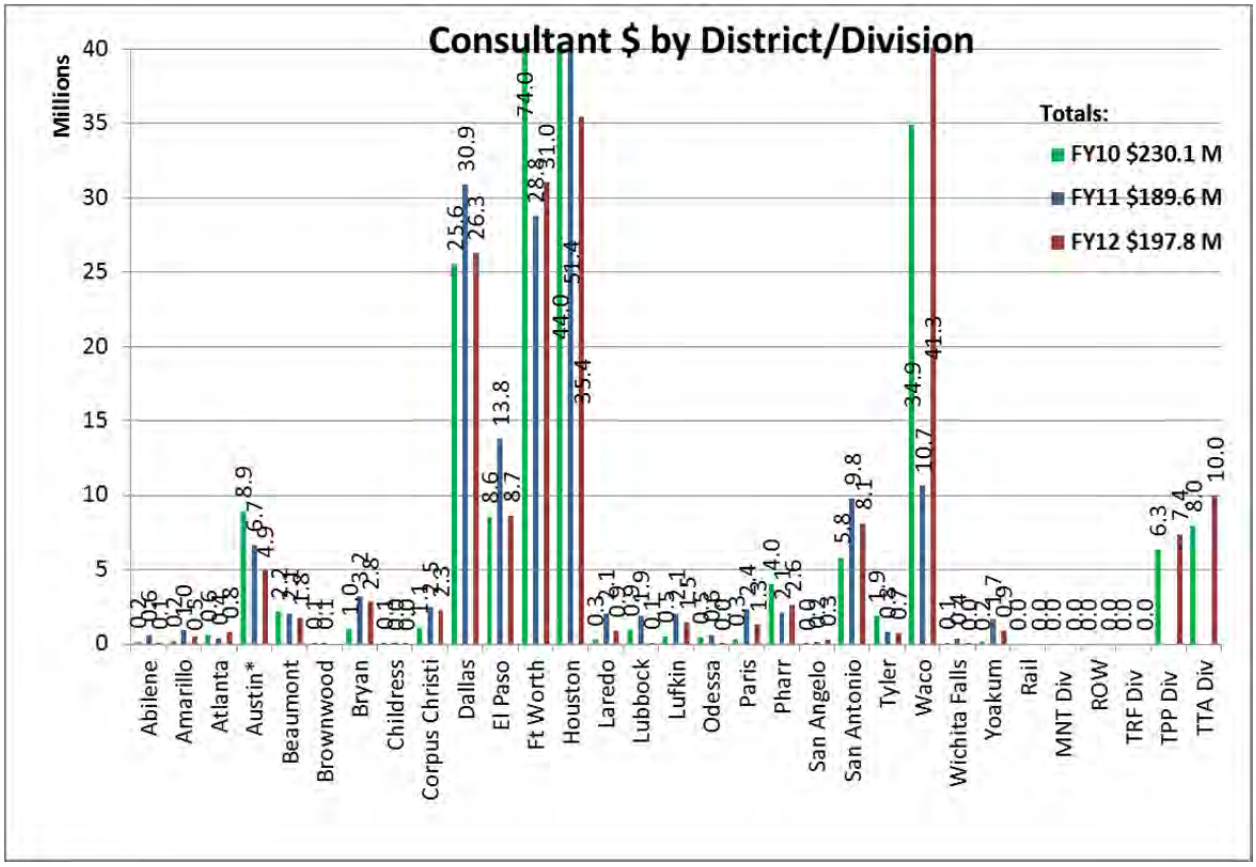


Figure 5.8: District and Division Expenditures for Consultant Work, FY 2010–12

Among the divisions, the Maintenance, Rail, and Traffic Divisions have low amounts, while the Planning and Toll (TTA) Divisions are highest. Among districts, Brownwood, Childress, San Angelo, and Wichita Falls are the lowest. Dallas, Fort Worth, Houston, and Waco are the highest (although Waco had an unusual period with widening projects on Interstate Highway 35 that is not likely to be repeated). Austin, San Antonio, and El Paso form a second tier of prolific districts. This chart indicates the areas of the state that produce the most work for consultants.

5.3 Pre-Certification for TxDOT Consultant Contracts

To win TxDOT work, consultants must show relevant experience. TxDOT's qualifications-based selection (QBS) process for the procurement of engineering services requires the pre-certification of individuals to ensure that they meet the minimum qualifications. The pre-certification process is governed by Title 43, Chapter 9, Sub-Chapter C of the Texas Administrative Code.

5.3.1 TxDOT Work Categories

TxDOT uses 78 work categories (see Appendix B) to delineate its engineering work activities, and a person can be pre-certified in any number of these categories. Pre-certification in these work categories is based on work experience on past projects. These work categories are grouped under 16 broad work groups, consisting of the following:

1. Transportation Systems Planning
2. Environmental Studies
3. Schematic Development
4. Roadway Design
5. Bridge Design
6. Bridge Inspection
7. Traffic Engineering and Operations Studies
8. Traffic Operations Design
9. Bicycle and Pedestrian Facilities
10. Hydraulic Design and Analysis
11. Construction Management
12. Materials Inspection and Testing
13. (blank)
14. Geotechnical Services
15. Surveying and Mapping
16. Architecture
17. (blank)
18. Miscellaneous

5.3.2 Consultant Contracts Information System

TxDOT maintains a database–Consultant Contracts Information System (CCIS)– of firmsthat employ pre-certified individuals for any of the 78 categories shown in Appendix B. The CCIS database maintains the pre-certification of individuals at the work-category level. The information from the database is available online. As part of this study, CTR conducted a comprehensive analysis of the CCIS pre-certification data to identify SBEs' potential to take on the prime role, which requires a team of pre-certified professionals that can handle the lead role on engineering contracts.

Pre-certification in any category of work only implies that the pre-certified individual meets the minimum requirement for undertaking the work delineated under that category. Also, because TxDOT pre-certifies individuals and not the employing firm, any time an individual changes his or her employer, the number of work categories under which a firm is pre-certified can change. Therefore, this data has a dynamic quality. The analysis of pre-certification data in this report is based on the data downloaded from CCIS on July 26, 2012. That data consists of 5,621 pre-certified individuals working for 803 firms.

5.3.3 Pre-Certified Firms and Individuals

The July 26, 2012 dataset consists of 836 firms of which 33 have zero pre-certified professionals in any of the 78 categories. Of the remaining 803 firms, almost 37% (295 of 803) have only 1 individual pre-certified in any of the 78 categories. The majority (421 of 803) of firms in the CCIS database have 2 or fewer pre-certified individuals on their payroll.

The number of pre-certified individuals in a firm is a factor in a firm's ability to compete for the prime consultant role for a large number of TxDOT's engineering contracts. A summary of the pre-certified individuals per firm is shown in Figure 5.9. The largest firm in the CCIS database employs 176 pre-certified professionals, accounting for over 3% of all pre-certified professionals in the CCIS database.

Figure 5.9: Count of Firms and the Number of Pre-Certified Professionals

More detail is given in Figure 5.10, which indicates that HUB firms tend to have fewer pre-certified employees.

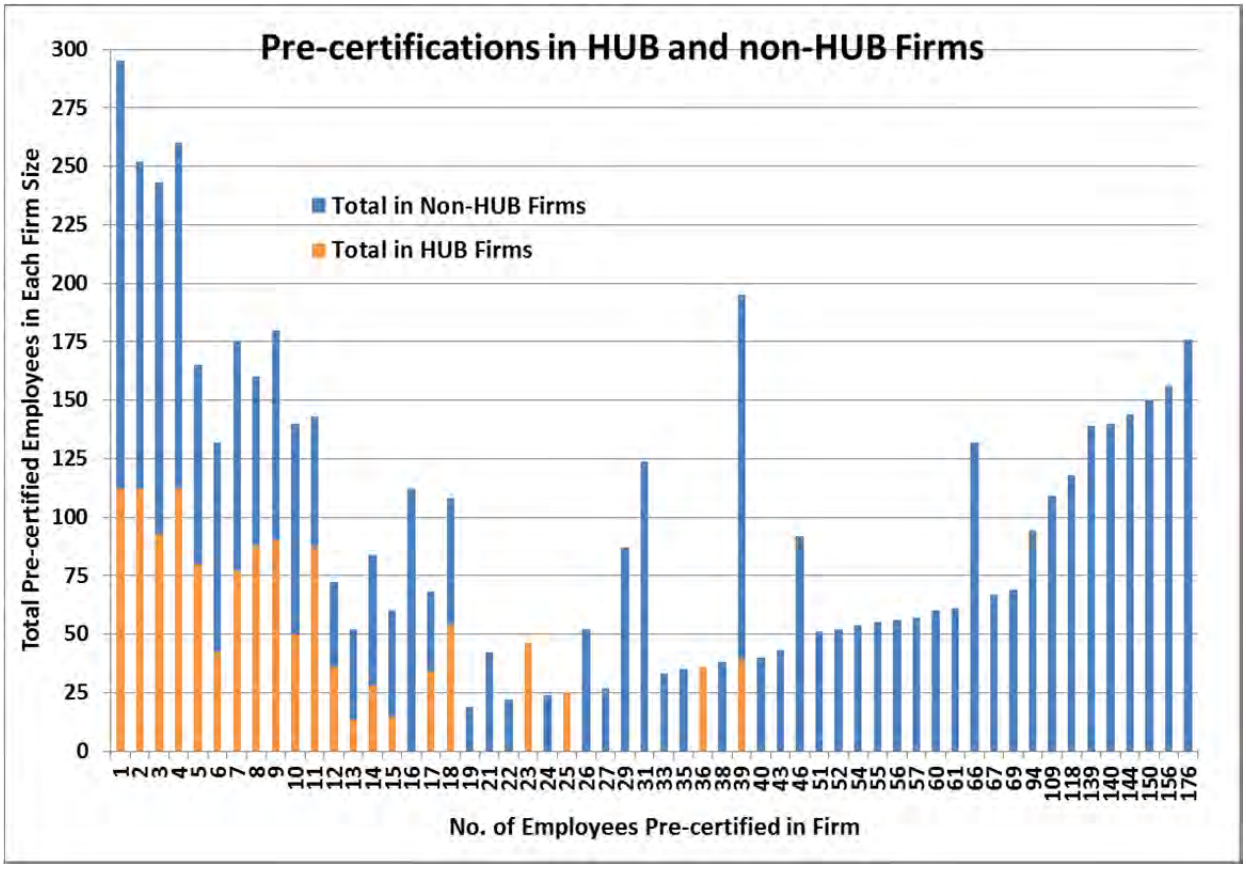


Figure 5.10: Total Pre-Certified Employees in HUB and non-HUB Firms

5.3.4 Pre-Certifications by Firm HUB Status

Firm HUB status and number of pre-certifications were also analyzed. About 39% of firms (312 out of 803) are classified as HUB firms while the remaining 61% (498 out of 803) are non-HUB owned firms, as shown in Figure 5.11.

A large majority (almost 77%) of pre-certified professionals work for non-HUB firms as shown in Figure 5.12. The largest 10 of the 803 firms account for almost one-quarter (1,295 of 5,261) of all pre-certified professionals in the CCIS database. Based on these figures, the average number of pre-certified individuals per HUB firm is 4.07 and the average for non-HUB firms is 8.86. Therefore, on average, a non-HUB firm employs more than two times as many pre-certified professionals as a HUB firm.

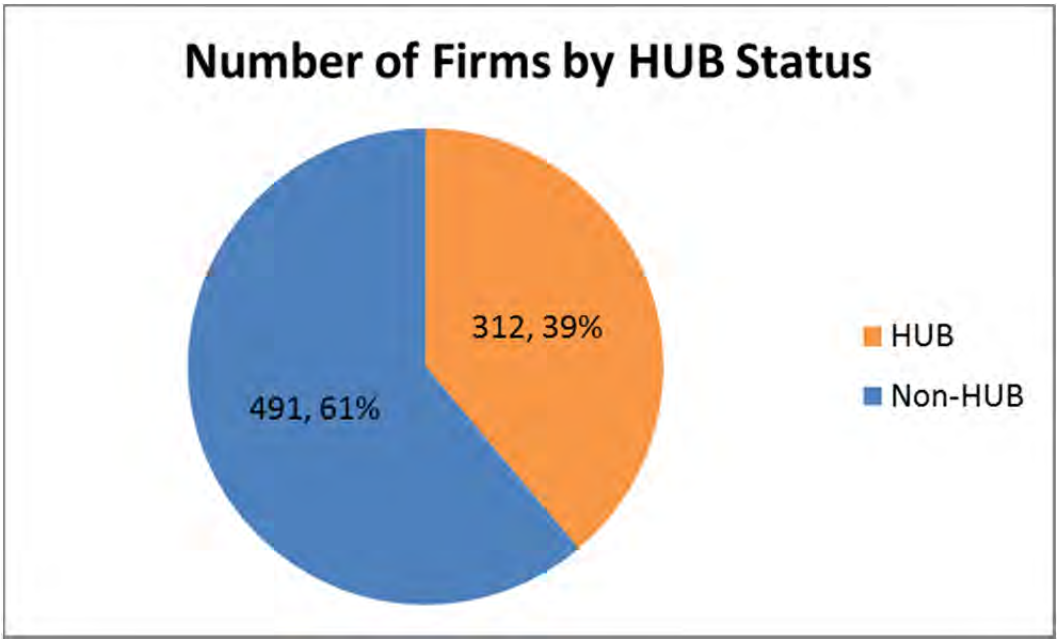


Figure 5.11: Number of Firms by HUB Status

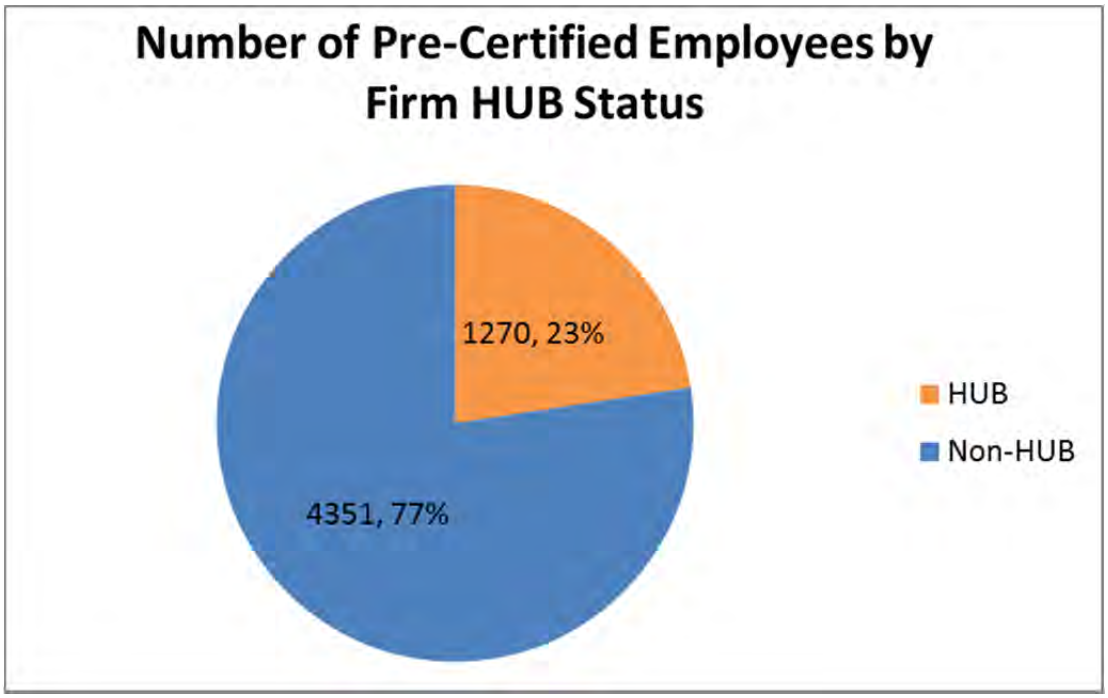


Figure 5.12: Number of Pre-Certified Professionals in TxDOT CCIS Database Employed by HUB/Non-HUB Firms

5.3.5 Pre-Certifications by Firm Ownership Ethnicity

The dataset from CCIS provided an ethnicity identifier for each firm's ownership. The following ethnicity identifiers are included in the database.

6. **AI:** Native Americans, including persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians.
7. **AS:** Asian Pacific Americans, including persons whose origins are from Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Samoa, Guam, the U.S. Trust Territories of the Pacific, the Northern Marianas, and Subcontinent Asian Americans, (persons whose origins are from India, Pakistan, Bangladesh, Sri Lanka, Bhutan or Nepal).
8. **BL:** Black Americans (African Americans), including persons having origins in any of the black racial groups of Africa.
9. **HI:** Hispanic Americans, including persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race.
10. **WO:** American Women, which includes all women of any ethnicity not specified above.

Figure 5.13 shows the breakdown of pre-certified persons in CCIS by firm ownership ethnicity.

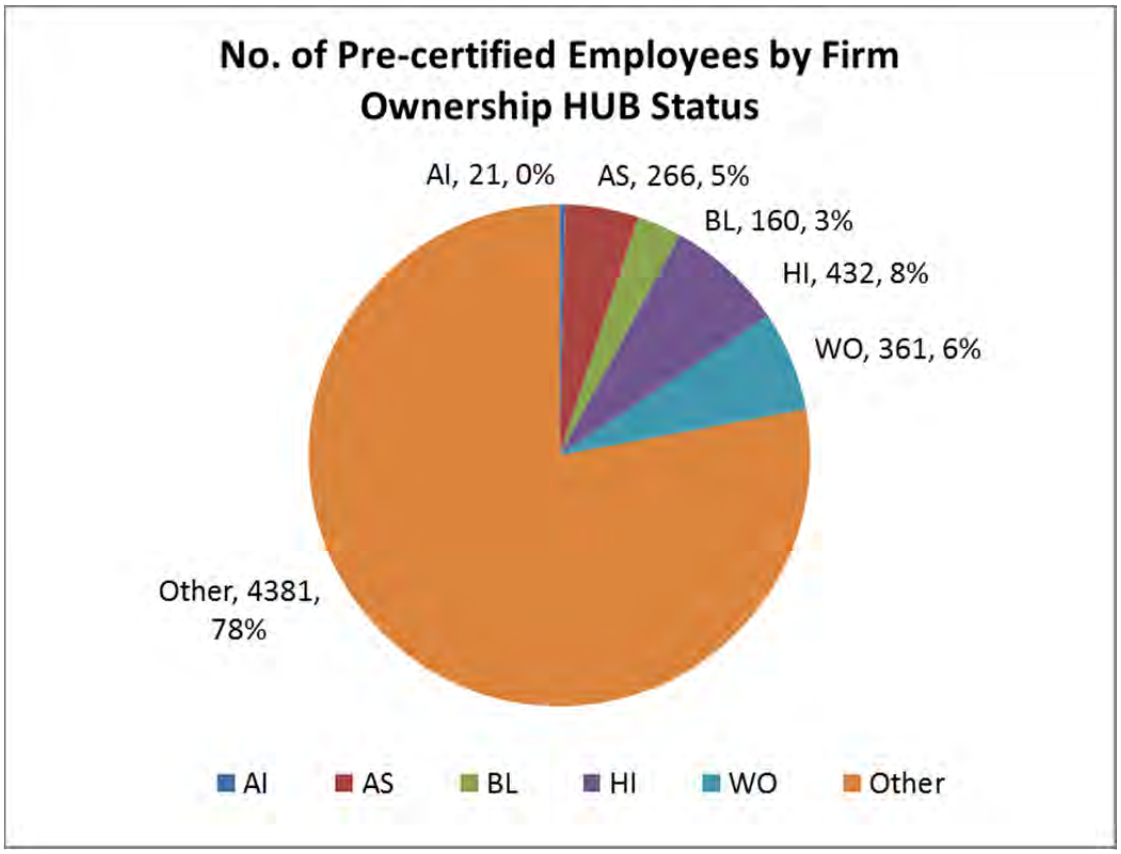


Figure 5.13: Number of Pre-Certified Professionals by Firm's Ownership Ethnicity in CCIS Database

Note that these figures are for firm ownership ethnicity, not pre-certified individuals' ethnicity. For reference and comparison only, 2010 Census Texas ethnicity breakdown is given in Figure 5.14. In addition, 2012 data from the Texas Board of Professional Engineers was used to create a pie chart of the Professional Engineers (PEs) licensed in the State of Texas and their ethnicity

and gender, as shown in Figures 5.15 and 5.16. All these figures are summarized in Table 5.5 following the figures.

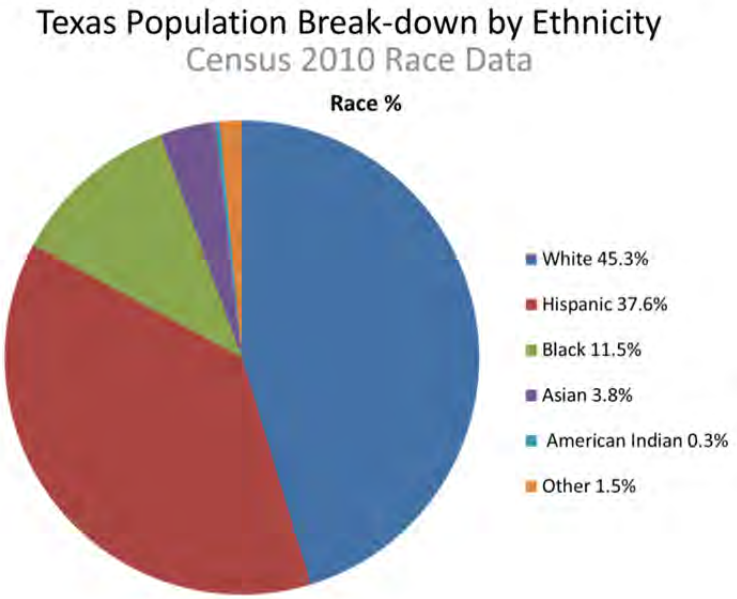


Figure 5.14: Texas Population Breakdown by Ethnicity

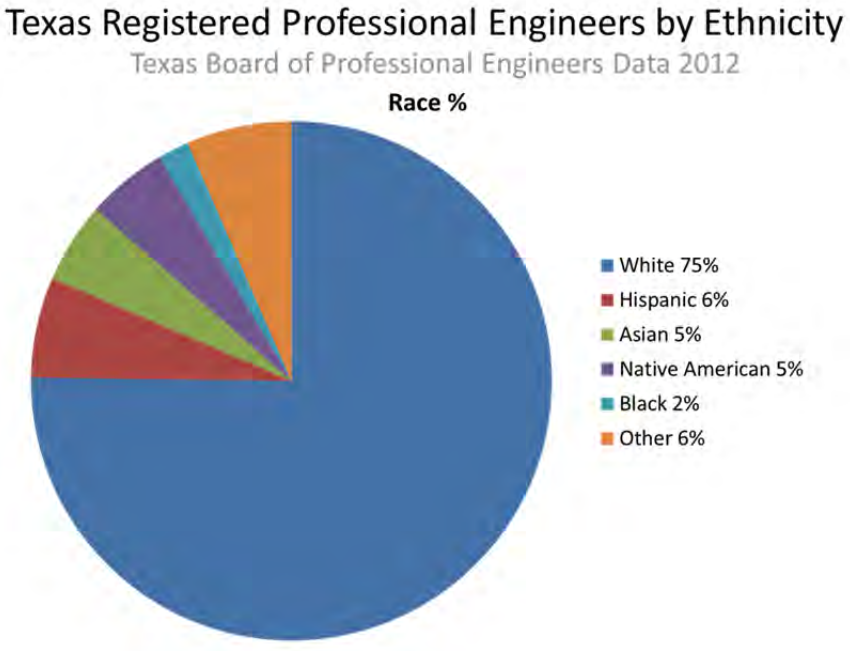


Figure 5.15: Texas Registered PEs by Ethnicity

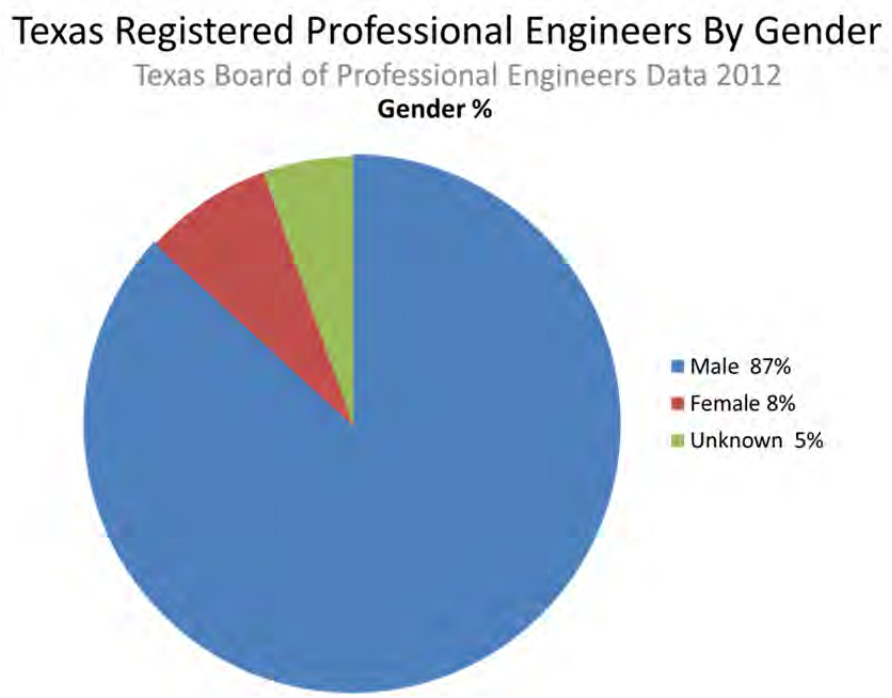


Figure 5.16: Texas Registered PEs by Gender

Table 5.5 gives a tabular view of the same data, indicating fewer Hispanic, African American, and female PEs compared to the general population, as the yellow-highlighted cells emphasize. Comparing pre-certifications by firm ownership to the PE population, Native Americans and females are slightly under-represented, but there appears to be no bias by ethnicity or gender in granting PEs TxDOT pre-certification.

Table 5.5: PS&E Function Codes for Which Consultant Expenditures are Tracked

Group	Texas Population 2010 Census	Texas Registered PEs by Ethnicity	Texas Registered PEs by Gender	TxDOT Pre-Certifications by Firm Ownership
Hispanic	37.6%	6%		8%
African American	11.5%	2%		3%
Asian	3.8%	5%		5%
Native American	0.3%	5%		<1%
White or Other	46.8%	81%		78%
Female			8%	6%

5.3.6 Pre-Certifications by Work Category

The research team performed an analysis to identify the number of pre-certified professionals in each TxDOT work category group by firm ownership ethnicity. In addition, firm ownership ethnicity was used to segment the number of individuals pre-certified for each work category group. The details are shown in Figure 5.17. Schematic Development and Roadway Design had the most pre-certified professionals of all groups, followed by Traffic Design and Hydraulic Design. It appears that the proportions of ethnic and gender groups are fairly consistent across work categories, indicating no bias in TxDOT pre-certifications by work category.

Additional charts are presented in Appendix C. They show the number of pre-certified professionals for each work category group by ownership ethnicity of their employing firm.

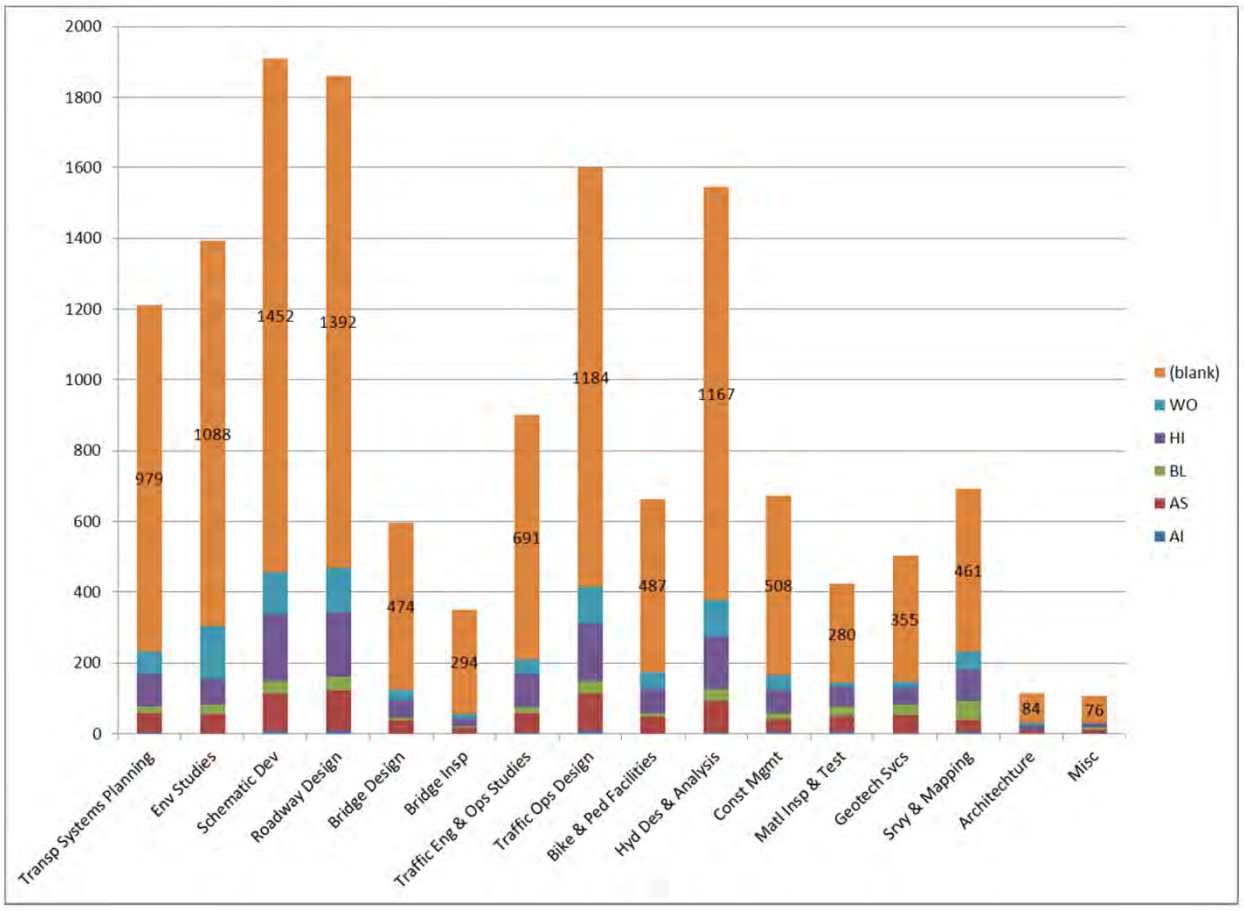


Figure 5.17: Number of Unique Pre-Certified Professionals by Groups of Work Categories

5.3.7 Depth of Resources

In order to win engineering consultant contracts as a prime consultant, a firm is expected to perform at least 30% of the work to ensure that they have a stake in the contract and are not overly dependent on sub-consultants for ensuring quality and timely deliverables. To do this, a firm must show a depth of resources. This requires the employment of multiple pre-certified professionals. The research team's analysis of HUB firm resources follows.

Figure 5.18 shows the number of pre-certified individuals employed by HUB firms as broken down by ownership ethnicity. Of firms having only 1 pre-certified professional, 35 are owned by women, 29 by Hispanic Americans, 15 by African Americans, 27 by Asian Pacific Americans, and 1 by a Native American. On the other end of the spectrum, the largest HUB firm is an African-American-owned firm with 39 pre-certified professionals on its payroll, followed by a female-owned firm with 36 pre-certified professionals.

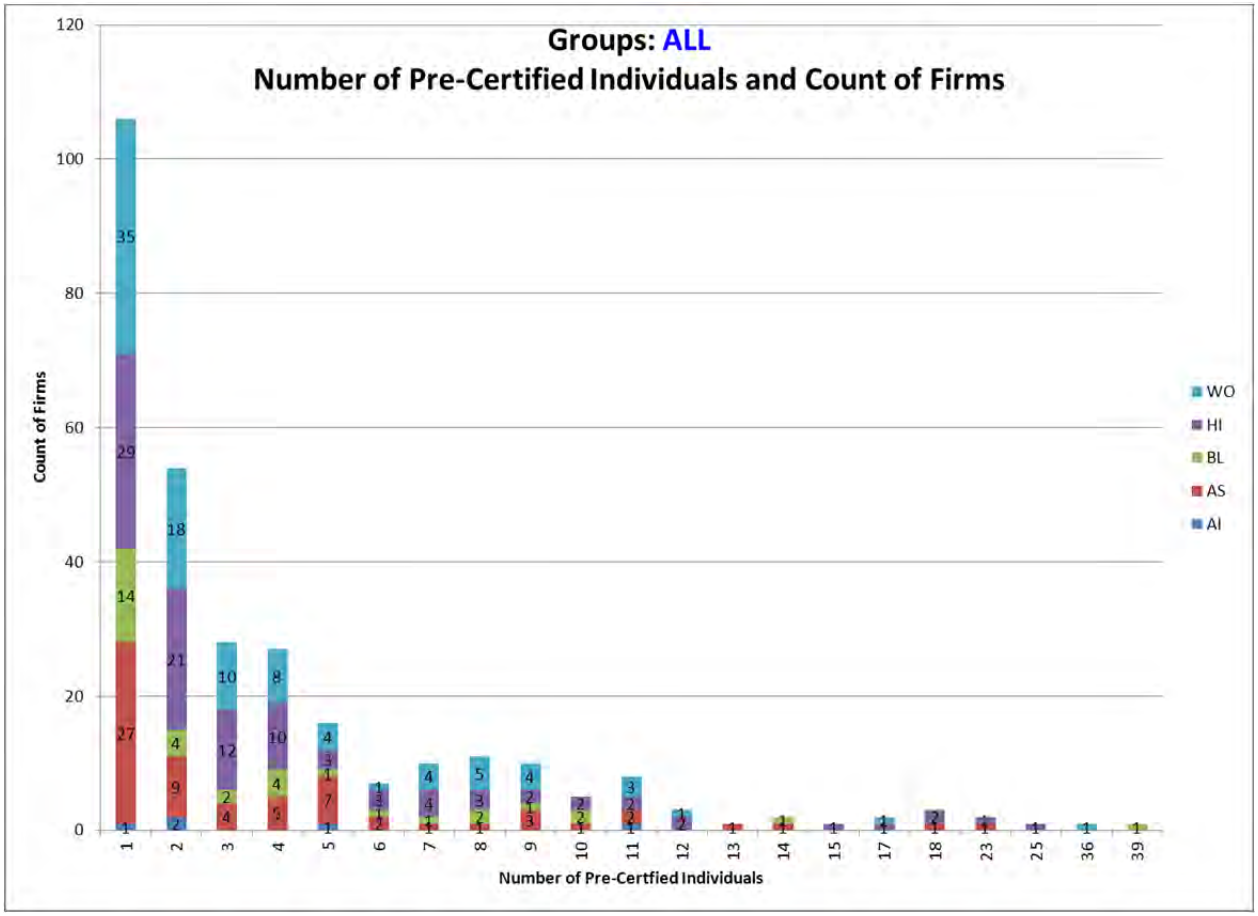


Figure 5.18: Number of Pre-Certified Professionals in HUB Firms

Considering that some non-HUB firms have as many as 176 pre-certified individuals, HUB firms in general have lesser depth in resources. Charts in Appendix D show more details of this analysis by individual TxDOT work categories and the count of firms that employ pre-certified professionals in that group.

5.3.8 Breadth of Experience

Any professional is counted as pre-certified as long as that individual is pre-certified in a single work category currently used by TxDOT (as shown in Appendix B). However, many professionals are pre-certified in multiple (as many as nine or more) categories. This standing has bearing on the selection of prime consultants. Multiple pre-certifications portray broader and more diverse past experience and increases an individual's chance of being a project manager and/or task leader on TxDOT consulting contracts.

Figure 5.19 shows the breadth of experience of the employees of HUB firms when it comes to pre-certification in more than one group of work categories, compared to employees of non-HUB firms.

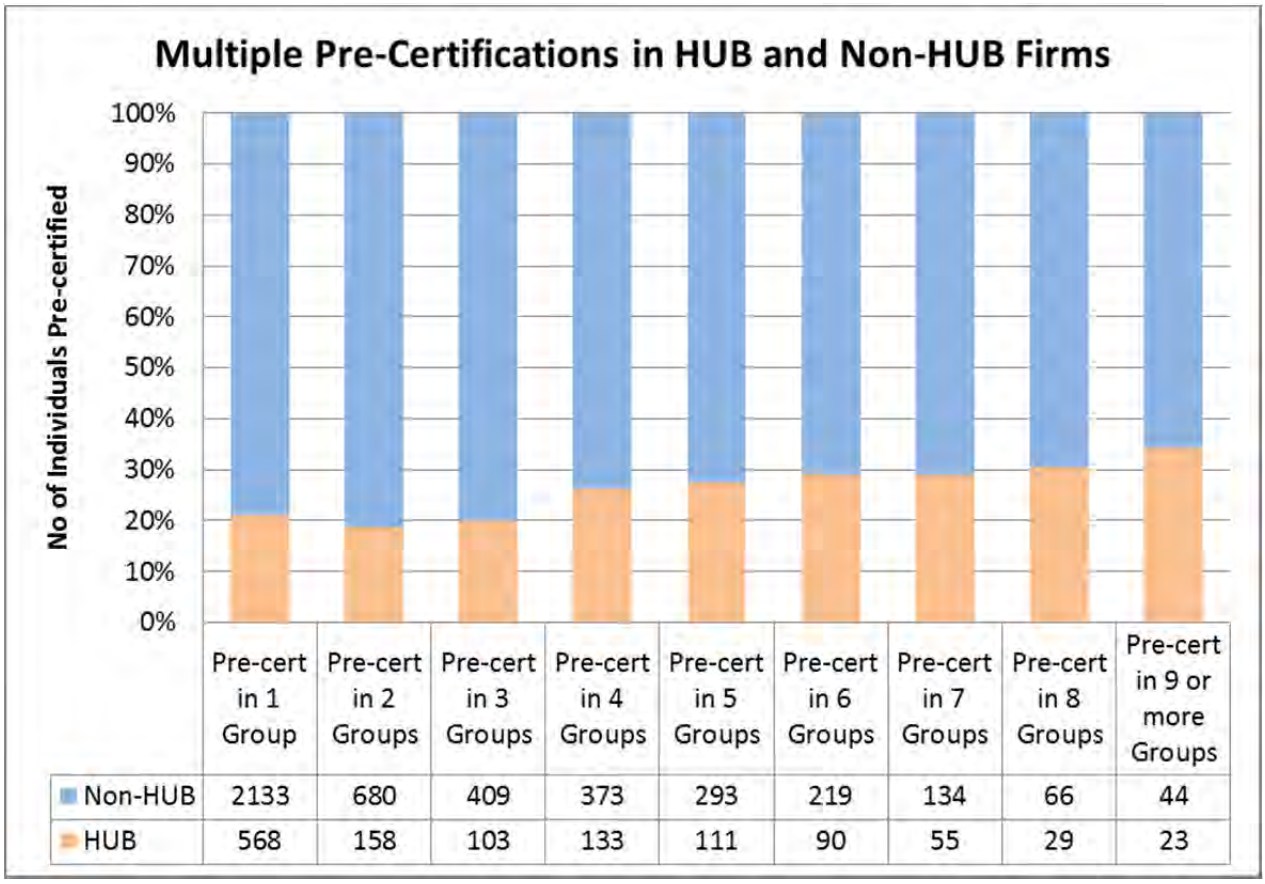


Figure 5.19: Pre-Certified Professionals in CCIS and Breadth of Pre-Certifications

For example, at the left end of the spectrum, of 2,701 professionals with pre-certification in only 1 group of work categories, 21% (568) are employed by HUB firms. At the right end, of the 67 professionals that are pre-certified in 9 or more groups of work categories, 34% (23) are employed by HUB firms.

While the percentages for the HUB firms increase from left to right, the absolute numbers are decreasing. This may be because HUB firms have difficulty attracting highly pre-certified individuals, or that highly pre-certified individuals start their own HUB firms. Either way, the number of widely experienced professionals employed by HUB firms tends to be lower than the number in non-HUB firms.

5.4 Summary of Data Analysis Findings

This chapter presented some analyses of data on TxDOT professional services contracts since 2003 and the make-up of individuals pre-certified for TxDOT work. The analyses yielded six key findings:

1. Competition increased; compared to the period 2005–2008, the period of 2009–2012 saw these developments:
    - TxDOT dollars and number of contracts decreased over 60%
        - Big firms are going after small contracts
    - But HUB share of state dollars was stable, near 32% (13% prime, 19% sub).
        - HUB share of state contracts was stable, near 50%
    - DBE share of federal dollars also stable, near 20% (6% prime, 13% sub)
    - Small firms suffered no disproportionate impact due to competition
2. Small firms had access to suitably sized contracts:
    - 86% of TxDOT contracts were for less than $2 million.
    - 50% of contract dollars were in contracts less than $2 million
3. HUBs tend to do well in some types of work:
    1. Better than average in Geotechnical, Hydraulic, Materials Engineering, PS&E, Schematic/Environmental, Surveying, and Traffic Engineering
    2. Worse than average in Architecture, Bridge Inspection, all Environmental areas, and Hydraulics
4. TxDOT consultant work is focused in a few areas:
    - More dollars are in Route Studies, Environmental, Right-of-Way, Surveys, and Roadway
    - More work is seen in Dallas, Houston, Ft Worth, and Waco, and in the Toll Division
5. HUB firms tend to have less depth of resources and breadth of experience:
    - HUB firms have an average of 4.07 pre-certified employees versus 8.86 in non-HUB firms
    - HUB firms have fewer employees with multiple certifications.
6. TxDOT pre-certifications show no bias against ethnic-owned firms:
    - Percentages of TxDOT pre-certifications in HUB firms are similar to Texas PE percentages by ethnicity and gender
    - The real issue is PE representation: Texas PE percentages by ethnicity and gender are unbalanced compared to Texas population percentages.

Chapter 6. Interview Findings

6.1 Introduction

Consultant interviews were conducted as specified by TxDOT in the RFP. A questionnaire was developed for interviewing consultants (Appendix A). Interviewees were selected from the List of Certified Providers published by TxDOT. The three sub-contractor partners were provided with lists of consultants in their region and were asked to identify and select consultants to be contacted for interviews. In addition, at TxDOT's request CTR identified consultants in El Paso for interviews. The numbers of consultants selected in each region were as follows:

- Houston area: 18
- San Antonio area: 22
- Dallas/Ft Worth area: 25
- El Paso: 6
- Austin area: 10

The selected consultants were all contacted by telephone, followed by email confirmation. Of those contacted, about 50% responded positively to being interviewed, but all requested one-on-one interviews and confidentiality regarding their identity. The rest either declined or did not reply to messages. Given that the interviews were a donation of the consultants' time and travel, 50% is a good response rate.

Of about 40 interviews scheduled, there were about 15 last-minute cancellations, no-shows, or requests to re-schedule. Ultimately 25 consultants from the original contact list were interviewed in that round. Most interviews took about 90 minutes with a range of 1 to 3 hours.

After a review of the HUB class representation in the initial group, some additional consultants were contacted and interviewed. In all, the research team was able to interview 30 firms (35 individuals) in the study's time frame. In addition, five TxDOT staff members involved in consultant procurement were interviewed.

It must be stressed that whenever opinions are solicited through voluntary participation (versus random selection), respondents are more likely to have an ax to grind.

6.2 Interviewee Statistics

A total of 35 individuals (from 30 companies) were interviewed. Interviewees were solicited randomly from a list of SBE consultants pre-certified by TxDOT. In addition, 5 TxDOT staff members were interviewed for a total of 40 interviewees. Every company interviewed was HUB-certified and SBE-certified, and only one was not DBE-certified. The percentage of SBE interviewees in each HUB group is shown in Table 6.1 (women-owned firms span several ethnic categories).

Table 6.1: Percentage of Interviewees in Each HUB Group

Firm Ownership HUB status	Number of Firms	Percentage
African American	7	20%
Asian American	4	11%
Hispanic	14	40%
Native American	1	3%
Anglo American	9	26%
Women-owned	11	31%

None of the respondents mentioned any issues regarding ethnic bias in TxDOT consultant procurement. Interviewees were based in the following areas: Austin (3 individuals), Dallas/Ft Worth (13), El Paso (3), Houston (8), and San Antonio (8). All interviewees requested and were granted anonymity to ensure frank responses. No significant differences across geographic areas were found in their responses. Moreover, after about 20 interviews the researchers noted that responses were repeating the same points, and conducting more interviews did not provide any additional insights.

6.2.1 Company Size

In terms of size, the smallest company had 1 full-time and 3 part-time employees, and the largest company had 85 employees, with a median of 14 employees. Regarding the number of employees pre-certified for TxDOT work, one company had just lost its only pre-certified employee, while another had 21 pre-certified professionals. The median was five pre-certified employees. The youngest company was formed 3 years ago, the oldest 41 years ago, and the median age was 12 years—formed in 2000.

The companies were asked for their average annual billings, both the company total and TxDOT work specifically, in the last 3 years (2010–2012) as well as the 2 preceding years (2008–2009). Minimum, maximum, and median values are shown in Table 6.2.

Table 6.2: Average Annual Billings (Total and TxDOT) of Interviewees

	Average Annual Total Billings		Average Annual TxDOT Billings	
Period	2008–2009	2010–2012	2008–2009	2010–2012
Minimum	$400,000	$0	$0	$0
Maximum	$9.8 million	$10.6 million	$1.8 million	$1.7 million
Median	$3.3 million	$2.7 million	$12,000	$7,000

The drop in the median total annual billings between the two periods indicates that the economic recession over the period from 2008–2012 affected most companies. Annual TxDOT billings also dropped, meaning that companies relying on TxDOT work experienced a loss of funding.

6.2.2 Work Portfolio

The companies were asked to give the top three types of work that they handle. Table 6.3 shows the percentage of firms doing work in each listed area. Many of them perform general civil engineering work, roadway design, and traffic engineering. Some specialize in drainage, hydrology/hydraulics, environmental, surveying, bridge design, geotechnical services, or planning.

Table 6.3: Work Areas in Which Interviewees Operate

Work area	Percentage of firms involved
General civil engineering design and management, including land development	50%
Roadway design, including toll roads	45%
Transportation/traffic engineering, including ITS	45%
Drainage design	36%
Hydrology/hydraulic design (basic and complex)	27%
Environmental/NEPA	23%
Surveying	23%
Bridge layout and design (major and minor)	18%
Airport planning	14%
Schematics	14%
Structural design for buildings	9%
Water/wastewater/utilities	9%
Planning	5%
Testing (geotechnical, asphalt, concrete)	5%
Urban planning	5%

6.2.3 Participation in TxDOT's Program

LOIs Submitted: Seventy percent of SBEs said they have submitted Letters of Interest (LOI) as the prime consultant (prime) for a TxDOT project in the last 5 years, down from 77% in the previous 5-year period 2002–2007. Of those reporting the number of LOIs they submitted as prime, the maximum was four per year and the median was two. Ninety percent said they have submitted LOIs as a sub-consultant in the last 5 years, up from 75% in the previous 5 years. Of those reporting the number of LOIs as sub-consultant, the maximum was seven per year and the median was two. It appears that SBEs have become less optimistic about their chances as prime consultant, and settle for being sub-consultants.

Winning Rates: This view is borne out by their reported winning rates. Twenty percent of SBEs said they have won a project as the prime consultant for a TxDOT project in the last 5 years,

down from 40% reporting wins in the previous 5 years. Worse yet, TxDOT cancelled the projects of two of the winners in the last 5 years. Fifty percent of SBEs said they have won a project as a sub-consultant for a TxDOT project in the last 5 years, down from 65% in the previous 5 years. They perceive that their chance of winning as a prime or sub-consultant decreased.

6.2.4 Work with Other Clients

The majority of SBEs have had success with clients other than TxDOT on prime consultant and sub-contracts, as shown in Table 6.4.

Table 6.4: Clients With Whom Interviewees Have Won Contracts

Client Type	% Who Won Contracts in the Last 10 Years
City Government	95%
County Government	90%
Transit Agency	80%
Toll Authority	40%
Federal Agency	40%
Metropolitan Planning Organizations (MPO)	35%
Regional Mobility Authorities (RMA)	30%
Other Client (Private, School Distr., Port, etc.)	80%

Generally, the smaller the client, the greater the success rate of SBEs. Conversely, the newer the entity (MPOs and RMAs, for example), the lower the success rate of SBEs. These trends suggest that to be successful, a firm must develop a relationship with the client, and such relationships are easier with local and smaller clients than with larger and remote clients.

6.3 Attaining Prime Consultant Status

Status and Growth: SBEs want to be prime consultants for several reasons. Some prize that status because it shows that they have achieved respect and recognition, that they are a well-qualified firm. As a prime consultant they have more control of the project, selection of the sub-consultants, and the work to be done by each party. It gives them the opportunity to lead projects, deal directly with TxDOT, enhance their negotiating skills and experience, and go after bigger projects. A majority of SBEs said that prime consultant status allows them to grow their business, expand capabilities, hire more people, and earn larger fees. Ultimately, companies hope to grow out of the HUB program.

Graduating from Sub-consultant: SBEs recognize that they are not likely to win projects as prime consultants when first starting out. Winning subcontracts is a significant step to gaining more experience with TxDOT, and thus being able to more effectively compete for prime contracts. Some even prefer to be a sub-consultant and focus on engineering, and let the prime consultant handle the paperwork. Other firms who specialize in niche areas accept that they will

probably always be sub-consultants, and many prosper in that role. However, others are tired of being only getting sub-consultant roles with limited ability to affect overall project quality. One said that being a sub-consultant did not help him win as a prime consultant later on because he got no exposure.

Prime Consultant versus Sub-consultant: Sub-consultants have to negotiate twice with the prime consultant, first to get on the team for the LOI, then for their fee after the project is awarded. Sub-consultants are often unaware of what role they were nominated for in the LOI versus what ended up in the contract. The sub-consultants have no recourse in cases where the prime consultant reneges on promised work, as TxDOT will not talk to sub-consultants. The sub-consultants feel that the LOI should be part of the contract to lessen chances of being used by the prime consultant only to win the contract.

6.3.1 Becoming a Successful Prime Consultant

Relationships: SBEs who have had success being a prime consultant after being a sub-consultant were asked what contributed to their success. By far the most common answer was the relationship they had with TxDOT staff. Some mentioned that this relationship was a result of their history of quality work on time and budget, and their understanding of TxDOT's rules and regulations. However, such relationships have withered since consultant selection was regionalized, and with recent competition from large firms for even small projects.

Keys to Success: One SBE said that success is a matter of what you are compared to. For example, when the question is whether the respondent can handle the job, he wins, but when the question is should they choose him or Big Company X, Big Company X wins. Some SBEs said that winning as a prime consultant is all about networking. One SBE requires its entire staff to serve on civic committees, an expensive investment that has not paid much dividend so far. One said that when they win work, the awards list published on TxDOT's website has been good advertising for them. Another mentioned that reciprocation is a successful technique—e.g., sub-consulting to a HUB prime consultant in another region, then reversing that arrangement for local jobs. One said that having 10 or more employees pre-certified by TxDOT at any given time has brought success.

Niche Consultants: SBEs who specialize in Hydrology/Hydraulics and in Surveying reported winning Indefinite Deliverable Indefinite Quantity (IDIQ or "evergreen") prime contracts in those areas. But other niche consultants, e.g., in Traffic Engineering and Environmental, said that they only get work as sub-consultants, because they have been pigeonholed and are no longer viewed as prime consultant material.

Joint Ventures: One strategy that has helped SBE/HUB/DBE firms win work as prime consultants involves teaming with a larger, more experienced firm. This larger firm would serve as a strong sub-consultant, or possibly a joint-venture partner. The only motivation for a larger firm to agree to such an arrangement is if the HUB prime consultant was able to count its own involvement toward the HUB goals for the project.

6.3.2 The Ideal Project for an SBE Prime Consultant

Size: Many SBEs said that the projects packaged by TxDOT are mostly larger than they feel they can compete and win as prime consultant. They were asked what the ideal project would be for them to go after. One SBE flipped the question, saying "the real issue is, what size project is TxDOT comfortable awarding to an SBE prime consultant?" One said he can easily handle a $30 million construction project, but TxDOT would never consider an SBE for such a job. Another said that the larger the project, the more specialties are required, limiting the number of viable prime consultants.

Fee Range: Focusing on consultant fee as the project measure, most SBEs said they can easily be an effective prime consultant on a $500,000 to $1 million contract of 1 to 2 years' duration. The median response was $500,000. The two SBEs on the upper end respectively said $3–5 million and $1–5 million for a 1- to 2-year contract. The two on the low end respectively said $100,000 to $150,000, and $200,000 for 1 to 2 years. As expected, each preferred projects with the work categories in which they are strong. Most said they would like to see more PS&E packages of $500,000 or less in fees, and several said that the key is to have projects that allow you to show a variety of skills and enhance your project manager (PM) capabilities.

6.3.3 The Prime Consultant's Share of a Contract

Setting Limits: Current TxDOT rules require the prime consultant to do at least 30% of the project work with the objective for him to retain responsibility for the product. Interviewees were asked what the prime consultant's minimum and maximum share of a project should be. One said there should be no limit—let the most competent party do the work. Another said that the limits should depend on the kind of work. One said that establishing a minimum bar of 30% excludes SBEs with limited skill sets if the work categories are diverse. Most SBEs said there should be no minimum or maximum if the prime consultant is a HUB.

Raising the Minimum: Most SBEs said that raising the minimum would give HUB prime consultants more control of projects. One SBE said that some large companies play a game of 'fronting' a HUB prime consultant for 30% of the work, and keep all the high-profile tasks for themselves. If the prime consultant is a HUB, they said that the minimum participation of the prime consultant should be greater than 30%. Their median estimate was 50%, and the upper end was 60%.

Capping the Maximum: With regard to the prime consultant's maximum share, all SBEs said that without a HUB requirement big firms would keep all the work. The prime consultant share should thus be (100% minus HUB share). Since most were in favor of raising the HUB share over the current 23.6%, their estimates of maximum prime consultant share ranged from a high of 75% to a low of 60%, with the median being 70%. SBEs said that this maximum would still allow a HUB prime consultant to offer a 'nice share' of the work to a large company. Indirectly, SBEs were estimating minimum sub-consultant share to be between 25 and 40%, with a median of 30%.

6.4 Firm Status and Goals

Perception: TxDOT staff said that a company's status as a SBE or HUB does not influence the selection of a consultant. They said everything is performance-based, and good or bad performance is recorded at the PM level. However, many SBEs perceive the opposite, saying that "many people within TxDOT rate teams/companies on factors other than those specifically listed in the Notice of Intent to Contract (NOI). This includes 'depth of resources,' which is never included as requirement in the NOI and appears to be based on sheer size of company." SBEs said that size of company should not matter, only the team proposed, but "TxDOT staff questions SBEs' ability to execute work, even though those same staff have little knowledge of the capacity of the SBE, acting instead on hearsay." One said "small means we don't have excess resources, not that we are less capable."

Exposure: One SBE said that having HUB status was the only way they could break into the market, and that they prefer to remain a HUB because they continue to have success with that status. Another SBE said that "the real question is, does TxDOT use our status as SBE or HUB to discriminate against us?" The same SBE noted that TxDOT puts too much emphasis on who is the PM and his TxDOT experience—"historically underutilized means you have not had as much exposure, so your PMs may have less TxDOT experience."

6.4.1 State HUB Goals

Counting HUB Share: State HUB rules require that if the prime consultant is a HUB, that portion of the work does not count toward the project HUB sub-contracting goal. This rule hurts HUBs in three ways:

a. It forces HUB prime consultants to team with other HUBs, suggesting a team of lightweights. Non-HUB prime consultants have more flexibility in teaming and showing a depth of resources.

b. It reduces the ability of HUB prime consultants to reciprocate with non-HUBs with whom they have sub-consulted, creating bad relations.

c. It reduces the amount of work that the HUB prime consultant gets in the project compared to what a non-HUB prime consultant can get, limiting their market share.

Self-Satisfying the Goal: SBEs said the existing rules are a barrier to HUBs graduating to non-HUB status. They feel a HUB prime consultant should be allowed to "self-satisfy" the project HUB requirements, or at least have some portion of their participation counted towards it, especially if it is a small project. Some interviewees question why TxDOT has a HUB sub-contracting goal, and not an overall HUB contract goal. The current process reinforces the impression, both in TxDOT and with large firms, that HUBs are suited only for sub-contract work, not as prime consultants.

HUB/DBE/SBE Goals: Some interviewees said there should be separate participation goals for HUBs, SBEs, and women-owned businesses. Currently there is no goal for SBE participation, so an SBE has to be a HUB or DBE to gain work. Several SBEs proposed the idea of a set-aside program for SBE prime consultant contracts separate from existing HUB sub-contracting goals. They said it should be focused on smaller projects for SBEs to build their TxDOT experience

and reputation. Most feel that contracts less than $2 million (in fees) are their target zone, so projects less than that size should be reserved for SBEs. One SBE recommended some mentoring set-asides, i.e., contracts in which junior TxDOT staff would be mentored by SBEs. Set-asides could be limited in scope by using them only during periods when consultant contract awards fall below a certain threshold.

Customizing SBE Projects: However, some SBEs feel that reserving only small projects would reinforce the perception in TxDOT and among large firms that SBEs are only suited for small projects. Instead, they would like to see TxDOT making a greater effort to identify the type of work appropriate for SBEs. This would be more successfully accomplished at the district than at the regional level. One pointed out that the recent census raised the SBE standard from a $4 million/year company to $14 million/year. TxDOT should also review its framing of the size of contracts that best fit SBEs.

Changing the Rules: One SBE was ambivalent on changing existing rules, saying that many SBEs rely primarily on sub-contracts and would not be able to compete with HUB prime consultants. On the other hand, new rules might spur them to pursue prime contracts. Two SBEs (who are also specialty firms) came out against prime contract set-asides for HUBs, saying it is easy for them to be the prime consultant on contracts and sub-contract out work not in their specialty. One pointed out that there are some large HUBs. The other said that some SBEs are just not ready to be prime consultants.

6.4.2 Minority Participation in TxDOT Contracts

TxDOT HUB Goals: TxDOT staff said that the HUB requirements for a project are estimated by the managing district and submitted to the Design Division. The actual percentage HUB participation is set by the Civil Rights Office of TxDOT, and is currently around 23.6%. One TxDOT staffer said that the figure should be based on the availability of HUB expertise and the nature of the project work. However, most SBE interviewees said that the current minimum HUB goal is too low. They thought that the goal should be somewhere between 30 and 40%. A useful step would be for TxDOT to analyze for each NOI issued the number of LOIs received, and the number of firms shortlisted, interviewed, and selected; this step would help identify a more proactive strategy in matching SBEs to projects that may be suitable for them to lead as primes.

Prime Consultant Responsibility: SBEs perceive that TxDOT shunts the responsibility for meeting HUB goals on to consultants. The prime consultant firm has to put together a HUB plan in their proposal, an expense that apparently carries very little weight in the selection process. Many prime consultants make only a token “good faith effort” to meet HUB goals, as they already have their favorite sub-consultants. The prime consultant’s HUB plan has to show only that HUBs were invited to sub-consult, and many use the automated features on the website run by the State Comptroller. HUBs said that many times they receive invitations from prime consultants to sub-consult on projects for which they clearly have no capacity.

No Incentive in Goals: SBEs said that large prime consultants stick to the bare minimum HUB requirement because there really is no incentive for them to team with SBEs. They only sub-contract out specialty work like surveying, environmental, and drainage, propping up niche firms

rather than potential competitors. Larger firms need an assurance from TxDOT that their LOI will not be rejected for going with relatively unknown small firms. Two interviewees suggested that proposals that include more HUB participation than the project minimum should receive bonus points in scoring proposals.

Prime Consultant Rule-Bending: Some instances of bending of the rules were mentioned. One interviewee said that he knew of a case where a prime consultant suggested to a minority staffer that that person form a company and get HUB-certified, and the prime consultant would pay him through that mechanism, just to meet HUB goals. Some SBEs say they have been used as "window dressing" by a prime consultant to win a project, and subsequently received little or no work from the prime consultant.

HUB Rule-Bending: Some HUBs also play rule-bending games. One SBE mentioned an instance of a HUB with no intention of actually doing the work demanding to be on a team to "help" the prime consultant meet the HUB requirement. Another described a case where one HUB could not fulfill the work and he had to rely on someone else to do it.

Process Disincentives: One SBE said that the selection process is overly neutral in comparing SBE/HUB/DBE firms to others. This works well enough for large projects and benefits large firms, but it is counterproductive on small projects and hurts small firms. As one SBE put it, "The way it is set up encourages firms to stay as HUB and be a little fish in a big pond. They should be encouraged to graduate from the program."

TxDOT HUB Tracking: TxDOT does not track whether the HUB sub-contract goal was met post-award. SBEs said that the minority participation numbers posted by TxDOT are misleading, since they record awards rather than actual payments made to HUBs. One SBE recommended that TxDOT should require prime consultants to file a quarterly payment report in which sub-consultants verify what they did and what was paid, as the federal government requires.

6.5 Access to TxDOT Program Information

Six-Month Work Plan: Almost all the interviewees are familiar with TxDOT's website and the list of 6 months' worth of upcoming work that is posted. Some said that they like the recently updated design and the information provided on preparing proposals. However, several said that the project information in the list, especially details on project work content in specialty areas and HUB requirements, is insufficient for them to make decisions on whether to go after a project and/or to seek a teaming arrangement. One SBE mentioned that it is not uncommon for a project to show up on TxDOT's website less than a month before the request for proposals. TxDOT staff indicated that they only publish work that is already funded, so it is not possible to show a long-term plan such as a 5-year outlook, but it may be possible to post a 2-year look-ahead list.

Advance Information: Several SBEs hinted that bigger firms seem to have advance information on upcoming projects, so by the time the NOI comes out, teams have been formed and sub-consultants selected. Some SBEs felt that it was a matter of bigger companies being able to afford staff dedicated to networking and marketing, while others thought that having a previous

work relationship with TxDOT or hiring recent TxDOT retirees gives better insight into upcoming work and requirements.

Quarterly Meetings: Some regional offices host a quarterly meeting to give updates on projects, rules, LOI requirements, reasons for disqualifying LOIs, and Plans, Specifications and Estimate (PS&E) requirements. The most recent one in San Antonio was attended by 25 consultants. Some SBEs said these meetings are unadvertised, putting them at a disadvantage. These meetings are done via video teleconference, so attendees must travel to a TxDOT facility. The quarterly meetings were stopped because the American Council of Engineering Companies (ACEC) thought they are too time consuming and expensive to attend. SBEs said that this is an overhead expense and they cannot afford the staff to attend these meetings or to market themselves. A webinar alternative would allow attendees to save on time and travel.

TxDOT-Consultant Interaction: TxDOT staff also said that consultants can call and schedule a meeting with the Region's Consultant Office or with TxDOT Area Engineers, but SBEs said that their requests are ignored or declined. Several SBEs said that larger firms do not make an effort to mentor them. They feel that a networking workshop where SBEs get to interact with representatives from larger firms and with the TxDOT staff involved in consultant procurement would be useful.

6.5.1 TxDOT SBE Outreach Programs

Impressions: Interviewees were asked about their familiarity and experience with TxDOT's outreach programs, namely SBE Workshops, Learning Information Networking and Collaboration (LINC), and DBE Technical Assistance Program (TAP). Most interviewees had some experience with them, but not recently. Their comments on these programs may be based on outdated impressions.

SBE Workshops: Most said that the SBE Workshops were a waste of their time and resources because they were geared to vendors and small construction contractors and did not provide information on professional services contracts. Some said the invitations were misleading in that they suggested that the workshop was a business opportunity. Others found that the workshops were suitable only for a newcomer with no knowledge of TxDOT.

Learning Information Networking and Collaboration (LINC): Some SBEs said that LINC was useful because it explained how to market themselves to prime consultants, and what is legal and acceptable for interactions with TxDOT staff. One mentioned that he had applied to attend but was not selected. One said that LINC was not helpful because it did not cover what is needed to submit an LOI, or the grounds for disqualification. He recommended that TxDOT offer case studies on what disqualifies a firm and mistakes to avoid.

DBE TAP: Those who used the DBE TAP said that it was useful training for accounting, computer usage, and business/financial assistance planning. However, they still felt it was geared to construction contractors rather than consultants. One said that you can get access to the training only if you have an active contract with TxDOT. Another said that if you call with an issue, you get bounced around without resolution.

6.6 TxDOT's Pre-Certification System

Pre-Certification Process: Most SBEs said that, even though TxDOT's pre-certification system staff is "ultra-helpful," the computer interface is archaic. It is mainframe-based and limits how much information can be entered per 'submit.' It uses password protection for data that the applicants themselves do not consider secret, and requires quarterly renewal of their password. It takes 70 days to approve an application, and does not allow immediate appeal of a denial. It seems to favor internal TxDOT lingo, intimidating new applicants. Pre-certification must be renewed every year—a burdensome requirement.

Pre-Certification Standards: The experience requirements for pre-certification seem to give more weight to TxDOT work even though non-TxDOT work may have met similar or higher standards, making it difficult for those without TxDOT experience to qualify. One SBE said that pre-certification is applied unevenly−structural engineering requires 4 years' experience post-PE license, but roadway engineering requires just a PE license. Another SBE said that the bar for pre-certification is low, and that some applicants are not completely truthful, but that TxDOT does not verify. Other agencies do not require it, but have started asking for TxDOT pre-certifications just because the system exists.

Specialized Pre-Certifications: Specialized SBEs favor pre-certification as a way to keep out unqualified persons. One recalled that in the early 2000s TxDOT re-classified Environmental Studies as Scientific Services procured by low bid, and a lot of fly-by-night firms won contracts. The status quo on consultant contracts was restored in 2008. TxDOT's Environmental Division still has a Scientific Services procurement program that is 60–80% qualifications-based and 20–40% price-based. Some SBEs have had success with those projects, but low bidding continues to keep down fees.

Pre-Disqualification System: SBEs said that TxDOT's pre-certification system is a barrier to their success because it works more like a "pre-disqualification" system. The TxDOT requirement that the prime consultant must do at least 30% of a project puts some SBEs at a disadvantage for prime consultant contracts because they have a smaller number of pre-certifications compared to larger firms. SBEs said the systems seems designed more for TxDOT's convenience than for consultants, being a pass-fail gateway before TxDOT will even look at a consultant's LOI. In any case, they said, even if a firm meets a project's pre-certification requirements, TxDOT seems to grade proposals on the specific experience described in the proposal, making the entire pre-certification system seem redundant.

6.6.1 Audit Requirements

Administrative Qualification: TxDOT maintains a list of Administratively Qualified (AQ) firms. If a firm is not on the AQ list, it is more difficult to be accepted on a team or to win a contract. AQ requires an approved audit, and the October 2012 list had very few HUB firms. Non-engineering firms are exempt from audit requirements. SBEs said that audits are expensive ($5,000–$25,000) and not cost-effective if their likely profit on TxDOT work is not greater than the audit cost. Even if an SBE has paid for an audit, often TxDOT's audit staff still questions it, and may even conduct their own audit of the firm. One SBE said that in the past TxDOT required an audit only if you had more than $300,000 in work, and an audit was good for 2 years.

Overhead Rate: SBEs said that the current system seems to favor larger firms as their audited overhead rate (OH) covers their non-direct staff costs, whereas even one marketing person would spike an SBE's OH. The alternative 1.45 overhead rate offered by TxDOT seems intended to be coercive, as TxDOT staff said it is one standard deviation below the mean OH rate on TxDOT contracts. SBEs feel that this number is low, and apparently intended to keep down the average. For an SBE, even if 1.45 is less than its actual OH rate, in some cases it is more cost-effective to accept a loss than to pay for an audit. SBEs said that if you have accepted the 1.45 rate, you should be placed on the AQ list.

Billing Issues: Having had an audit does not necessarily allow firms to bill TxDOT accordingly, and in some instances, TxDOT contracting officers change the hourly rates or other allowable charges to arrive at the same grand total that would have been achieved with the 1.45 OH rate. Related to the same point, SBEs said TxDOT does not allow direct charges from firm principal officers, but for SBEs the principals may also be their lead professionals.

Alternative Audit Options: SBEs said that other agencies follow federal audit rules or use the Federal Form 330, which they said is more favorable. The North Texas Transit Authority allows sub-consultants to use the prime consultant's audited rate. The Oklahoma DOT does the audit for SBEs and also provides a list of acceptable auditors. Some firms mentioned that the Texas Society of Professional Engineers recommends an OH rate. Others said that the rate should be a function of the size of the firm and/or the project size.

6.6.2 Contract Types

Design-Build Contracts: Generally, TxDOT has used state funding for the bulk of its engineering contracting, with associated state HUB rules and goals (currently at 23.6%). Design-build (DB) projects, as well as other projects delivered through other innovative contracting mechanisms, are being used to deliver major complex mobility enhancement projects and are taking up an increasing share of TxDOT funding. Most of these projects follow different procurement rules from those in the regular TxDOT consultant program. On DB Comprehensive Development Agreement (CDA) projects, which have federal funding, lower federal DBE goals apply (around 8% or less for total design and construction). The developer can elect to meet DBE goal requirements through sub-contracting out construction work or any other menial work to SBEs. Because DB projects are very large, SBEs only have a chance as sub-consultants, but the prime consultants prefer to use their in-house staff for engineering work, and sub-consultants only get 'fetch and carry' work to meet that low DBE goal. This problem is more acute for firms that have relied on HUB goals in the past.

Specific Deliverable Contracts: On the more common design-bid-build (DBB) projects, TxDOT auditors require that contracts larger than $1 million be specific-deliverable (SD), with a tight scope. DBB projects have been tending in recent years towards large projects for which TxDOT asks a large range of pre-certifications even if not likely to be needed, effectively excluding SBEs. One SBE said he feels that most SD contracts are written in a way to favor a predetermined winner. One mentioned an example of a project with 70% environmental work, but the other work categories were written so only a large firm could be the prime consultant.

Indefinite Deliverable Contracts: IDIQ contracts ("evergreens") used to be $2 million for 2 years, but were reduced to $750,000 for 2 years to allow for more contracts. However, the work is mostly for Environmental, Surveying, or Hydrology and Hydraulics, which favors specialized firms over general PS&E firms. SBEs would like to see evergreen contracts in all the specialty areas. IDIQ proposals require description of the approach to a sample project, but in some cases the sample project can be an issue for SBEs. One recalled a situation where the sample project was in a remote location and very expensive to visit. Another recalled a sample project for a PS&E IDIQ being a Bridge Widening, a completely different kind of work.

6.6.3 Contract Packaging

Scoping: SBEs said that TxDOT's contract packaging is often a barrier to them winning work. Some of them said that the project scope includes an excessive number of work categories for which they either have to be pre-certified or find a partner with the pre-certifications. In some cases the work scope seems to be a wild guess, e.g., Environmental = 1%. They said TxDOT needs to do a better job of scoping projects. IDIQ contracts are better suited to situations where the work scope is still vague, as long as the sample project for the proposal at least relates to the desired services.

Sizing: SBEs said that they have noticed a trend in TxDOT to combine projects, perhaps to reduce contracting effort. SBEs have less chance of winning such bundled jobs. Similarly, statewide jobs issued from centralized divisions in Austin are less likely to be won by SBEs. TxDOT's OneDOT approach allows work to be awarded to any contracted consultant, but working far from the home base may not be feasible for an SBE. SBEs said that Advance Planning work should be separated from PS&E work, or else there is a tendency for the designers to over-design in order to boost their fees. SBEs said that TxDOT should develop a selection matrix that matches the type and size of job to the consultant size and capacity, with a bias toward local consultants.

Contract Issues: One SBE said that TxDOT rules require that if 30% or more of a project is engineering, a professional engineer must lead. For example, even if a project is 70% environmental, an environmental firm has to partner with an engineering prime consultant. Even if they win an IDIQ, SBEs said that it is difficult to plan and staff up for it because the work is of uncertain quantity and duration. In some cases IDIQ awards fail to produce any work, and worse yet, SBEs said they are invited to compete for renewal of those contracts, which usually end up going to the previous awardee again. One SBE cited an instance where an evergreen contract was requested, but then it was cancelled and the work was instead done by in-house TxDOT staff. He said that TxDOT should have a rule that if consultants went to the expense to propose for a project, it should be awarded.

6.7 Proposals

Teaming Dilemma: Companies are given 21 days to respond to an NOI. TxDOT staff said this schedule has brought down contracting time from 256 days to 70–100. SBEs said that this short response time puts them at a disadvantage in forming or joining teams. Teaming is a big issue for SBEs. As a prime consultant you want to assemble the best team to accomplish the work and give yourself a good shot at winning it. As a sub-consultant you have to choose which team to

join: some said they commit in the order of requests received; others wait till the last minute to figure which team has the best chance.

Switching Partners: One SBE said that he was told that TxDOT does not want to see the same team time after time, so they need to switch partners. TxDOT said that the intent is to make the prime consultant for a contract widen HUB participation in sub-contracts rather than sticking with their favorites. Implicit in this view is the apparent admission that the same prime consultants keep winning, and only the sub-consultants are interchangeable.

6.7.1 Screening of Proposals

Checking LOIs: TxDOT staff said that LOIs are first screened in TxDOT by non-technical staff for completeness of the package. They said that about 10% of LOIs are disqualified for various reasons, including using the wrong forms. SBEs said that LOIs are rejected for typographical errors, spelling mistakes, or not using certain TxDOT key words. SBEs said that bigger firms have an advantage on LOIs because they have specialists in LOI writing, but some SBEs question whether good writing is essential to engineering performance.

Scoring LOIs: Qualified LOIs are scored for technical value by three or more TxDOT reviewers using a rubric developed specifically for that project. The TxDOT review panel is selected from those who have completed a training module. They must have a minimum of 15 years of PM experience, and TxDOT tries to ensure that they are familiar with the project conditions. SBEs said that scoring is not consistent across projects, districts, or regions, so SBEs are never sure how they will be scored.

Experience Factoring: One SBE mentioned that he was told that the number of years of experience is a scoring metric for teams. He pointed out that one person may have 35 years of experience but only 3 related to the specific work, but that person would outscore someone with 10 years of directly relevant experience. Only the PM and the Task Leaders are scored, not the entire team, and that too is based primarily on TxDOT experience, so a team with less TxDOT experience will score poorly. This is a Catch-22 situation.

Score Compilation: A TxDOT contract specialist compiles the scores and ranks them. Each scorer carries the same weight in the tallying, even those far from the consensus. SBEs said that one low score effectively kills your chances. The scores are submitted to TxDOT's Design Division for approval. A number of consultants equal to three plus the number of proposed contracts, or those above a natural break in the scores, are invited to interview.

6.7.2 Consultant Interviews

Interview Panel: The same panel that screens the LOIs conducts the interviews. TxDOT staff said that having read the LOI does not prejudice interviewers, and a good LOI does not always translate into a good interview. Some SBEs said that the panels are good, but others said they have seen on the panels non-technical members, staff from other districts or regions not familiar with the project, or people who are inexperienced in consultant selection. SBEs said that the project panel ought to include someone conversant with the project, preferably one who will later be the primary TxDOT contact for the project.

Questions and Answers: The interview questions and answers are prepared and approved beforehand. TxDOT staff said that one consultant is allowed to make a presentation at the interview, then any of the task leaders can answer the questions. The team may collaborate before answering. Points are awarded for each right answer. TxDOT staff said they expect more than the canned answers, giving extra points for additional right answers. However, SBEs said that the inexperienced interviewers look only for the answers on their list, so even if you have 10 great ideas that are not there, your score will be very low. SBEs said some of the questions are not related to qualifications. One was asked to draw a map of a TxDOT district. Another was asked to name the counties and county seats, and a third was asked to name the county judges. One was even asked to respond to a question in Spanish. Even if an SBE passes the LOI screening and is invited to interview, they feel the deck is stacked and they are just being invited to make up the required number of interviews.

Interview Participation: TxDOT imposes limits on interview participation, a sore point for many SBEs who are sub-consultants. SBEs said that only the PM and some task leaders are allowed into interviews, and sometimes only the PM can answer questions, so if a firm is a sub-consultant, it may not get a chance to gain interview experience and raise its profile with TxDOT. A person can only attend one interview (to prevent individuals from knowing the questions in later interviews), so if a firm wants to be on multiple teams, it has to designate a different task leader for each prime consultant. This is a barrier to the success of SBEs who might want to hedge their bets, because they are limited in their teaming by the number of task leaders they have on staff. It also hurts relations with prime consultants if you do not send your best task leader to their interview. One SBE suggests re-using a sub-consultant's scores for all the teams he is on.

6.7.3 Post-Selection Debriefing

Minimal Benefit: TxDOT provides a debriefing for unsuccessful proposers. TxDOT staff said that consultants are given their scores and the reasons why they did not win. The great majority of the interviewees had attended one such session, and almost all said it was not helpful.

Effectiveness: SBEs said that they feel the debriefings are only being done to meet requirements, and are rarely of benefit to improve chances next time around. SBEs said that the TxDOT person doing the debriefing may not even have been involved in the screening or interview, and the feedback they give is usually "pro-forma," "generic," "not constructive," or "deliberately vague to avoid implicating TxDOT negatively." One SBE mentioned a case where the debriefer, who had been on the interview panel, said that he had no traffic engineering knowledge, so all he could do was check if the consultants answered the questions exactly as on his cheat sheet.

Timeliness: A few SBEs said that the sessions were timely, but several said that the sessions are delayed so long after the LOI or interviews that your 'mistakes' would have been repeated a few times in the interim. One SBE said he had a 9-month delay.

Training Opportunity: SBEs said that the debriefing should be used by TxDOT as a training opportunity. Mistakes in the LOI should be pointed out and corrections provided. TxDOT should supply the rubric used in scoring the LOI so proposers can understand where to focus their

efforts. Issues of TxDOT experience versus non-TxDOT, and what counts as PM experience, need to be clarified. Better records of interviews should be kept. The winning scores should be shared, instead of being told you were second and "this close to winning." SBEs said that TxDOT should publish the questions and answers post-interview, and maintain a database of questions and answers as a training tool for SBEs.

6.8 Paperwork Requirements

Impacts and Limitations: The majority of SBEs said that TxDOT paperwork is about the same as for other clients. Some said that the cost of preparing a proposal is similar whether you are a large or small firm, so it has a disproportionate impact on SBEs. Two said they like that TxDOT limits proposals to five pages, but two also said that it is hard to describe all your expertise for a job in five pages.

Requirements for Planning Work: One firm that specializes in planning said that the TxDOT's proposal requirements for planning work are unreasonable. For work that is purely planning, they have to team with an engineering firm to submit the proposal, when in fact there is no engineering involved. TxDOT also requires planning firms to carry professional liability insurance, whereas other clients do not. They recommend that proposals for pure planning work have different requirements from those for engineering work.

Changing Sub-consultants: TxDOT rules prevent prime consultants from changing sub-consultants easily. This requirement protects sub-consultants from being shortchanged by prime consultants who have promised work, but it can have an unintended consequence. One SBE said that to avoid the paperwork in changing sub-consultants, a prime consultant called him in on an informal arrangement to do some work on a project, but as a result he got no credit for it in the final plans.

Project Performance Evaluation (PPE) Database: One interviewee said that three references are needed to get PM status in TxDOT's database—a tough proposition. Another SBE mentioned that TxDOT staff do not promptly record a PM's accomplishments on a project in the PPE tracking database, and when an SBE submits an LOI claiming that project experience, the reviewers do not make sufficient effort to verify it. If the project is not recorded in PPE, the LOI is rejected through no fault of the SBE or the PM.

6.8.1 Software and PS&E Standards

Design Software: Most SBEs have no issue with TxDOT requiring them to use MicroStation for preparing design files. A few of them said that AutoCAD is the industry standard so they have to maintain two software licenses and up-to-date training, but others saw it as just the cost of being in business.

PS&E Standards: TxDOT staff said that they have strict standards on fonts and plan presentation, but some interviewees felt they were nitpicking and not really important to construction contractors. One SBE said that TxDOT requires an extensive audit trail for checking and correcting design plans to minimize its own internal effort. One SBE questioned whether the TxDOT staff members reviewing consultant work are themselves licensed professionals.

6.8.2 Payments

The majority of SBEs said that TxDOT's payment system is very prompt and efficient. TxDOT's rule is to pay an invoice within 30 days of approval. However, a few SBEs recalled instances where invoices were kicked back for minor issues, resetting the 30-day clock. One mentioned being retaliated against for questioning the issues, and his $80,000 bill was held up for 13 months. Another said that some TxDOT managers try to enforce the task-level dollar amounts in the contract, even though it is widely recognized that neither TxDOT nor the consultant are certain as to estimates of task level effort. Some SBEs said that the larger problem is with prime consultants, who sometimes delay sub-consultant payments as much as 90 days even though TxDOT had already paid the invoice.

6.9 Competition

Shrinking Budget: TxDOT has seen significant shrinkage of its consultant budget in recent years. According to one TxDOT staffer, the statewide budget went from $500 million per year in FY 2006–2008 to less than $20 million in FY 2009. It has risen slightly since then, to about $100 million in FY 2011. But this is much less than the total requests from the regions, which was for over $300 million. In 2011, the East Region issued only two PS&E contracts, for $750,000 each.

More Players in the Pool: Large firms are now competing fiercely for work that only SBEs used to propose on. It is not uncommon for TxDOT to receive over 50 LOIs for a single project, meaning that there are over 49 disappointed firms for every winner. Moreover, the recent federal reclassification of an SBE as less than $14 million annual revenues coupled with the economic downturn means that more firms are now SBEs. Some SBEs would like to see a microbusiness category for firms with less than $2 million revenue. Right now such tiny firms are competing with much larger firms.

Competitive Advantage: SBEs said that competing against large firms is very difficult because TxDOT selection teams seem to be swayed by polished LOIs, flashy presentations, and the notion that a 1,000-person firm could bring all those resources to the project. Large firms can compete for projects in all parts of the state, whereas SBEs are limited in the geographical area within which they can effectively operate. Large firms can also afford staff to "work the schmooze circuit"—networking and gaining insights into upcoming work before SBEs.

Ranking vs. Qualifications: SBEs said that the existing selection process is not truly qualifications-based (i.e., whether or not a firm is capable of doing the project), but instead is a ranking system that compares firms to each other. As a result, the same firms are always in the top tier and win work, while less-successful firms are caught in a vicious cycle.

6.9.1 Regionalization

Consolidation: In a move to consolidate certain services, TxDOT established four regional centers. One benefit of regionalization for TxDOT was that districts could share engineering resources, but SBEs said that a lot of smaller projects that previously went to them are now being done remotely by other districts. One role of regional centers is consultant management. Through regionalization TxDOT intended to increase efficiency in its procurement operations. However, since the procurement of engineering services is based on a qualifications-based-selection

process as opposed to cost-based (used for most other procurements), the regionalization of this procurement is creating additional barriers to SBEs being selected in a prime role.

Loss of Relationships: SBEs said that the primary impact of regionalization has been loss of relationships with local district staff, who knew their history and capabilities. SBEs are primarily local firms, which creates difficulty in establishing and cultivating relations with staff from other districts. They stress that relationships are key to winning work in the consultant arena.

Lack of Local Knowledge: SBEs said that they have noticed that the level of experience in TxDOT has been falling, and consultant selection teams show this trend. Some people who used to do consultant selection in the districts opted not to join the regions, exacerbating this loss of institutional experience. SBEs said that less-experienced selectors are not familiar with SBEs and are not comfortable selecting them, opting instead for the safer choices of large and national firms. Through regionalization TxDOT can select a pool of consultants under indefinite-deliverable contracts and issue work-authorizations to any contracted consultant. A consequence of using out-of-town consultants is that they may not be familiar with local conditions, especially environmental issues. Prime consultants are not required to have local partners.

6.9.2 Systemic Issues

Human Bias: A number of systemic issues with consultant selection were raised in the interviews. Most SBEs expect that there will be a natural "human' bias in any selection process. One SBE said, "People, in general, want to work with a consultant or firm that they have had a good experience with in the past. When it comes down to the final selection, if you have two firms of equal ability…TxDOT…will tend to select that firm they know." Viewed another way, the process is unfriendly to new firms, and "every job is considered too important to trust to an unknown." None of the interviewees mentioned any hint of racial bias in TxDOT consultant selection.

Favorites: TxDOT staff said that they prefer consultants who will be responsive to their needs and deliver quality products on schedule. They admit that some districts have their favorites among evergreen-contracted consultants and will draw on those before going to the next. To avoid this favoritism, recent TxDOT rules require that work orders be assigned sequentially down the roster of contracted consultants.

Size Bias: SBEs said that TxDOT is biased to larger firms. One SBE said, "Hypothetically, if I replace the experience and project approach of the employees of the large firm with the small company name, it wouldn't win the contract." One SBE thought that the mindset in TxDOT is that bigger firms have lots of resources, which allows for backup personnel. For example, if the consultant's PM leaves, he can be replaced easily. SBEs said they are rated down just for having less redundancy in personnel, even though that means TxDOT will get the people promised, not "a substitute from Cincinnati." Moreover, SBEs said that TxDOT has a perception that dealing with a small firm is more work than dealing with a large firm.

National vs. Local: One SBE said that legislative rules have encouraged the consolidation of consultant firms. Having a wider presence guarantees more work. One SBE said that, of five

Hydrology/Hydraulics IDIQ contracts recently awarded, three went to national firms and two to midsize firms. He said that it seems that TxDOT rotates awards among the big firms.

Revolving Door: Several SBEs said that there seems to be a revolving door between big firms and TxDOT. One observed that almost every PM on every job has either worked for TxDOT or has a close relationship with TxDOT staff. Companies with ex-TxDOT employees on staff seem to have inside information on upcoming TxDOT work. SBEs said it is hard for them to get a meeting with TxDOT staff, but ex-TxDOT employees have no such difficulty. Such retirees will not join an SBE, knowing very well that the system favors large companies. One SBE said that one large company had set up an office and hired a retired TxDOT manager to run it. That person immediately won a major project, and while it is true that the project he won is not TxDOT-funded, it was developed while he was in charge. SBEs said that even younger TxDOT managers involved in consultant selection do not want to antagonize large firms because they may want to join one of those firms one day.

Program Rating: Interviewees were asked to characterize TxDOT's professional services procurement as compared to the procurement by other entities. The responses ranged from Good to Poor, with the median being Average. Those who rated it Above Average mentioned the simplicity of the LOI and the use of HUB goals. Those who rated it Average said it was similar to other agencies' procurement programs. Those who rated it Below Average felt that several selection factors are not qualifications-related.

6.10 Non-TxDOT Consultant Programs

Small Prefers Small: Interviewees were asked about their experience with non-TxDOT consultant programs and for ideas that would benefit SBEs. They said that, in general, smaller agencies have a small firm-bias, holding the view that local and small is more responsive than national and large. Their projects also tend to be smaller, so there is less competition from large firms, which allows SBEs to gain experience as prime consultants. Their outreach programs are friendly to SBEs, they are more open to hiring SBEs, and many have goals for SBE participation as well as HUB participation. They allow HUB prime consultants to self-satisfy HUB goals.

Access: Generally, small and private clients are less likely to advertise upcoming work, instead relying on consultants to seek out information, fostering greater access. Usually, the individuals responsible for the selection process are open to sharing information with consultants about the project or process. There is one point of contact from screening to selection. Sometimes those clients will hold pre-proposal meetings to outline the project and process and to answer questions from consultants. Depending on the size of the project and number of proposals submitted, those responsible for selection may be one person or a few.

Paperwork: Smaller clients and smaller public agencies have fewer paperwork requirements. Most do not require an audit beforehand, and typically do not have pre-certification. Each entity has its own rules and procedures for selecting consultants, but most require a statement of qualification. Others request individual and firm resumes and detailed descriptions of similar projects to determine if the firm and team members have the necessary experience for their project. Experience elsewhere is treated as equivalent, as long as the standards were similar, rather than preferring "exact" experience.

Selection Process: SBEs said that smaller clients and smaller public agencies have a better interview and selection process. They focus on choosing the best team. Sometimes a short list is determined followed by an interview before final selection. Most do not keep a formal database on individuals; they rely on past experience with firms or project managers to help guide them in selection. The staffs are well-qualified, experienced, prepared, and therefore more confident in their approach. They focus on how the consultants plan to execute the project, rather than "saying the right words." One SBE said that they have a corporate memory; if you do a good job and meet their deadlines, you get more jobs with them.

6.10.1 Private Clients

Different Rules: Private clients generally have different rules from public agencies, and most times their awards are based on relationship and/or price. In general, their requirements are less stringent. Most of them do not have HUB requirements, but some of them have SBE participation goals.

6.10.2 City Programs

SBE Programs: All the SBEs interviewed have done work for cities, and most of them praised those programs. Both the City of Houston and the City of San Antonio were cited as excellent for SBEs, running good outreach programs, providing training and help to SBEs during proposal preparation, and generally favoring local firms. The City of San Antonio has a goal that 51% of its work should be done by SBEs, and tracks whether the firms on the LOI are actually used. If a change is detected, the relevant sub-consultant is notified and a rectification process initiated. The City of Dallas is "very minority-focused instead of selection based on qualifications."

Information: Generally, it is easy to meet with cities' capital improvement program coordinators, and to learn what projects are being programmed into the budget. One SBE said that some cities have a program for small startup firms where you can get "small alley type jobs" and then, if successful, graduate to more complex jobs. A proposed City of El Paso ordinance will restrict work to local firms, somewhat along the lines of a City of Houston ordinance. The City of Austin allows losing consultants to get a copy of the winning proposal for a $20 fee.

6.10.3 County Programs

Relationships: SBEs said that county procurement programs are relationship-driven so you have to get in to be successful. Most do not have a pre-qualification process. Bexar County distributes work to consultants, trying to give some to everyone who is qualified.

6.10.4 Other State DOTs

Examples: One SBE said that there is not a significant difference on how things are done from state to state. The audit that Wisconsin uses is much more elaborate, making it easier to become qualified. The Oklahoma DOT (OKDOT) was mentioned as having a program that has been completely revamped, and is now SBE-focused and very approachable. OKDOT publishes an 8-year work plan with good detail, so consultants can organize and be prepared to propose on projects. It pays for ACEC membership and for part of the required audit. It also gives a list of acceptable auditors. The Florida DOT rebuilt its consultant program from scratch about 10 years ago, and was also cited as a good example for review.

6.10.5 Federal Programs

DBE Goals: SBEs who have done work for the federal government report divergent views: some said that the process is eminently fair with significant effort to hire DBEs, but others said that federal rules are more complex than TxDOT's and it is harder to win federal work. Several SBEs mentioned the federal 8(A) program as a set-aside program for DBEs. One mentioned that some federal agencies use a tiered goal approach, awarding work first to veteran-owned firms, then to DBEs, then to SBEs, etc.

6.10.6 Other Programs

Mentoring: The North Texas Toll Authority (NTTA) recently changed its consultant hiring program. It has a mentor program called ROADS in which points are awarded to prime consultants for being more inclusive, but it is difficult to get on the NTTA list because many firms want to be on it. The Dallas Area Rapid Transit organization has a similar program. Houston Metro allows a sub-consultant to be on up to four teams, which improves chances of being on the winning team. The San Antonio Water Authority makes a strong SBE outreach effort.

6.11 Improving TxDOT's Process

Choosing Consultant Teams: TxDOT staff said that their primary interest in selecting a consultant is that the consultant has adequate experienced resources for the project. The NOI includes the number of work hours for each specialty, and respondents must show availability/capacity. However, only one SBE said that they felt the process was fair to smaller firms—in his opinion the capability of the team was the deciding factor, not the size of the firm. Another SBE pointed out that a team is a team, and only the team qualifications should be considered, not which companies they work for.

Minimizing Risk: One SBE said that TxDOT's process is risk-adverse and does not empower staff to experiment. He said that during interactions with consultants, TxDOT personnel strive for safe communications, conveying the impression they are afraid to interact with consultants. This diffidence may be due to a lack of expertise or an overly restrictive process.

Updating PPE Database: One SBE said that TxDOT needs to police the updating of its PPE database—he was disqualified for claiming experience on a project that was not in the database, when the fault was with TxDOT for not inputting the information, and then failing to check with the relevant district staff during LOI review. Another said that in evaluating PMs, TxDOT should give as much weight to non-TxDOT work as its own projects, as long as the work required a professional's seal.

Tailoring LOIs: One SBE said that limiting LOIs to five pages favors large firms who are better known and do not need to say as much to make the case for their qualifications. This is especially true on larger projects with many work categories and an equivalent number of major task leaders. An SBE has to do more to explain their qualifications, approach, and understanding of the project. LOI page limit should change with project size and complexity.

Evaluating LOIs: SBEs said that LOIs are not evaluated consistently. For one LOI, an SBE was told that he should show only experience specific to the project type, but for another he was told that he should have included other experience, e.g., experience with an interchange was applicable to a bridge replacement project. One SBE felt that all LOIs should be graded for technical content without being disqualified for non-technical omissions.

Choosing Panels: SBEs said that the screening and interview panels should be mostly TxDOT staff who are local to and familiar with the project, and non-technical and non-regional staff should be prohibited. Some SBEs said that TxDOT needs to provide better training to their selection staff and ensure that committees are scoring LOIs and interviews only on what is asked for in the NOI or interview.

Training SBEs: One TxDOT staffer said that there is a need to conduct training for firms on how to prepare LOIs, having seen simple mistakes and omissions. Several SBEs said that they felt at a disadvantage in the interview portion. One said he was aware that one large firm has an ex-TxDOT person on staff who conducts mock 20-minute interviews as training for their teams. Such training for SBEs would be beneficial.

Opening Up Interviews: SBEs also said that the interview needs to be opened up to sub-consultants so they get an opportunity to learn the ropes. The limitation of allowing a task leader to attend only one interview should be re-examined, as it reduces a sub-consultant's chances of winning work and thus graduating to contend as a prime consultant. It would also allow smaller prime consultants to get the top representative from each sub-consultant, instead of fielding a 'B team' because the sub-consultant did not want to risk antagonizing bigger prime consultants in their choice of which representative to send to each prime consultant's interview.

Interview Format: SBEs said that interview questions need to be more about approach and methodology than specific detail items that are based on someone's ability to memorize minor facts from manuals or specifications. SBEs split on interview format. Most felt that a presentation should be required, as long as it is simple (e.g., no 3D animations), but some prefer questions, saying they are at a disadvantage against large firms with professional presenters. TxDOT should also consider posting the interview questions ahead of time in the same way that for construction contracts TxDOT posts the engineer's estimate pre-bid to eliminate any perception of insider knowledge. One said that showing you can think on your feet in an interview is over-rated. The focus should be on describing the technical approach.

Removing Size Bias: Ultimately, SBEs feel that the process is rigged to favor large firms and predetermined winners, and they are there just so TxDOT fulfills legal requirements. One said that a proposal costs about the same whether you are a big firm or small, and when compounded with a lower winning ratio for SBEs you have a disproportionate impact on SBEs. Prime consultant companies from outside the region bidding on local jobs tend to hire sub-consultants from their own regions. One SBE said that the Texas Legislature had passed legislation to force TxDOT to give preference to local firms, but this has still not been fully implemented. SBEs said that TxDOT should hire local firms, grow local expertise, and support the local economy.

Outreach and Localization: One SBE said TxDOT should set up a Small Business Advocacy office, similar to the federal 8(A) program. The federal government has a Business Opportunities website that is a one-stop shop for federal work. TCEQ and UT System OFPC are also good models. Another SBE suggested that TxDOT strengthen its outreach to HUBs by designating a HUB contact in each district, and ensuring that person is involved in consultant selection. One TxDOT staffer said that it would be useful for districts to have 'purchase order' capability for contracts less than $750,000 so they could hire pre-qualified consultants on a roster.

TxDOT Staffing: One SBE had a number of interesting recommendations for TxDOT. He said that TxDOT needs to do at least 15% of its engineering work (a variety of project types and sizes) in-house to build management capability. He cited one example of a major project done by a smaller district that had a number of problems due to inexperienced designers. He said that TxDOT design teams should meet the same depth requirements imposed on consultants. A team should be headed by a PM with 20 years of experience, leading two engineers with 10 years of experience each, along with young engineers and engineers in training. He said TxDOT should use local SBEs as a training ground for young TxDOT engineers by pairing them with an SBE for a project. He added that TxDOT needs to hire more young graduates and bring new blood into the organization.

6.12 Improving SBE Chances of Winning as Prime Consultants

Divest: SBEs were asked for their suggestions for increasing the chances of SBEs winning TxDOT prime consultant contracts. Most of them recommended divesting the program to the lowest possible level to increase access for local and small companies. They said that TxDOT staff is reluctant to be accessible out of the fear of being perceived as not being fair to some companies. SBEs thought this risk aversion can be lessened by empowering staff to experiment on smaller projects. Better access is needed after contract award to help SBEs navigate TxDOT requirements.

Early Project Information: SBEs said that TxDOT needs to improve its outreach program. This can start with providing better project information in advance so SBEs can plan on teaming and proposing. This could be extended to issuing NOIs to SBEs before being released widely. TxDOT should have pre-proposal meetings so sub-consultants and prime consultants can meet, market themselves, see who is interested, and form teams. The future TxDOT project manager should attend the pre-proposal meeting.

Additional Contracting Goals: SBEs said that TxDOT should broaden its goals for hiring consultants as in some city programs. Aside from HUB/DBE goals, there should also be goals for SBEs, woman-owned, specific minorities, etc. They said that TxDOT is generally not proactive on goals, but instead imposes requirements on prime consultants to meet those goals.

Policing Prime Consultants: SBEs said that TxDOT needs to change its interview process from a "test-taking exercise" to one that defines required skills for a project, and finds the most qualified local team that fits the bill. They said that they have seen many cases where large firms bait and switch, promising certain staff or showing examples of past large projects knowing full well that the staff who did that work are no longer available. Finally, SBEs said that TxDOT

needs to track H2 forms that say how much of a project will be sub-consultant work, and verify that sub-consultants get the share promised in the LOI, especially the HUB goals.

6.13 Summary of Interview Findings

In general, the research team found that interviewees had outdated information on TxDOT's programs and misperceptions regarding its rules and processes. To counter this situation, the department could strengthen its small firm outreach efforts. Based on the interviews, 23 findings are presented in Table 6.5. These findings address the two central questions of the study: 1) Relative to large firms, why are more small firms not awarded prime contracts? 2) What are the measures that can be implemented to improve the success rate of small firms, such that more small firms are awarded prime contracts?

Table 6.5: Summary of Findings from Consultant Interviews

Issue	Description
1. Competition	SBEs are at a competitive disadvantage versus large firms in terms of geographic reach, name recognition, and marketing ability, among other factors. SBEs would like to see counterbalancing measures to reduce competition from larger firms.
2. Regionalization	TxDOT's regionalization of consultant selection was identified as a factor in the SBEs' perceived loss of competitiveness on TxDOT projects. Most SBEs would prefer divestment of at least a portion of TxDOT's consultant procurement back to lower levels of TxDOT.
3. State Contracting Goals	State rules that a HUB prime consultant's portion of the work does not count toward the project HUB contracting goal are seen as a significant barrier to HUBs winning as primes. SBEs say that new state rules—e.g., separate goals for HUBs, SBEs, and women-owned businesses—might spur more SBEs to pursue prime consultant contracts.
4. TxDOT Contracting Goals	SBEs said that TxDOT is not proactive enough on HUB goals, but instead passes the responsibility on to prime consultants to meet those goals. One SBE suggested awarding extra points in the selection process for teams that exceed HUB goals.
5. Program Information	Several SBEs said that the information in the TxDOT 6-month work program posted on its website is insufficient for them to make early decisions on proposing or teaming. Teaming is critical for SBEs.
6. Access to TxDOT Staff	SBEs say that they have very few opportunities, such as workshops and pre-proposal meetings, to interact with TxDOT staff or larger firms and to form relationships.
7. TxDOT Outreach	Most SBEs had the impression that TxDOT's SBE outreach programs did not provide much information on professional services contracts. SBEs need more training on LOI preparation and interviewing, and targeted outreach programs.
8. Contract Packaging	Innovative contracting mechanisms are taking up an increasing share of TxDOT funding. SBEs only have a realistic chance as sub-consultants on such projects, but the prime consultants prefer to use their in-house staff, and sub-consultants only get 'fetch and carry' work. Designating a portion of engineering work for subs would be helpful.

Issue	Description
9. Project Scoping	Traditional contract packages have also been trending towards large projects. However, the number of pre-certifications required on many projects is discouraging SBEs from seeking to be prime consultants. In indefinite deliverable ("evergreen") contracts, the types of work seem to favor specialized firms over general PS&E firms.
10. Pre-Certification	Most SBEs said that the computer interface for TxDOT's pre-certification system is archaic. They feel that pre-certification is a pass-fail gateway before TxDOT will even look at a team's LOI, and the process needs to be improved.
11. Administrative Qualification (AQ)	AQ requires an approved audit, but SBEs said that audits are expensive ($5,000–$25,000). For an SBE, even though the alternative 1.45 OH rate offered by TxDOT may be less than its actual OH, in some cases it is more cost-effective to accept it than to pay for an audit.
12. Qualifications-Based Selection	Some SBEs feel that the existing selection process is not truly qualifications-based, but instead is a ranking system. As a result, the same firms are always in the top tier, and SBEs have difficulty getting in.
13. NOI Deadline	SBEs said that TxDOT's 21-day response deadline on a NOI is too short for them to form or join teams. Moreover, SBEs said that TxDOT has told consultants they want to see new teams for each project.
14. LOI Screening	SBEs said that LOIs are rejected for minor errors, or for not using certain TxDOT key words. Only the consultant's PM and the Task Leaders are scored, not the entire team. One SBE said that limiting LOIs to five pages favors large firms who are better known.
15. Selection Panels and Scoring	SBEs said that less-experienced selectors are not familiar with SBEs and are not comfortable selecting them, opting for the safer choices of large and national firms. Prime consultants are not required to have local partners.
16. Interview Format	SBEs had concerns about interview format, nothing that inexperienced interviewers look only for the canned answers. SBEs said some questions are not related to qualifications, but seem designed to disqualify SBEs.
17. Interview Participation	SBEs said that TxDOT imposes limits on interview participation. This is a barrier to SBEs, because they are restricted in their teaming to the number of task leaders they have on staff. One SBE suggested using a firm's interview score for every team they are on.
18. Post-Elimination Debriefing	The majority of SBEs said that TxDOT debriefing sessions are delayed so long after the LOI or interviews that 'mistakes' would have been repeated on other proposals in the interim.
19. Systemic Bias	SBEs who rated TxDOT's process "Above Average" mentioned the simplicity of the LOI and the use of HUB goals. Those who rated it "Below Average" felt that TxDOT selection panels prefer larger firms and those with PMs who either worked for TxDOT or had a close relationship with TxDOT staff. No SBEs reported any indication of ethnic bias in TxDOT consultant selection.
20. Sub-Contract Tracking	Some SBEs feel that the LOI should become part of the contract to lessen chances of sub-consultants being used by the prime consultant only as "window dressing" to win the contract.

Issue	Description
21. Payment Policies	One SBE said TxDOT does not allow direct charges from firm principal officers, but for SBEs the principals may also be their lead professionals.
22. Project Performance Evaluation Database	SBEs said that TxDOT staff do not promptly record a PM's accomplishments on a project in the Project Performance Evaluation (PPE) database, and when that PM submits an LOI claiming that experience, the reviewers do not make sufficient effort to verify it.
23. Non-TxDOT Programs	Federal: Several SBEs mentioned the federal 8(A) program as a set-aside program for DBEs. One said that some federal agencies use a tiered goal approach—awarding work first to veteran-owned firms, then to DBEs, then to SBEs, etc. State: The Oklahoma DOT was mentioned as a program that is SBE-focused and very approachable. They publish an 8-year work plan with good detail. The Florida DOT was also cited as a good example. Cities: The City of Houston and the City of San Antonio were cited as excellent for SBEs, with good outreach programs, training and help during proposal preparation, and generally favoring local firms. The City of San Antonio has a goal that 51% of its work should be done by SBEs. The City of Dallas is said to be "very minority-focused." Others: NTTA has a mentor program called ROADS in which points are awarded to prime consultants for being more inclusive. DART has a similar program. Houston Metro allows a sub-consultant to be on up to four teams.

Chapter 7. Conclusions and Recommendations

7.1 Study Objectives

Two central questions were addressed in the study:

1) Relative to large firms, why are more small firms not awarded prime contracts?
2) What are the measures that can be implemented to improve the success rate of small firms, such that more small firms are awarded prime contracts?

TxDOT established the work plan for this study. The two main components were analysis of TxDOT data and interviews of consultant firms. This report is the primary deliverable of the study.

7.2 Findings

7.2.1 Findings from Data Analysis

Six key findings arose from analysis of TxDOT contracting and pre-certification data. Because the data from TxDOT did not contain an identifier for small firms, two other identifiers were used as surrogates: Historically Underutilized Business (HUB) status and Disadvantaged Business Enterprise (DBE) status. TxDOT stated that all HUBs and DBEs are small firms.

1. TxDOT contracting volume has decreased and competition has increased. Compared to the period 2005–2008, in the period 2009–2012 the number of dollars and contracts awarded by TxDOT decreased over 60%. Even the top ten firms are pursuing relatively small contracts, as low as $150,000. TxDOT now receives as many as 50 Letters of Interest (LOI) on routine contracts.

2. Small firms have not suffered any disproportionate impact due to reduced TxDOT contracting. Comparing the 2005–2008 and 2009–2012 periods, the HUB share of state dollars awarded was stable at about 32% (13% prime, 19% sub). The HUB share of the state contract count stayed at about 50%. DBE share of federal dollars also remained stable over the two periods, near 20% (6% prime, 13% sub).

3. Small firms had access to TxDOT contracts in their target range. Eighty-six percent (86%) of the count of TxDOT contracts were for less than $2 million (HUBs got 50%), and 50% of contract dollars were in contracts less than $2 million (HUBs got 32%).

4. Small firms tend to do well in some types of work. Compared to their overall winning average, HUBs do better in Geotechnical, Materials Engineering, Schematic/Environmental, Surveying, and Traffic Engineering work. Their winnings are below average on Architecture, Bridge Inspection, Environmental, and Hydraulics work.

   TxDOT consultant work is focused in somewhat different areas. The bulk of dollars are in Route Studies, Environmental, Right-of-Way, Surveys, and Roadway. More consultant work

was awarded in Dallas, Houston, Ft. Worth, Waco, and in the Toll Division, than in other areas of the state.

5. In terms of TxDOT pre-certifications, HUB firms tend to have less depth of resources and breadth of experience than non-HUB firms. They have an average of 4.07 pre-certified employees versus 8.86 in non-HUB firms. HUB firms have fewer employees with multiple certifications (i.e., broadly experienced) than non-HUB firms.

6. TxDOT pre-certifications show no bias against ethnic-owned firms. Comparing the percentage of TxDOT pre-certifications in firms of each ownership ethnicity to the percentage of Texas Professional Engineers (PEs) by ethnicity, the numbers match closely. However, Texas PE percentages by ethnicity are very unbalanced as compared to Texas ethnic population percentages.

7.2.2 Findings from Interviews

The work plan established by TxDOT required the research team to solicit opinions from consultants through voluntary participation (versus random selection). Such a process tends to attract respondents with negative points of view. Generally, the team found that interviewees had outdated information on TxDOT's programs, and misperceptions regarding its rules and processes. The following are 14 selected findings from the opinions expressed by the interviewees:

1. Small Business Enterprises (SBE) are at a competitive disadvantage versus large firms in terms of geographic reach, name recognition, and marketing ability, among other factors. They would like to see counterbalancing measures to help them compete against larger firms.

2. TxDOT's regionalization of consultant selection is perceived negatively by SBEs because of loss of district relationships. Most SBEs would prefer divestment of at least a portion of TxDOT's consultant procurement back to lower levels of TxDOT.

3. State rules that a HUB prime consultant's portion of the work does not count toward the project HUB sub-contracting goal are seen as a significant barrier to HUBs. SBEs say that new state rules—e.g., separate goals for HUBs, SBEs, and women-owned businesses—might spur more SBEs to pursue prime consultant contracts.

4. Several SBEs said that the information in the TxDOT 6-month work program posted on its website is insufficient for them to make early decisions on proposing or teaming. Teaming is critical for SBEs, so they would like more and earlier information on future work.

5. SBEs would like more opportunities such as workshops and pre-proposal meetings for them to interact with TxDOT staff and larger firms and form relationships.

6. Most SBEs had the impression that TxDOT's SBE outreach programs did not provide much information on professional services contracts. SBEs need more training on LOI preparation and interviewing, and targeted outreach programs.

7. Most SBEs said that the computer interface for TxDOT's pre-certification system is archaic. The process needs to be improved.

8. The Administrative Qualification process could be simplified so SBEs have a chance to reduce the expense of audits.

9. SBEs said that TxDOT's 21-day response deadline on a Notice of Intent (NOI) is too short for them to form or join teams. Some mechanism for advance release of NOIs to SBEs may benefit them.

10. SBEs had concerns about TxDOT's interview format and the use of canned questions and answers. They felt that more discretion could be applied in rating answers, and extra points could be awarded to teams that exceed HUB goals.

11. SBEs said that TxDOT limits on interview participation are a barrier, because they are restricted in their teaming to the number of task leaders they have on staff. One SBE suggested interviewing a firm once and using its score for every team they are on.

12. The majority of SBEs felt that TxDOT debriefing of losing proposers should be done as soon as possible after elimination, instead of after final selection, so that they don't keep repeating their 'mistakes' in the interim.

13. No SBEs reported any indication of ethnic bias in TxDOT consultant selection.

14. Several non-TxDOT consultant programs were identified as potential case studies, including the federal 8(A) program, Oklahoma and Florida DOTs, and the Cities of Houston, San Antonio, and Dallas. The North Texas Toll Authority and DART were mentioned as examples of good mentoring programs.

7.3 Recommendations

In general, this research found many positives in TxDOT's consultant procurement program. The data analysis showed that the system has been even-handed to SBEs, despite significant reduction in contracting in the last 4 years. No evidence of ethnic bias in the program was found, either through data analysis or in the interviews. Interviewees praised TxDOT standards and the reliability of the program. Of the negative comments captured in the interviews, most involve tweaks to procedures.

The following recommendations address the second central question of the study (what measures can be implemented to improve the success rate of small firms, such that more small firms are awarded prime contracts?). Therefore, these recommendations seek mainly to provide more opportunities and access for SBEs. Thirteen recommendations are presented.

The recommendations are organized in three groups:

- Group 1 includes items that can be implemented by TxDOT directly.

- Group 2 consists of items that will require legislative/State Comptroller and/or TxDOT policy changes, and may go beyond the scope of this study, but have the potential to benefit SBEs.
- Group 3 includes items that were identified during the interviews and are being addressed by TxDOT with rules adopted effective February 21, 2013 in the Texas Administrative Code, Title 43, Subchapter C, Sections 9.34(b), 9.35(b), and 9.36.

Group 1- Can Be Implemented by TxDOT Directly

1. Highlight TxDOT SBE Outreach and Training Programs

Many SBEs have outdated information about TxDOT's small business outreach and training programs and need to educate themselves on TxDOT processes. However, Texas Government Code Section 2161.066(e) stipulates that "each state agency that has a HUB coordinator shall aggressively identify and notify individual HUBs regarding opportunities", so TxDOT could increase its efforts to highlight these programs. TxDOT could also explore ways to persuade consultants to 'refresh' themselves by attending a TxDOT workshop every few years.

2. Enhance Pre-Certification and LOI Screening Process

TxDOT's pre-certification system computer interface should be updated to be more user-friendly. The Letter of Interest (LOI) screening checklist should be posted online. TxDOT should also consider a web-based application for submitting and screening LOIs.

3. Track Additional Data

Data from TxDOT's CCIS database proved useful to the researchers in checking some of the findings from the SBE interviews. However, some inconsistencies were found in the CCIS database. TxDOT should review QC procedures for CCIS data quality. TxDOT could also consider some CCIS enhancements such as tracking the number of LOIs for various contracts/disciplines and the actual usage of sub-consultants post-contract award. LOI statistics may help SBEs target their efforts more effectively. Global tracking of sub-contracts would promote the visibility of that experience and aid SBE sub-consultants in transitioning to prime roles. Sub-contract tracking is currently managed at the project level.

4. Scope Additional Projects Targeted to SBEs

The data showed that even though 86% of TxDOT contracts are less than $2 million, these cover just under 50% of total dollars awarded. SBEs are more successful in under-$2 million contracts. TxDOT could develop more contracts of that size and use them in creative ways, for example, to develop a running 6-month stock of small ready-to-let projects in case large projects are delayed.

5. Study Non-TxDOT Programs for Enhancements

Due to time limitations for this study, it was not possible to investigate non-TxDOT consultant programs. The research team strongly recommends that the examples cited in the SBE interviews, as well as others identified in a broad review, be investigated for features that could benefit TxDOT's consultant program and are permissible by the Texas Administrative Code.

Group 2- Requires Legislative or Policy Changes

6. Request Modifications to State Contracting Goals

Currently, the Texas State Comptroller sets rules determining state agency HUB sub-contracting goals. Revised rules regarding contracting goals could benefit SBEs. The HUB sub-contracting goal could be replaced with a HUB contracting goal, i.e., total dollars awarded to HUB firms. A HUB prime consultant should be allowed to self-satisfy a project's HUB requirements, as is the case for DBEs on federal contracts.

In addition to HUB goals, SBEs suggested that separate contracting goals for SBEs and women-owned businesses could be considered. The available data was insufficient to verify if this is an issue. In any case, TxDOT's Office of General Counsel would need to review this idea to see if it is compliant with state and federal law and with recent case law.

7. Provide More and Earlier Program Information

Teaming is an important issue for SBEs. TxDOT could consider posting a 2-year look-ahead of potential consultant work on its website, with progressively more detail in the 1-year and 6-month plans so that SBEs would be able to develop potential teams and proposals for projects. In interviews TxDOT Regional staff indicated that posting look-ahead information is feasible.

8. Consider Implementing a Policy on Consultant Access to TxDOT Staff

SBEs feel they are at a disadvantage in gaining access to TxDOT staff. TxDOT could consider implementing a uniform policy on meetings between TxDOT staff and consultants, including quarterly and pre-proposal meetings. Pre-proposal meetings would help SBEs to raise their profiles. TxDOT is addressing these concerns to some degree with the recently-implemented "pre-NOI meetings", which are advertised on the TxDOT website in advance of the actual NOIs. TxDOT has conducted some of these meetings via the internet to save attendees time and travel expenses.

9. QBS—Consider a Roster System of Pre-Qualified Firms

SBEs differ from TxDOT in their interpretation of the term 'Qualifications Based Selection', saying that TxDOT's selection process is "a ranking system" in which a few top firms always win, and well-qualified firms are runners-up. Currently, according to federal and state rules for a competitive negotiation/qualification based process, rankings are to be based only on capabilities and qualifications. TxDOT might consider a roster system with pre-qualified firms and a project-to-firm matrix matching process, perhaps along the lines of the system used for TxDOT indefinite deliverable contracts.

10. Improve Opportunities for SBEs when using Innovative Project Delivery Methods

As TxDOT increases its use of innovative project delivery methods for mega projects, SBEs are affected in two ways. First, due to the inclusion of federal funding, the Design-Build operation uses federal rules which stipulate a lower DBE percentage as compared to state HUB rules. Second, the Design-Builder can elect to meet the entire DBE percentage goals by contracting out non-engineering tasks. Since SBEs are largely DBEs, TxDOT could help them increase their

success rates by reviewing innovative contracts to foster SBE participation in engineering work on those contracts.

Group 3- Being Addressed by TxDOT with February 2013 Rules

11. Review Interview Format, Participation, and Debriefing

SBEs said they would have a better chance of winning contracts if interview questions were available in advance, and if the interviews are open to a representative from each sub-consultant in addition to the PM and task leaders. The latter provision would also give the SBEs who are subs the opportunity to learn the skills they will need to become a prime consultant. The February 2013 rules now allow sub-consultants to attend more than one interview.

SBEs said that TxDOT's debriefing of losing proposers should be completed as soon as possible after elimination. TxDOT could use this as a training opportunity. TxDOT has recently reconfigured the schedules to conduct debriefing as soon as possible. However, short-listed firms cannot be debriefed until after contract execution. In addition, TxDOT might consider publishing and maintaining a bank of interview questions and answers as a training tool for SBEs.

12. Review Administrative Qualification Requirements

In the interviews SBEs indicated they had difficulty with TxDOT's AQ requirements, notwithstanding the exemptions available for state-funded contracts (approximately 90% of TxDOT's program). The June 2011 rules exempted a number of service types, including bridge inspection, materials inspection and testing, geotechnical services, surveying and mapping, and architecture. Notably, these service types are commonly performed by SBEs. The February 2013 rules maintained these exemptions, while further providing a self-certification option for administrative qualification. Self-certification may provide a cost-savings value to SBEs. SBE response to this rule change should be monitored by TxDOT to gauge the benefits.

13. Monitor New Small Contract Process

In the interviews SBEs requested more opportunities to win as prime providers. The February 2013 rules established the Small Contract Process for single, specific deliverable contracts that are state-funded and $750,000 or less in total value. Compared to TxDOT's conventional process, the Small Contract Process is simplified. It has no short list phase, i.e. interviews are not conducted. Selections are based entirely on the firms' qualifications as stated in their LOIs. Thus, the time and cost of preparing for and participating in interviews is eliminated. Non-SBE firms are not excluded from the Small Contract Process; such restrictions are not permitted under the applicable laws and rules. In implementing the Small Contract Process, TxDOT should monitor the success of SBEs, particularly in the prime provider role.

7.4 Conclusion

This study examined reasons why small firms are not winning more TxDOT contracts as prime consultants. Generally, it was found that interviewees had outdated information on TxDOT's programs, and misperceptions regarding its rules and processes. Analysis of TxDOT contract data showed that, even though TxDOT funding for consultant contracts has shrunk significantly, SBEs have not been disproportionately impacted. In 2005-2012, HUBs primes won 13% of state-

funded TxDOT contract dollars, and HUB subs won another 19%. On federally funded TxDOT contracts, DBE primes won 6% of dollars and DBE subs won another 13%. During the course of the study (in February 2013), TxDOT issued some new rules regarding its program, and these were reviewed in Chapter 4.

Several findings and recommendations are presented in this report. One of the main objectives of the study was to identify measures that can be implemented to improve the success rate of small firms as prime consultants. As such, the recommendations seek to provide more opportunities and access for small firms.

References

1. HUB Disparity Study of State Contracting 2009. MGT of America, Inc. March 2010.

2. DBE/HUB Program Current Status Analysis Report, Phase 1. BWA Diversity Consulting Services. May 2011

3. Texas Administrative Code.

4. Texas Government Code.

5. Texas Transportation Code.

6. Brooks Act at 40 United States Code (USC) Chapter 11, Section 1101–1104 (Pub. L 107-217, Aug 21, 2002, 116 Stat. 1129) (and 23 CFR Section 172).

Appendix A: Consultant Questionnaire

This questionnaire was used by the research team to interview the consultants.

Objective: To identify barriers to Small Business Enterprises (SBE) being selected as Prime Consultants for TxDOT professional services contracts, with focus on TxDOT selection process.

Interviewee name, company, date:

Section 1: Company Statistics

In this section we collect basic facts about the firm. This will help establish their success (as Prime Consultant or Sub-consultant) in securing TxDOT engineering work compared to work from other entities. We also want to know how those entities differ from TxDOT.

1. Size of the firm
    a. How many employees
    b. How many licensed Professionals that are pre-certified for TxDOT work
    c. Approx. annual $ volume of total billings in last 3 years and in the 2 years previous to that
    d. Approx. annual $ volume of TxDOT work in last 3 years and in the 2 years previous to that
    e. Ownership ethnicity (optional)
2. Certified as
    a. Small Business Enterprise (SBE)
    b. Historically Underutilized Business (HUB) (what category)
    c. Disadvantaged Business Enterprise (DBE) (what category)
3. The top 3 work categories (e.g., Schematics, Bridge Layout and Design, Roadway Design, etc.) in which you have had success in the last 3 years, and the 2 years previous to that (Append TxDOT master list of work categories.)
4. Are you familiar with TxDOT's consultant program? What suggestions do you have for making it more accessible?
5. Has your firm submitted Letters of Interest (LOI) for TxDOT projects in the last 5 years? 10 years?
    a. As a Prime (Y/N) 5 10
    b. As a Sub (Y/N) 5 10
6. Has your firm "won" TxDOT projects in that period?
    a. As Prime (Y/N) 5 10
    b. As a Sub (Y/N) 5 10
7. Which Districts/Regions/Divisions have you worked with as Prime?
8. Which District's/Regions/Divisions projects have you worked on as Sub?
9. If you have been winning work as a Sub, why do you want to be a Prime? Discuss.
10. If you had success being a Prime after being a sub, what contributed to your success?
11. In general, do you think that being classified as a HUB, DBE or SBE hurts your ability to win work as a Prime? If so, give some details.

12. What is your view on **state rules** about not counting an HUB who is the Prime towards the HUB share of a project?
13. Which public entities other than TxDOT have your firm won work from **as a Prime** in the last 10 years?
    a. Cities
    b. Counties
    c. Metropolitan Planning Organizations
    d. Regional Mobility Authorities
    e. Transit (DART, Cap Metro, etc.)?
    f. Toll authorities (NTTA, HCTRA, CTRMA, etc.)
    g. Federal (e.g., Corps of Engineers)
14. Have you had success as a Prime with other clients (private or public)? Which ones?
15. If so, what is different about those clients' programs compared to TxDOT? Discuss each client separately.
    a. Rules—discuss
    b. Process, staff expertise, consultant database, etc.-discuss
    c. Outreach-discuss
    d. Other-discuss
16. Have you attended or are you aware of the following small business outreach programs on doing business with TxDOT:
    a. TxDOT Small Business Briefings and Specialized workshops and presentations, offered several times each year at various locations across the state.
    b. Learning Information Networking and Collaboration (LINC), a mentoring program for businesses interested in bidding and performing on TxDOT contracts?
    c. DBE Technical Assistance Program (TAP), which offers training and technical assistance to DBEs in a variety of business-related areas to complement and enhance their business skills?

Section 2: Experience with TxDOT's Selection Process

This section deals with the interviewee's experience with TxDOT's Qualifications Based Selection process. The questions assume that the firm has registered with TxDOT and is pre-certified in at least one major work group or one of the sub-categories in the work group.

Solicitation and Response Phase

17. How has any of the following TxDOT requirements affected or aided in your ability to propose for TxDOT work **as Sub or Prime**? What alternatives would you suggest?
    a. Prequalification rules/requirements
    b. Having an indirect cost rate audit versus accepting TxDOT's 1.45 multiplier
    c. Paperwork/other investment
    d. Specified software, e.g., MicroStation vs AutoCAD
    e. DBE/HUB/SBE requirements
    f. Payment schedule—discuss each of the above that is checked.
18. Types, sizes and frequency of contracts
    a. Do you prefer project-specific deliverable contracts or indefinite deliverables, and why?

b. What is the ideal project size ($, duration, no. of work categories) for you to be viable as Prime?
c. What percentage of a contract should be done by the Prime?
d. How does TxDOT's project size/work packaging affect your decision to respond to an Notice of Intent? Please give examples.
e. What annual volume of TxDOT NOIs for work in your specialties would make it worthwhile for you to go after TxDOT work?

Interview Phase

19. What is your view on TxDOT's consultant selection teams' experience and project knowledge?
20. Has the regionalization of consultant selection had an effect on your success? Please give examples.
21. Based on your experience, what steps can TxDOT take to improve the interview process and increase the chances of small firms being selected as Prime?

Post Interview Phase

22. If not shortlisted, have you attended a de-briefing session?
23. Does it help to identify what can be done better for the next time? Effective? Timely?
24. From the de-briefing sessions do you have any recommendations to improve the chances of SBE/HUB/DBE firms being short-listed more often?
    a. Improvement ideas for TxDOT?
    b. Improvement ideas for the SBEs?
25. Do you perceive any TxDOT bias in selecting consultants? Could you give examples/details/suggestions for improvements?
26. Overall, how would you characterize TxDOT's professional services procurement as compared to the procurement by other entities? Please give examples and suggestions for improvements.

Thank you for your participation in this research. A report will be submitted to TxDOT for review and evaluation of recommendations for change. We hope that your input will improve TxDOT's consultant selection process. Contact: kpersad@mail.utexas.edu

Appendix B: TxDOT Pre-Certification Work Categories

No.	Standard Work Category
1.1.1	Policy Planning
1.2.1	Systems Planning
1.3.1	Subarea/Corridor Planning
1.4.1	Land Planning/Engineering
1.5.1	Feasibility Studies
1.6.1	Major Investment Studies
2.1.1	Traffic Noise Analysis
2.2.1	Air Quality Analysis
2.3.1	Wetland Delineation
2.4.1	US Army Corp of Engrs Permits - Nationwide Permit
2.4.2	US Army Corp of Engrs Permits - § 404 Permit
2.4.3	US Coast Guard & US Army Corp of Engrs § 10 Permits
2.5.1	Water Pollution Abatement Plan
2.6.1	Protected Species Determination (Habitat)
2.6.2	Impact Evaluation Assessments
2.6.3	Biological Surveys
2.7.1	Sec. 4(F)/6(F) Evaluations
2.8.1	Surveys, Res. & Doc. Of Historic Build, Struct. & Objects
2.9.1	Historical Architecture
2.10.1	Archaelogical Surveys
2.11.1	Historical & Archival Research
2.12.1	Socio-Economic & Environmental Justice Analysis
2.13.1	Hazardous Materials Initial Site Assessment
2.14.1	Environmental Document Preparation
3.1.1	Route Studies & Schematic Design-Minor Rdwys
3.2.1	Route Studies & Schematic Design-Major Rdwys
3.3.1	Route Studies & Schematic Design-Complex Rdwys
3.4.1	Minor Bridge Layouts
3.5.1	Major Bridge Layouts
3.6.1	Multi-level interchange & Exotic Bridge Layouts
4.1.1	Minor Roadway Design
4.2.1	Major Roadway Design

No.	Standard Work Category
4.3.1	Complex Highway Design
4.4.1	Major Freeway Interchanges & Direct Connectors
5.1.1	Minor Bridge Design
5.2.1	Major Bridge Design
5.3.1	Multi-Level Interchange Design
5.4.1	Exotic Bridge Design
6.1.1	Routine Bridge Inspection
6.2.1	Complex Bridge Inspection
7.1.1	Traffic Engineering Studies
7.2.1	Highway - Rail Grade Crossing Studies
7.3.1	Traffic Signal Timing
7.4.1	Traffic Control Systems Analysis, Design & Implementaton
7.5.1	Intelligent Transportation System
8.1.1	Signing, Pavement Marking & Channelization
8.2.1	Illumination
8.3.1	Signalization
8.4.1	ITS Control Systems Analysis, Design & Implementation
8.5.1	Highway - Rail Grade Crossing
9.1.1	Bicycle & Pedestrian Facility Development
10.1.1	Hydrologic Studies
10.2.1	Basic Hydraulic Design
10.3.1	Complex Hydraulic Design
10.4.1	Pump Stations - Hydraulics
10.4.2	Pump Stations - Electrical
10.4.3	Pump Stations - Structures
10.5.1	Bridge Scour Evaluations & Analysis
11.1.1	Roadway Construction Management & Inspection
11.2.1	Major Bridge Construction Management & Inspection
12.1.1	Asphaltic Concrete
12.1.2	Portland Cement Concrete
12.2.1	Plant Inspection and Testing
14.1.1	Soil Exploration
14.2.1	Geotechnical Testing
14.3.1	Transportation Foundation Studies

No.	Standard Work Category
14.4.1	Building Foundation Studies
15.1.1	Survey
15.1.2	Parcel Plats
15.1.3	Legal Descriptions
15.1.4	Right of Way Maps
15.2.1	Design & Construction Survey
15.3.1	Aerial Mapping
15.4.1	Horizontal & Vertical Control for Aerial Mapping
15.5.1	State Land Surveying
16.1.1	Architecture (Buildings)
18.1.1	Value Engineering
18.2.1	Subsurface Utility Engineering

Appendix C: Pre-Certification Data

The pie charts in this appendix are based on the pre-certification data from TxDOT's Consultant Contracts Information System (CCIS). The 16 broad work groups defined by TxDOT break into 78 work categories under which an individual professional can be pre-certified. Each pie chart represents the total number of professionals pre-certified in any of the work categories included in that group and the fractional distribution of these professionals by the HUB ownership ethnicity of their employing firm. The "blank" category represents non-HUB firms and total number of professionals employed by them with pre-certification in any of the work categories covered by that work group. (Note: the list of 16 work groups runs from 1 to 18, with no entry for 13 or 17.)

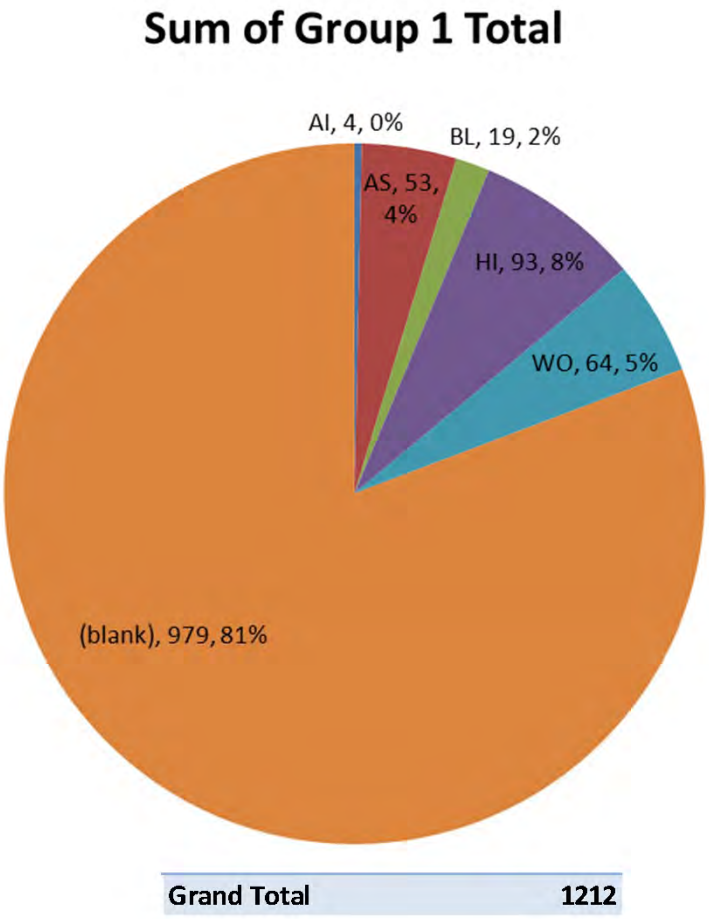


Figure C.1: Group 1 – Transportation Systems Planning

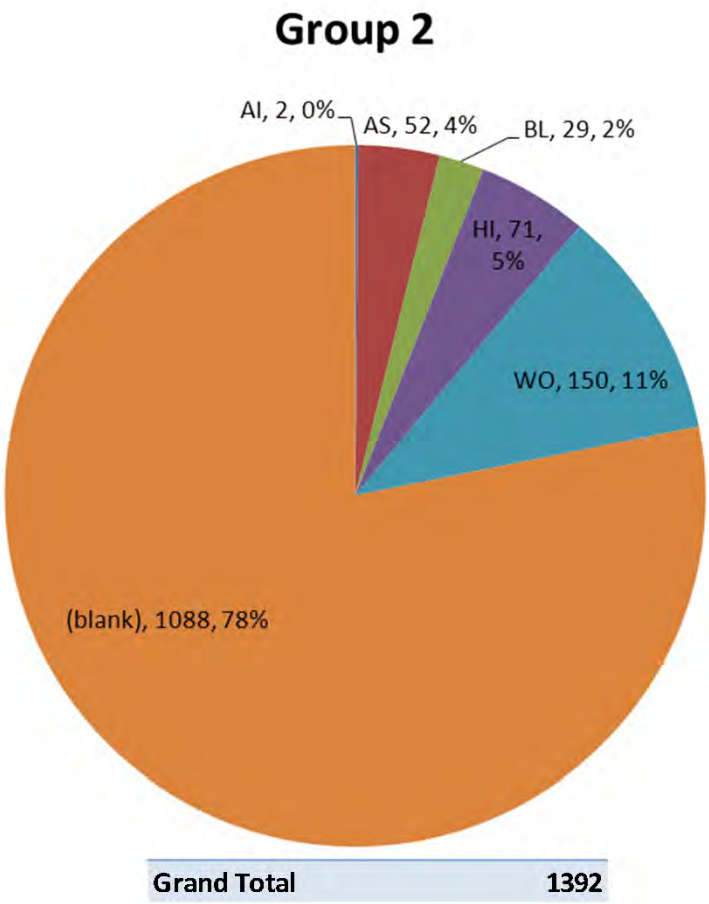


Figure C.2: Group 2 – Environmental Studies

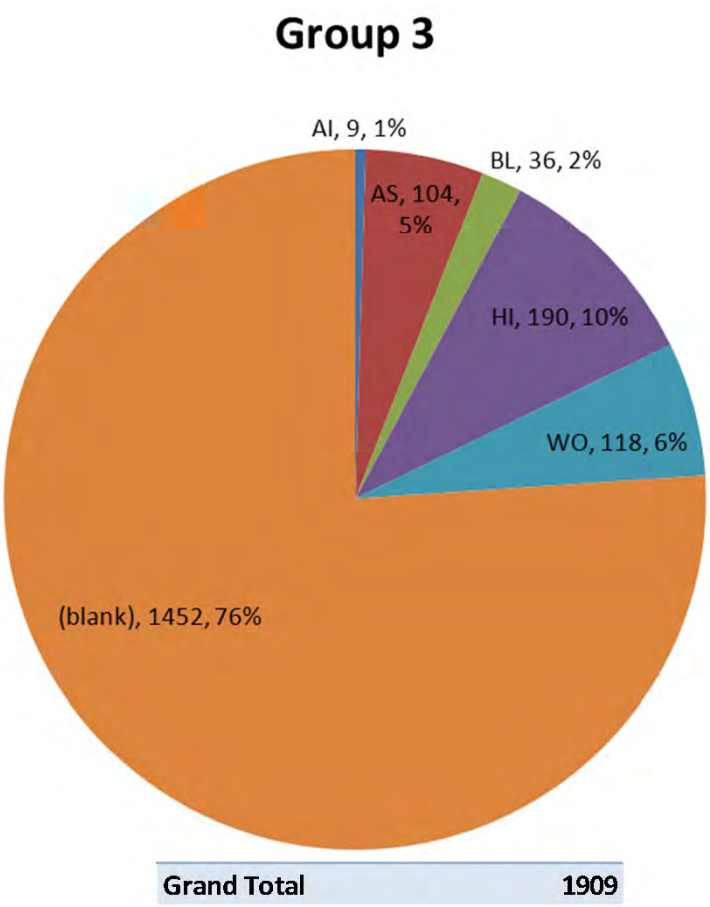


Figure C.3: Group 3 – Schematic Development

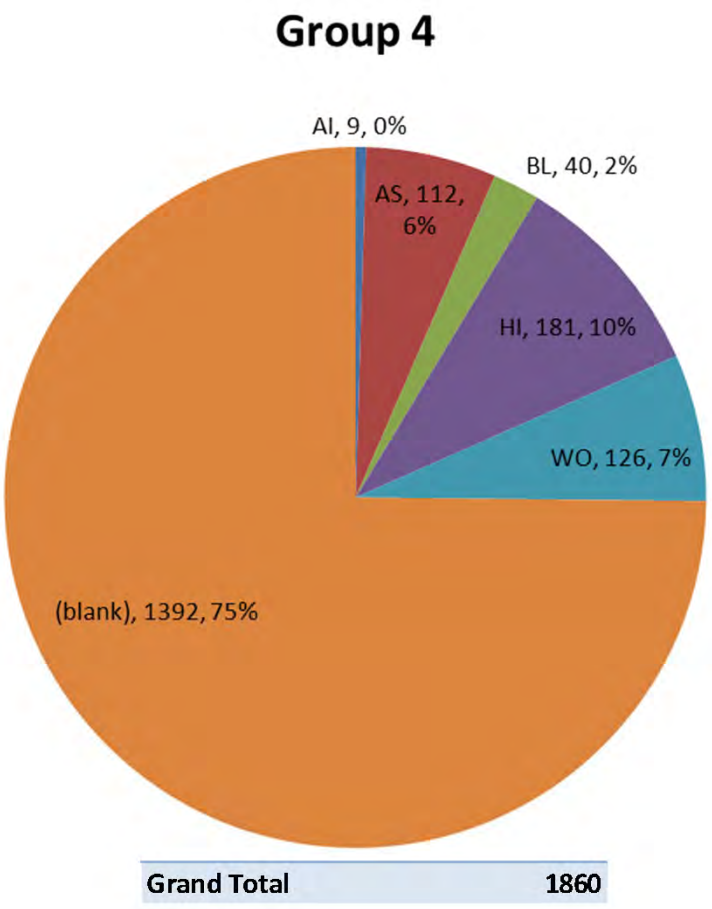


Figure C.4: Group 4 – Roadway Design

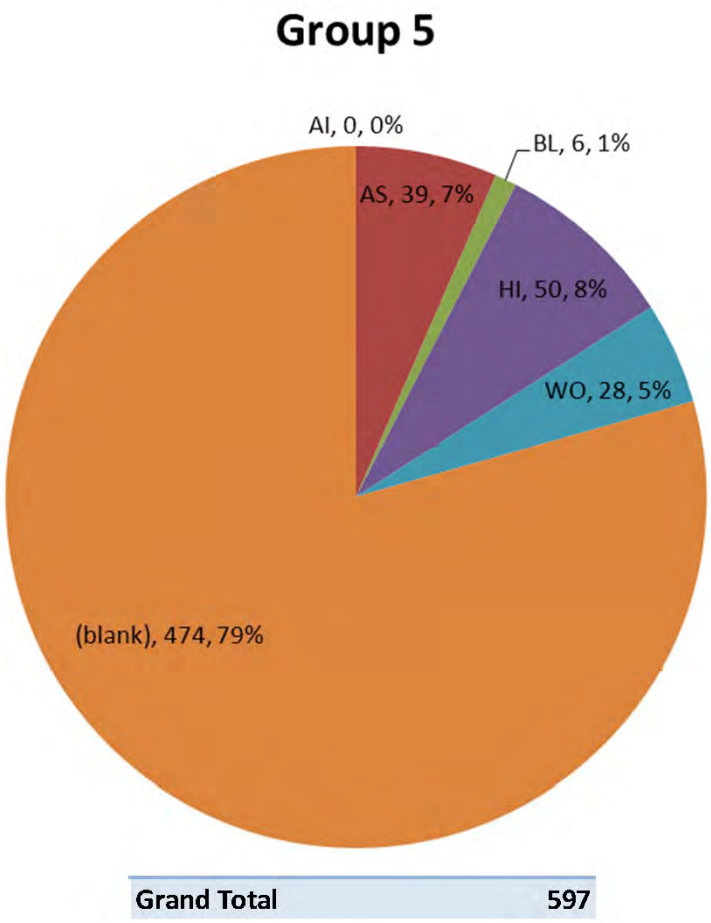


Figure C.5: Group 5 – Bridge Design

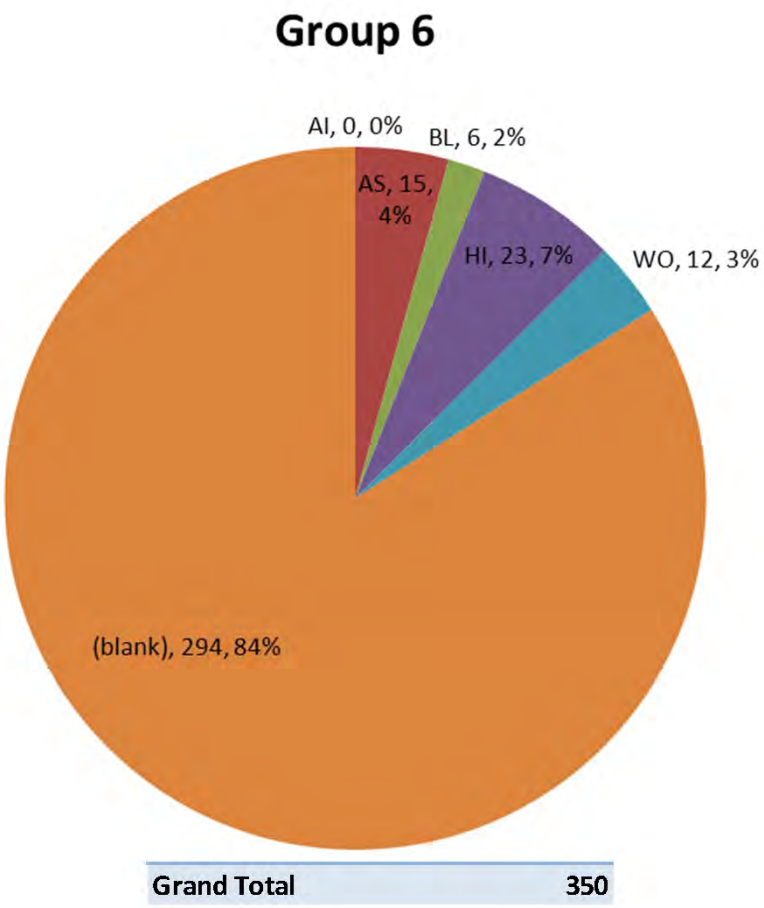


Figure C.6: Group 6 – Bridge Inspection

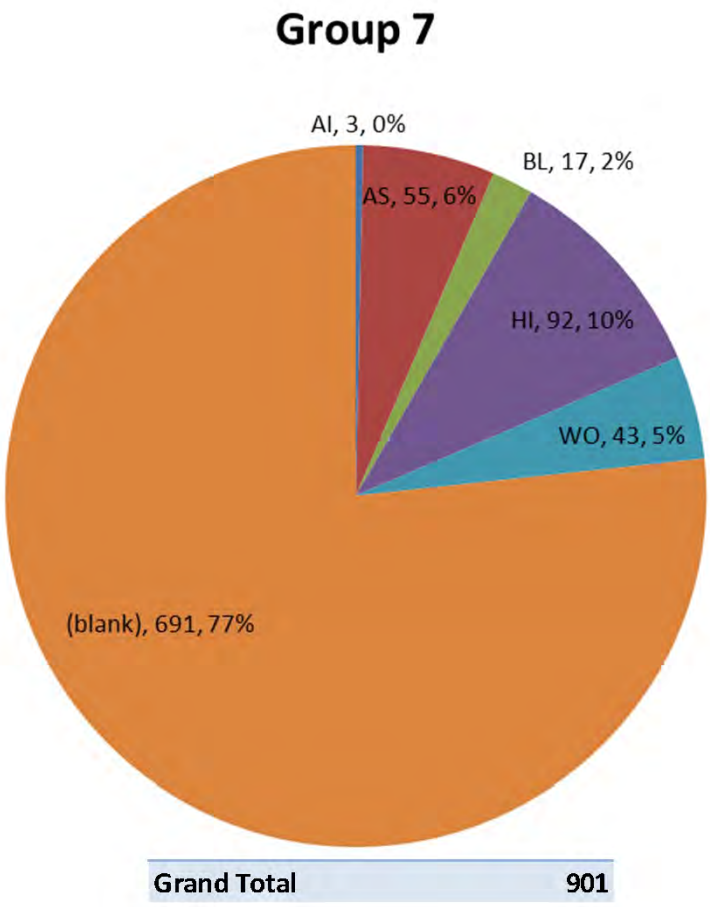


Figure C.7: Traffic Engineering and Operations Studies

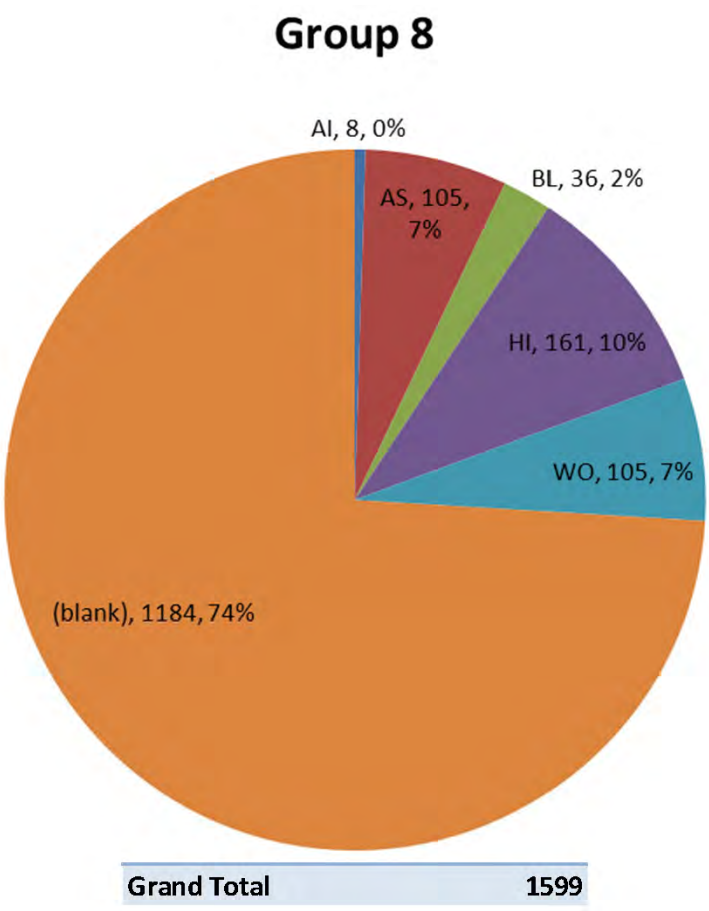


Figure C.8: Group 8 – Traffic Operations Design

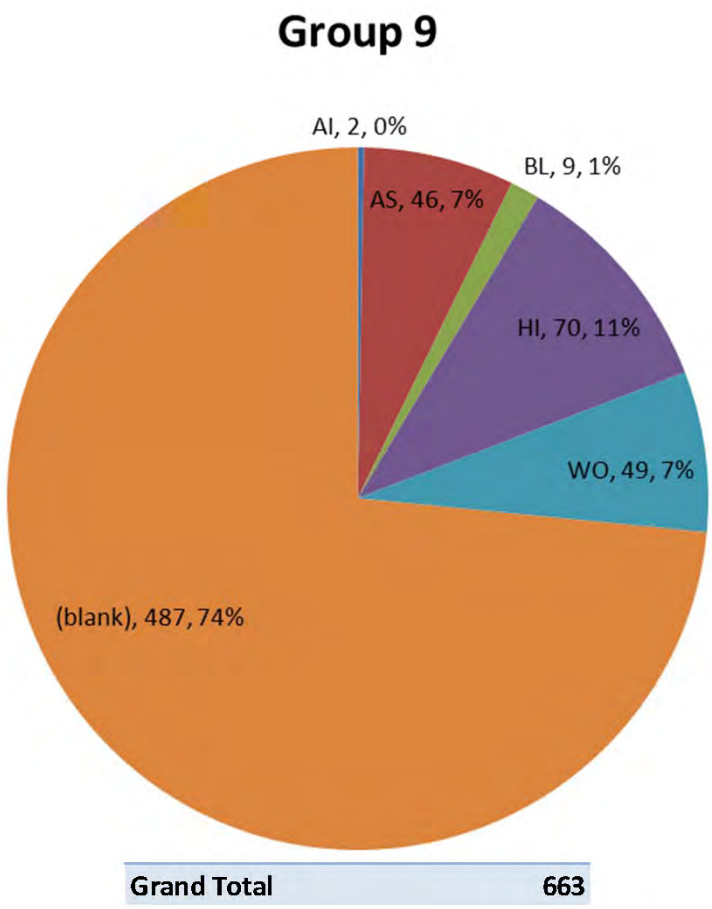


Figure C.9: Group 9 – Bicycle and Pedestrian Facilities

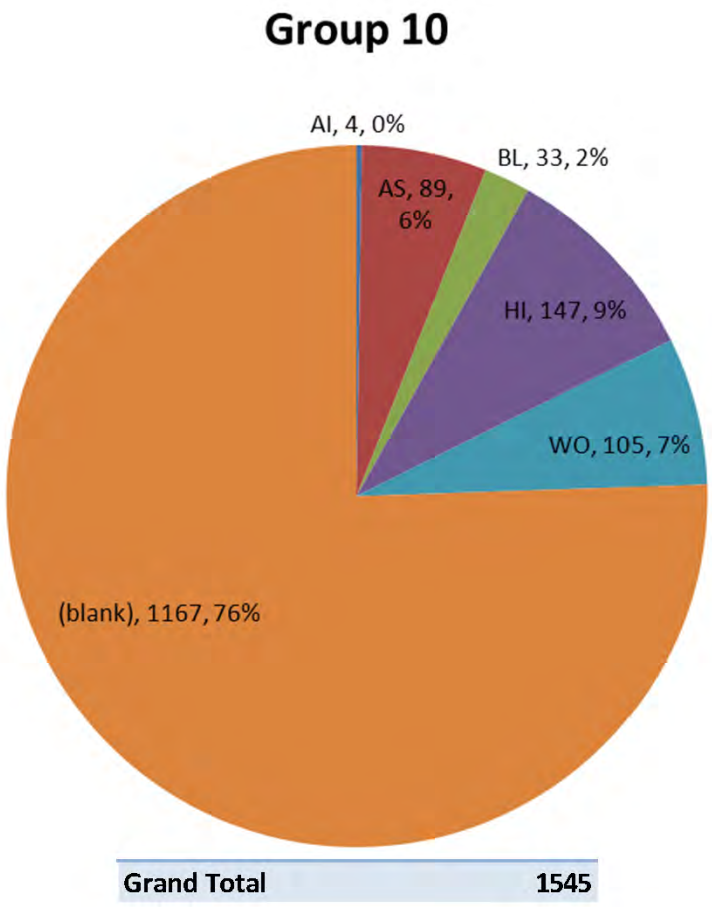


Figure C.10: Group 10 – Hydraulic Design and Analysis

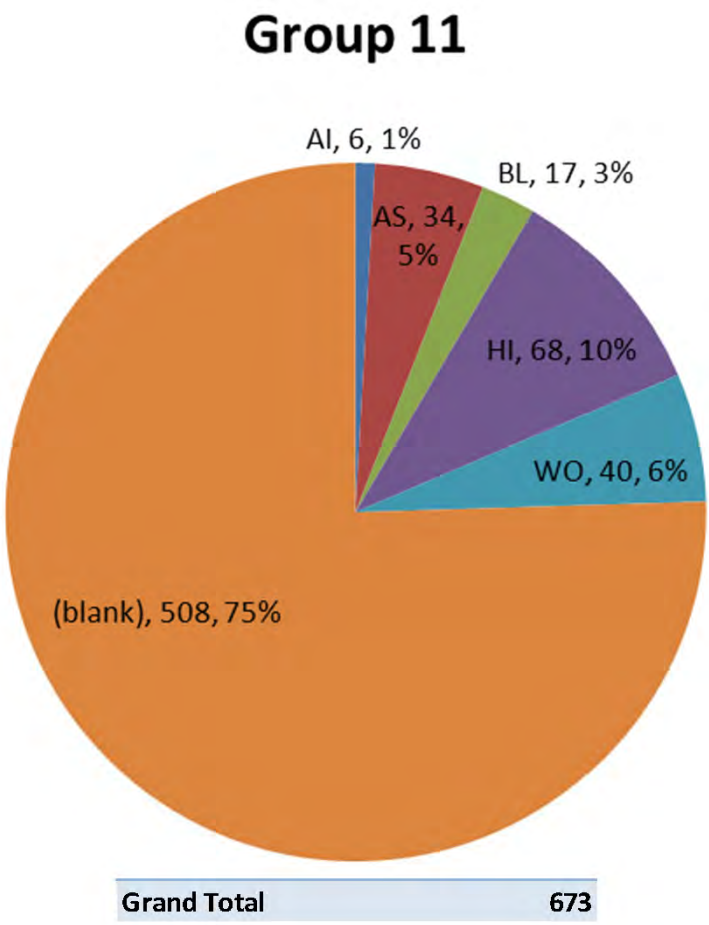


Figure C.11: Group 11 – Construction Management

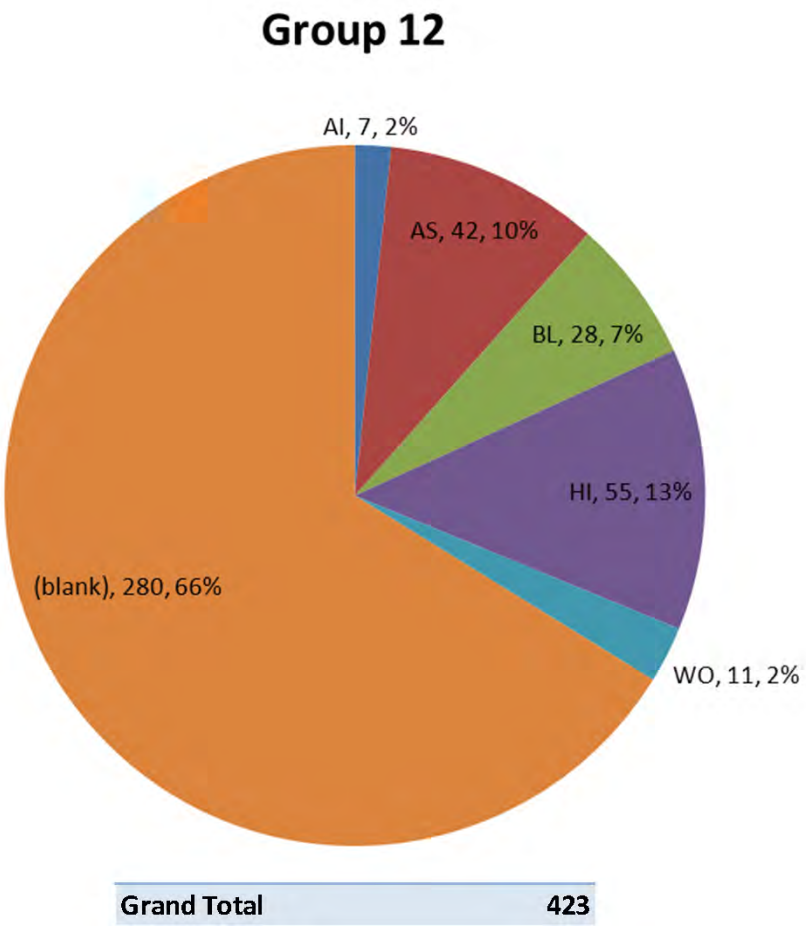


Figure C.12: Group 12 – Materials Inspection and Testing

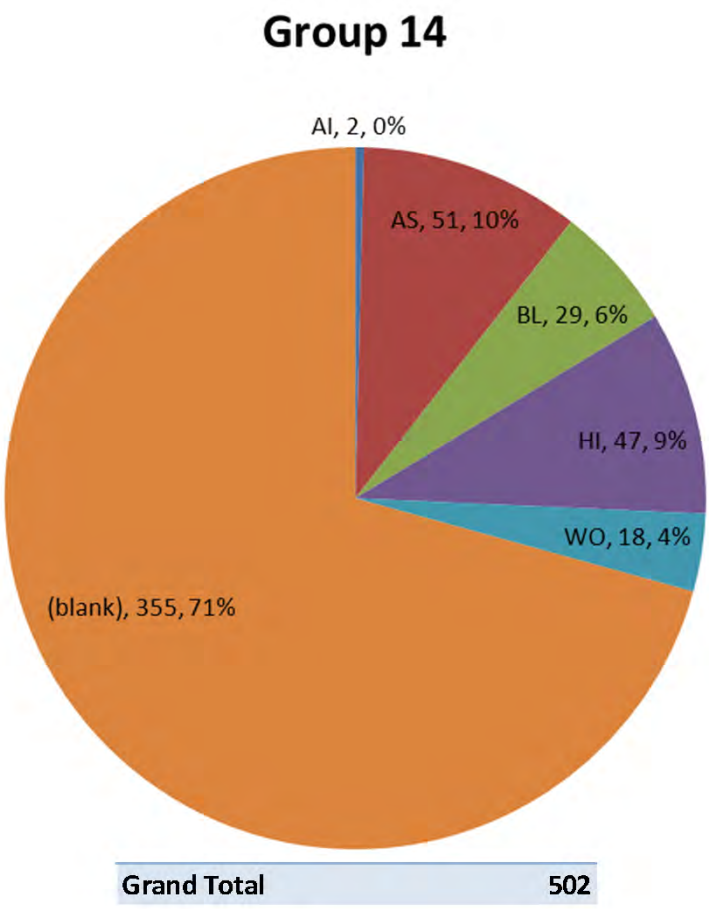


Figure C.13: Group 14 – Geotechnical Services

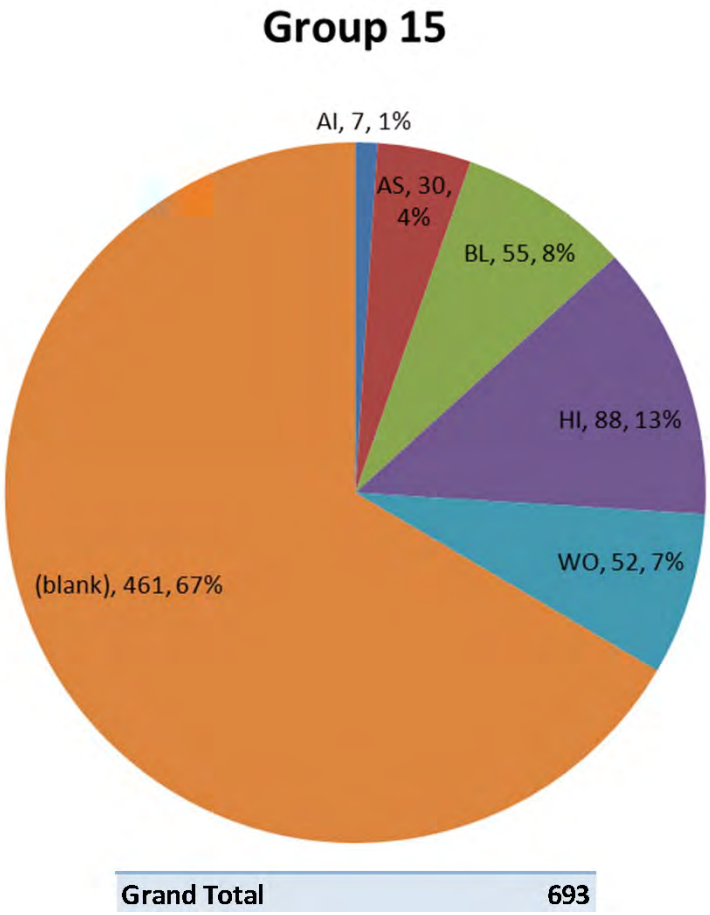


Figure C.14: Group 15 – Surveying and Mapping

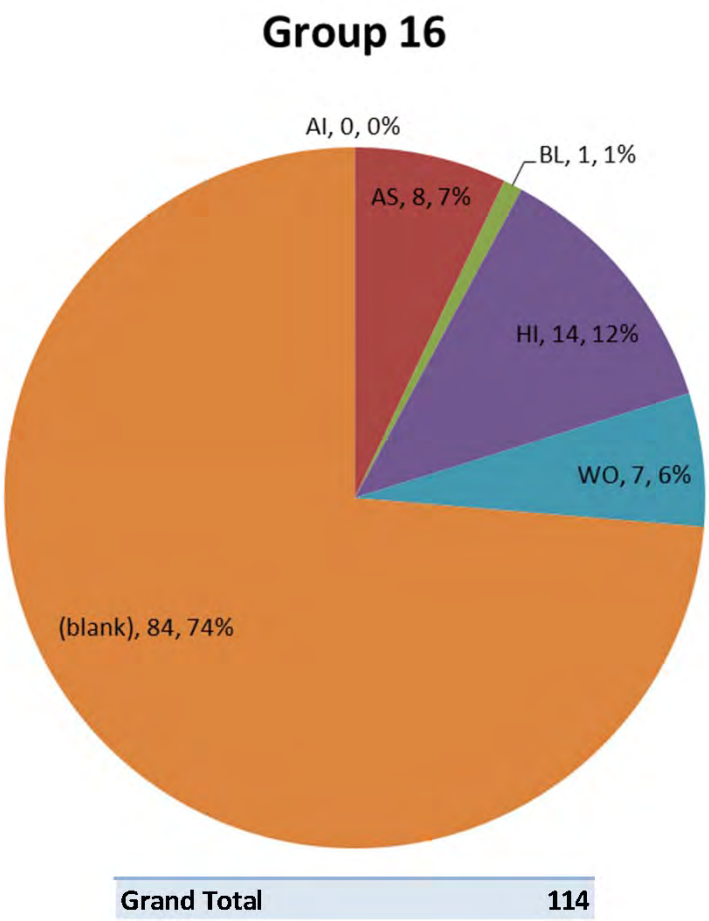


Figure C.15: Group 16 – Architecture

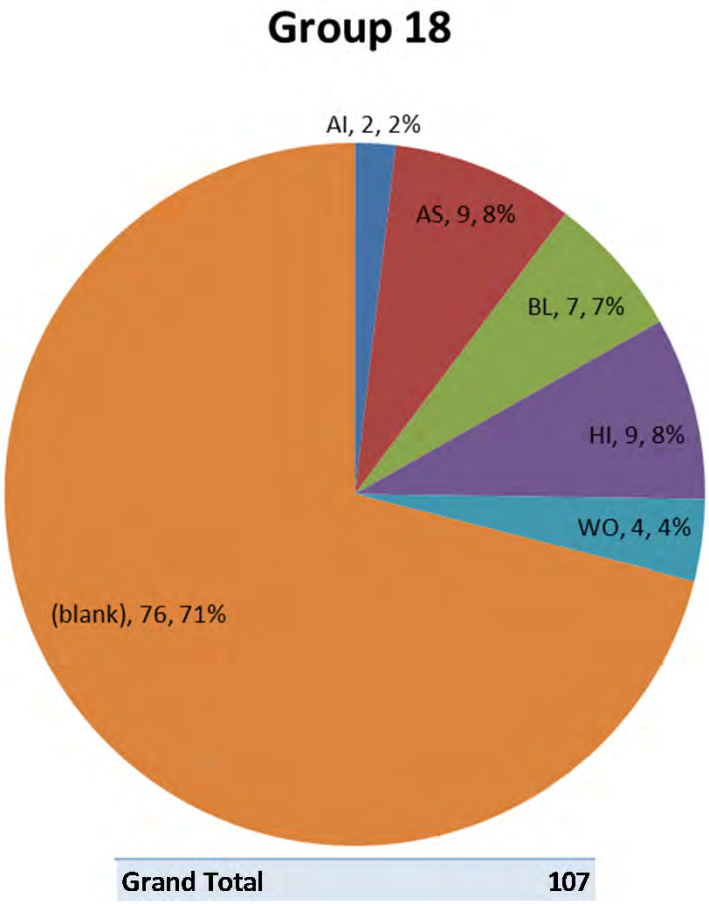


Figure C.16: Group 18 – Miscellaneous

Appendix D: Detailed Pre-Certification Data

The charts shown in this appendix are based on the pre-certification data from TxDOT's Consultant Contracts Information System (CCIS). There are sixteen (16) broad groups of work categories defined by TxDOT to group the seventy eight (78) work categories under which an individual professional can be pre-certified. Each chart in this appendix represents the total number of professionals pre-certified in any of the work categories included in that group and the fractional distribution of these professionals by the HUB ownership ethnicity of their employing firm. The "blank" category represents non-HUB firms and total number of professionals employed by them with pre-certification in any of the work categories covered by that work group.

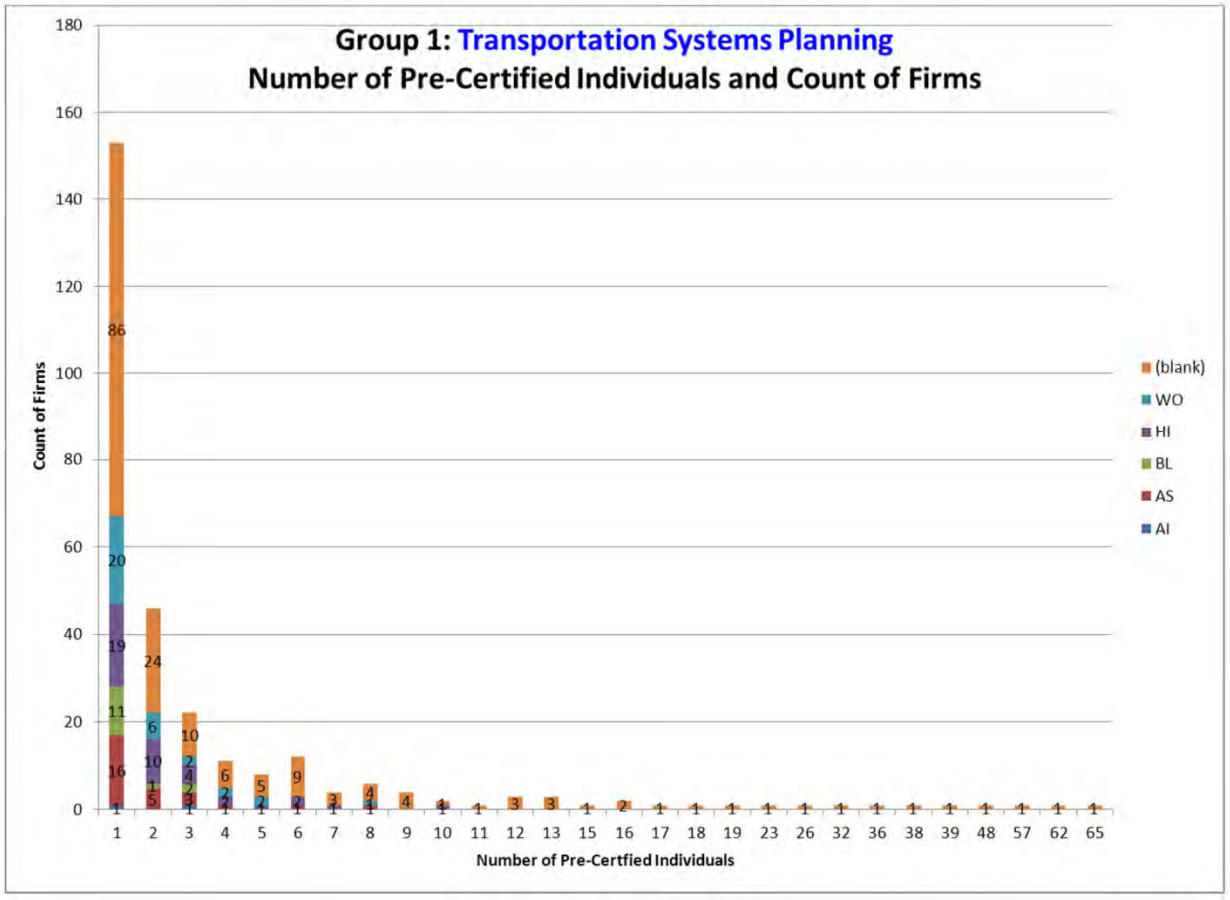


Figure D.1: Group 1 – Transportation Systems Planning, Number of Pre-Certified Individuals and Count of Firms

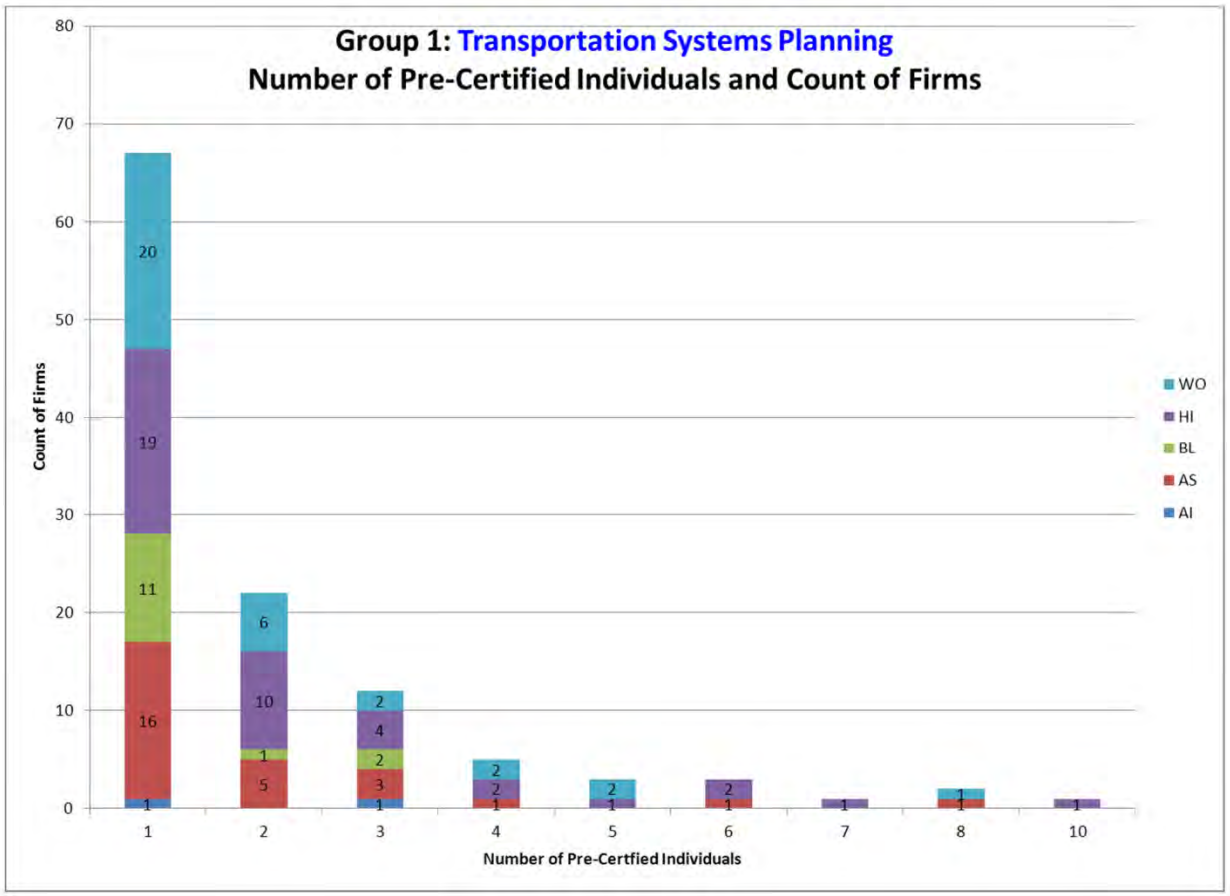


Figure D.2: Group 1 – Transportation Systems Planning, Number of Pre-Certified Individuals and Count of Firms

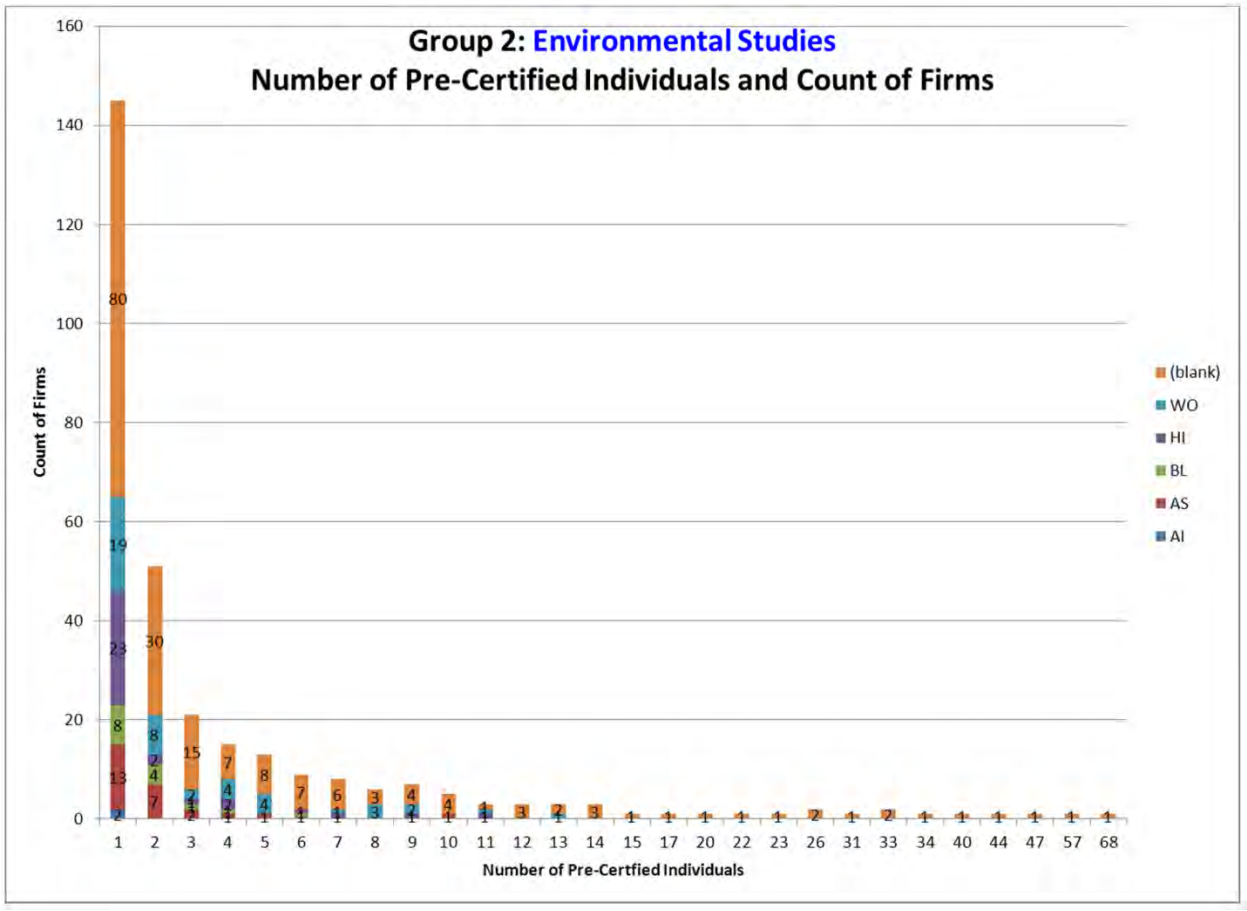


Figure D.3: Group 2 – Environmental Studies, Number of Pre-Certified Individuals and Count of Firms

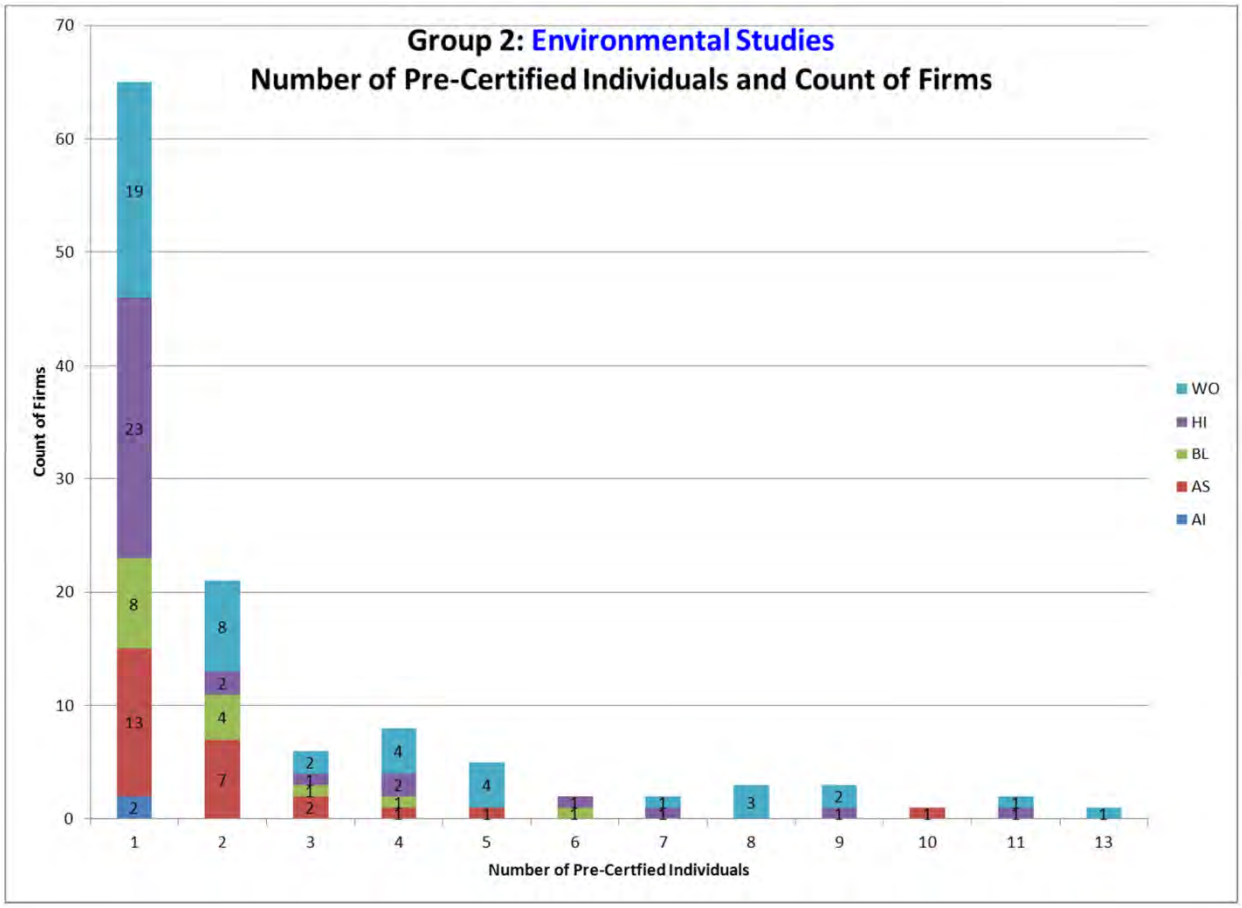


Figure D.4: Group 2 – Environmental Studies, Number of Pre-Certified Individuals and Count of Firms

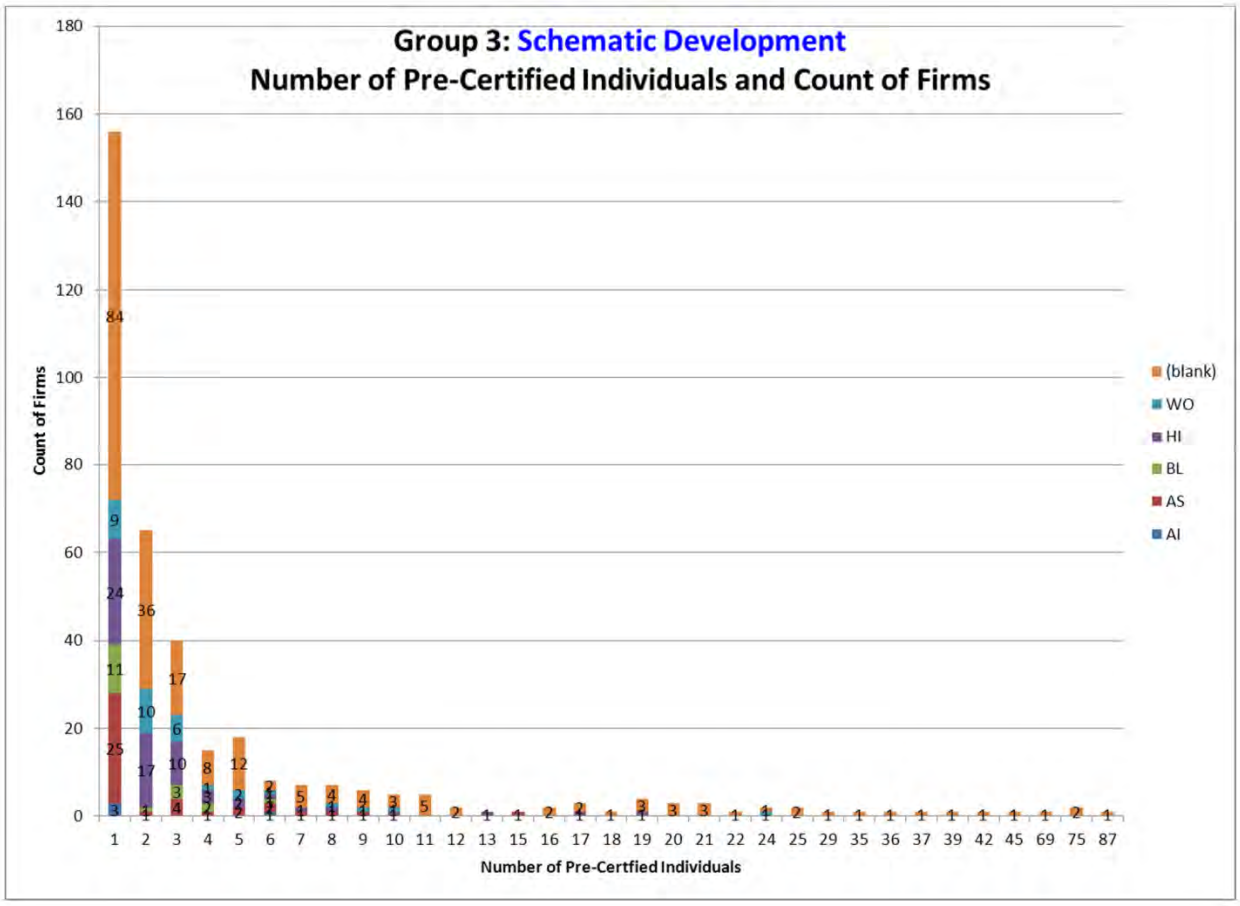


Figure D.5: Group 3 – Schematic Development, Number of Pre-Certified Individuals and Count of Firms

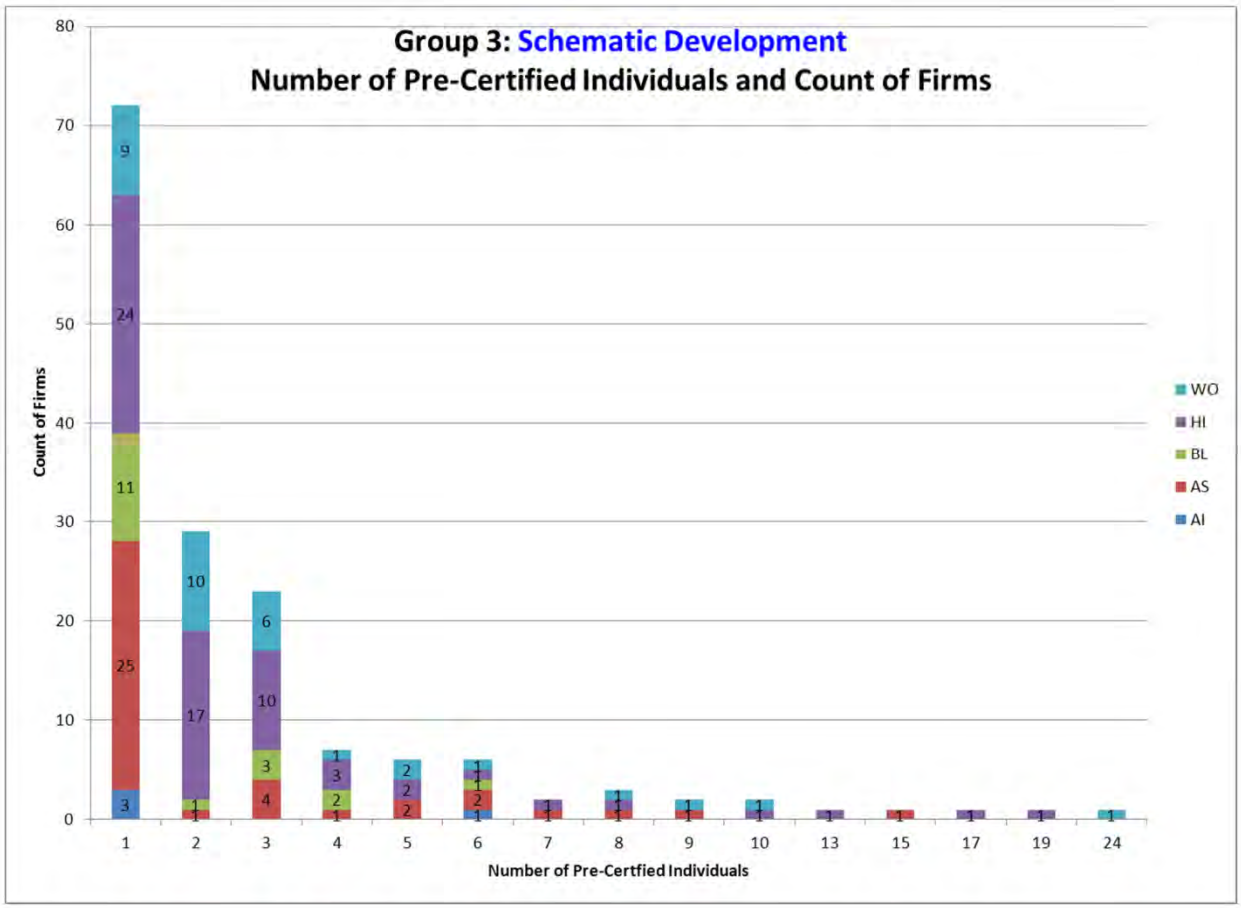


Figure D.6: Group 3 – Schematic Development, Number of Pre-Certified Individuals and Count of Firms

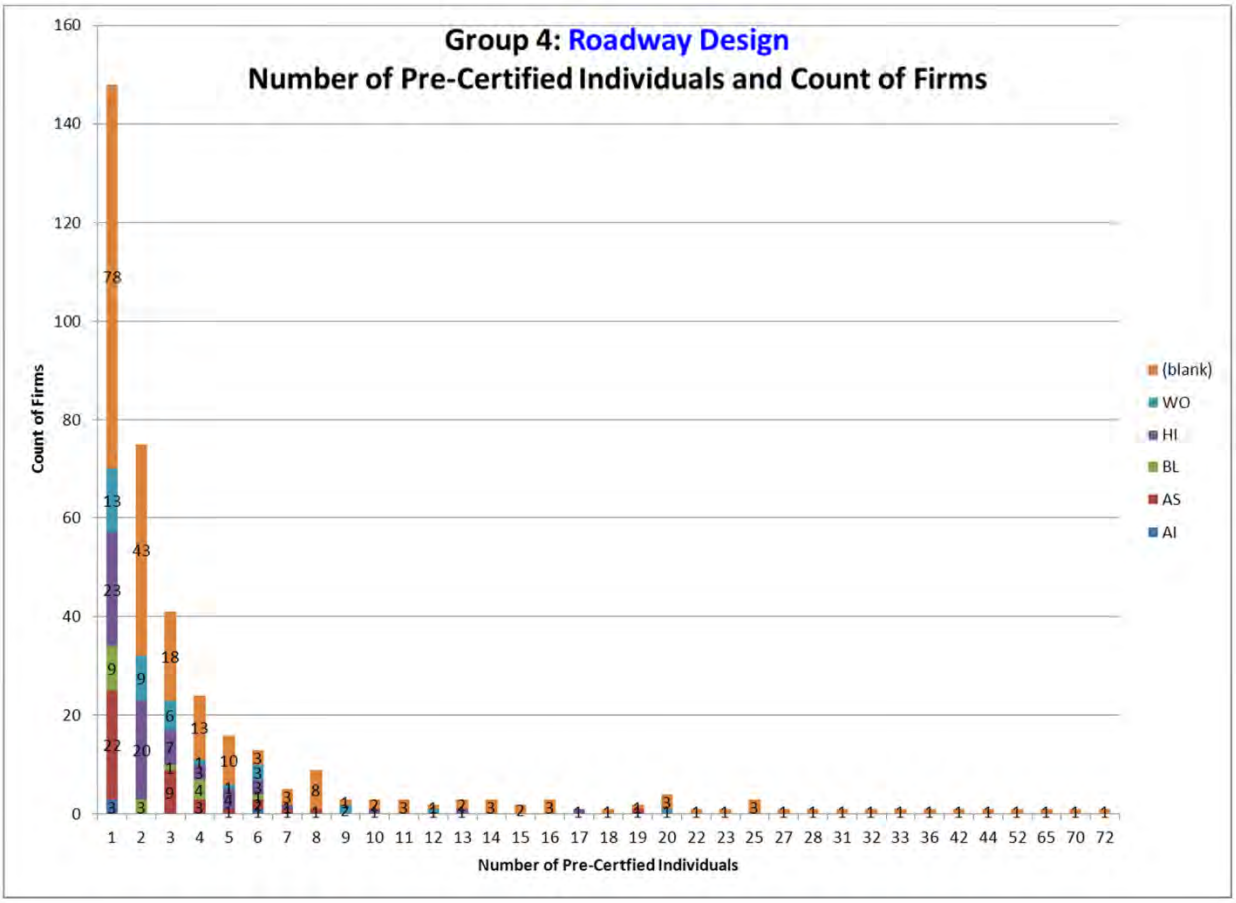


Figure D.7: Group 4 – Roadway Design, Number of Pre-Certified Individuals and Count of Firms

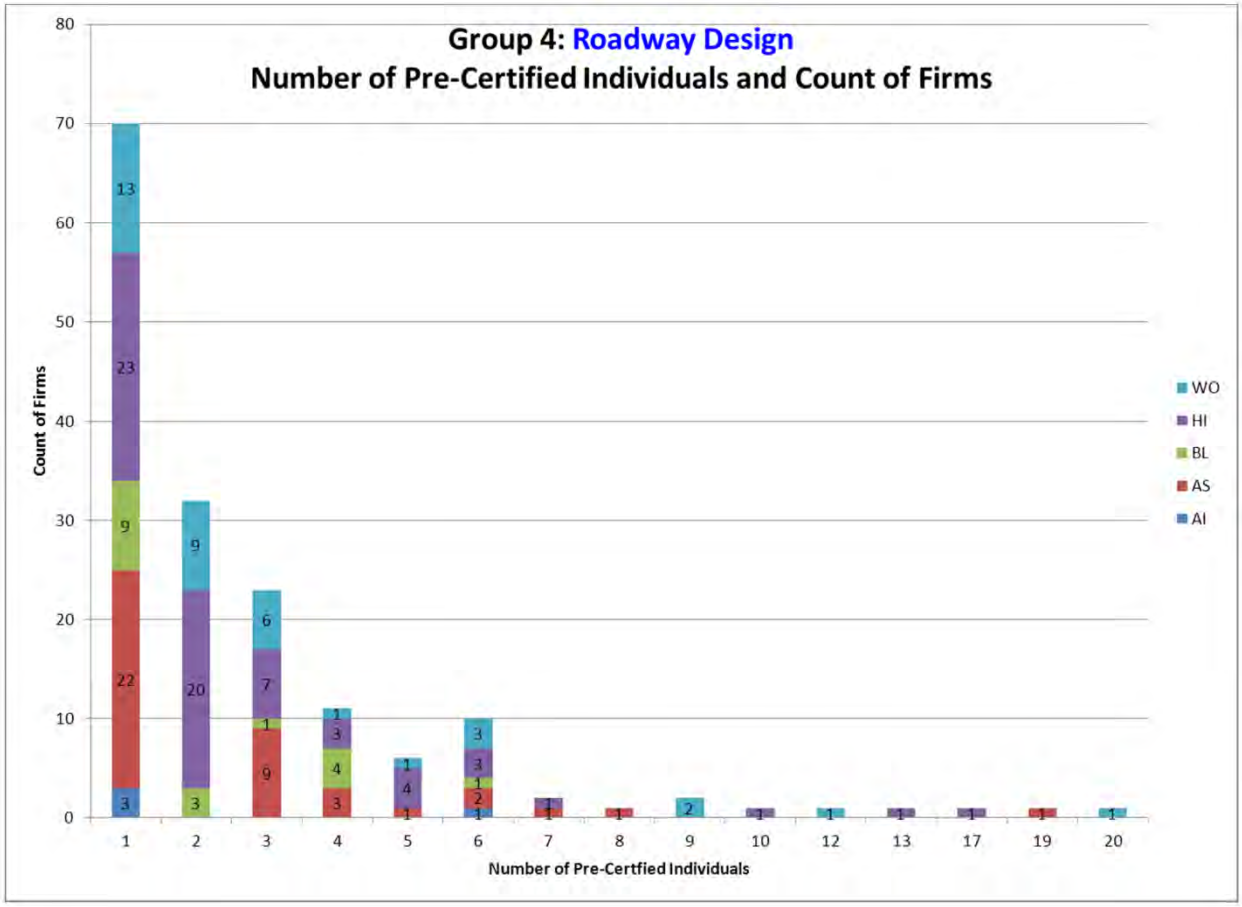


Figure D.8: Group 4 – Roadway Design, Number of Pre-Certified Individuals and Count of Firms

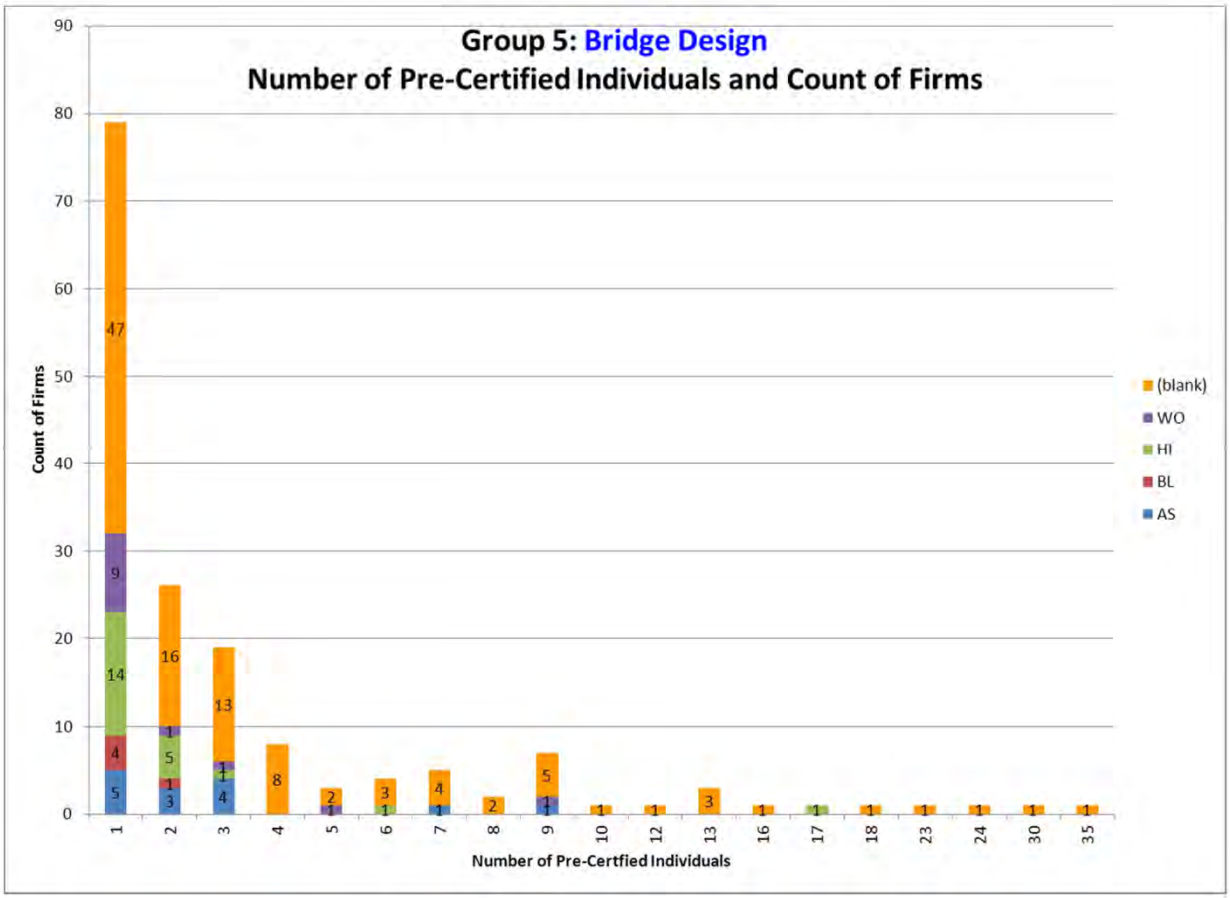


Figure D.9: Group 5 – Bridge Design, Number of Pre-Certified Individuals and Count of Firms

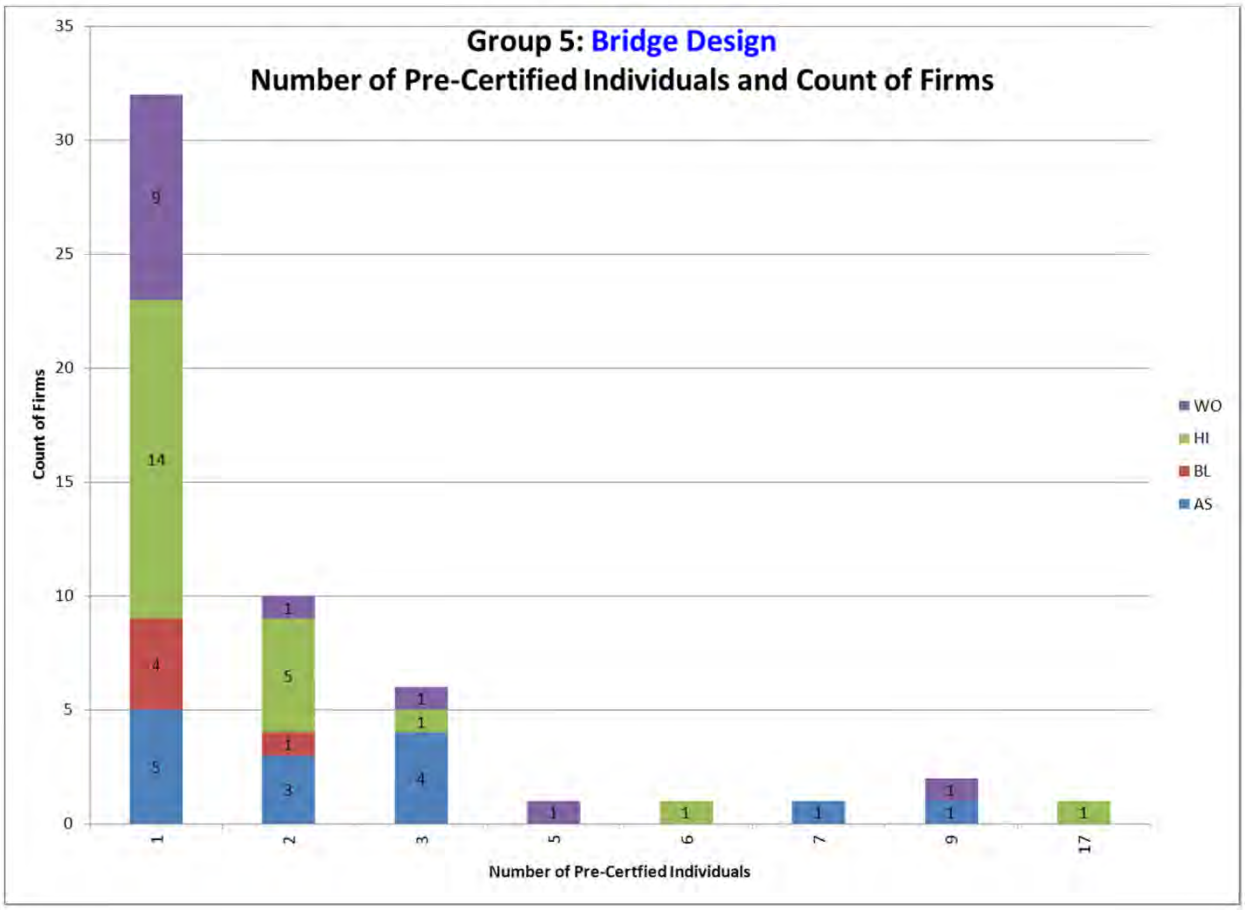


Figure D.10: Group 5 – Bridge Design, Number of Pre-Certified Individuals and Count of Firms

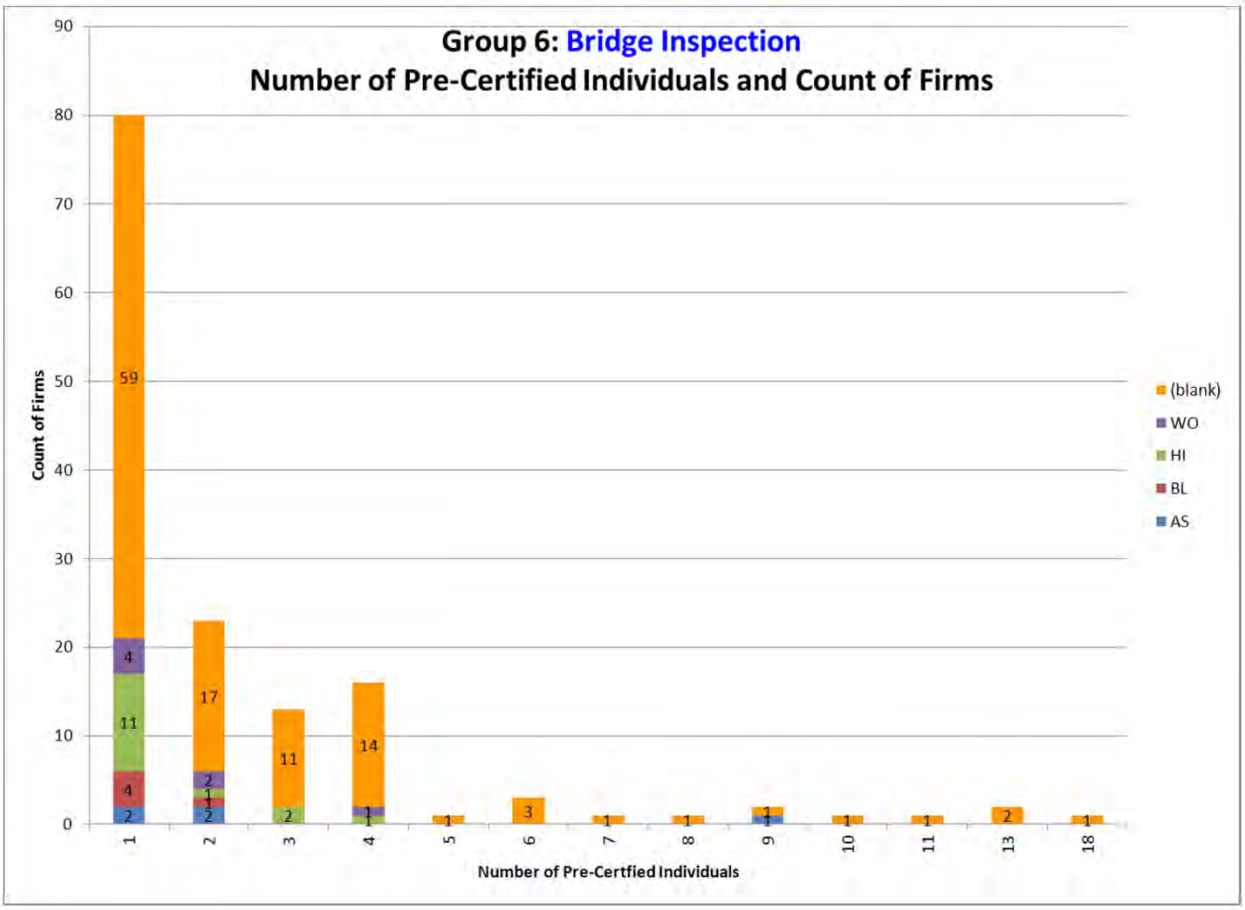


Figure D.11: Group 6 – Bridge Inspection, Number of Pre-Certified Individuals and Count of Firms

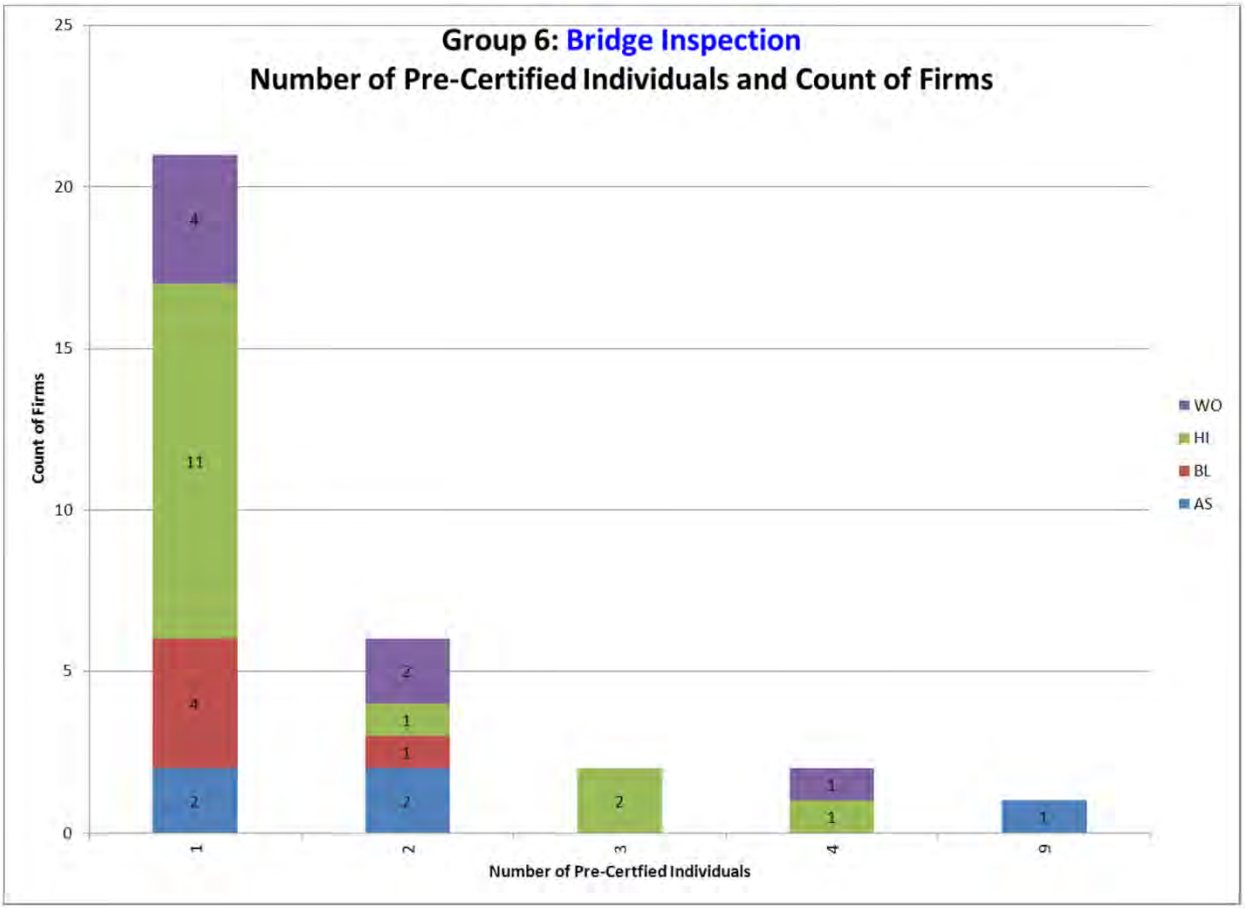


Figure D.12: Group 6 – Bridge Inspection, Number of Pre-Certified Individuals and Count of Firms

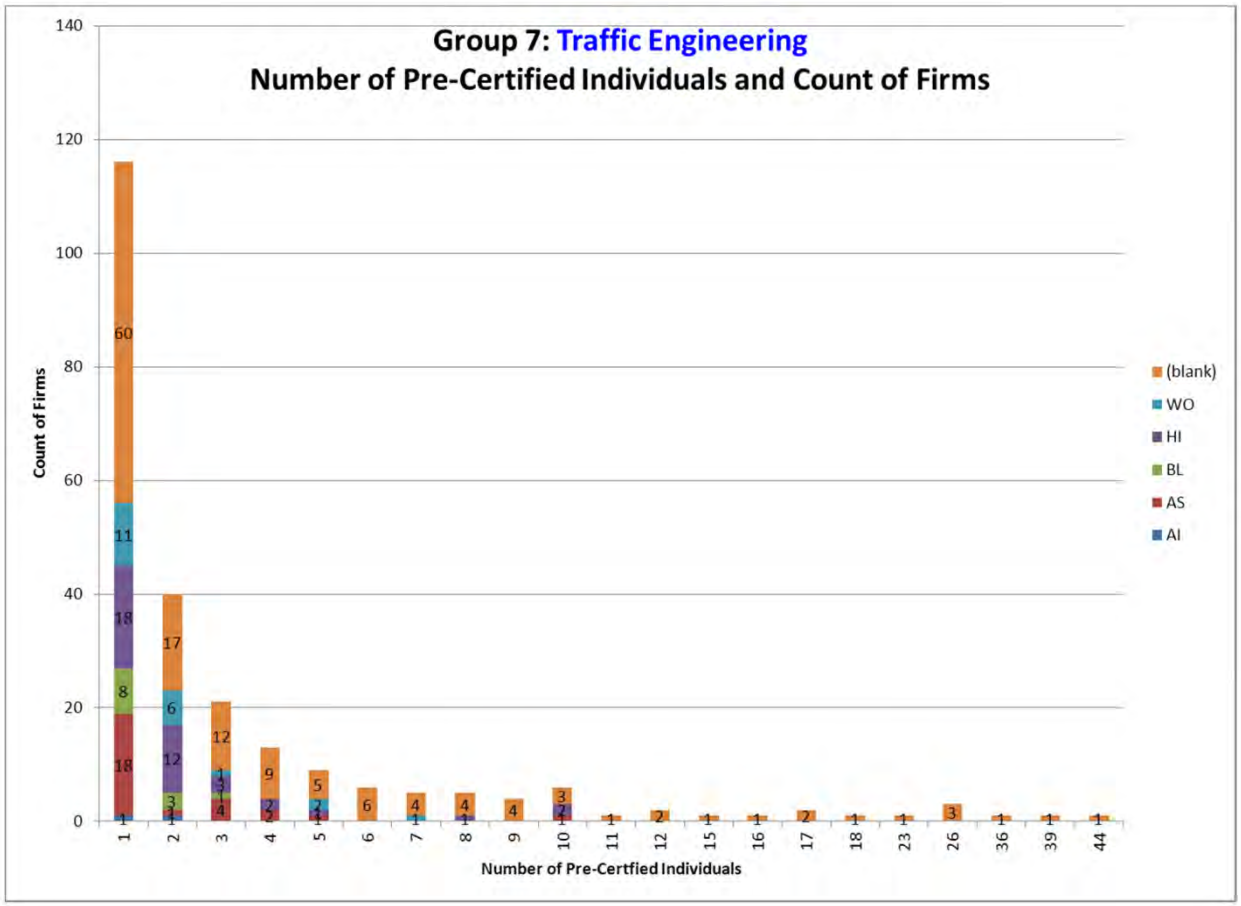


Figure D.13: Group 7 – Traffic Engineering, Number of Pre-Certified Individuals and Count of Firms

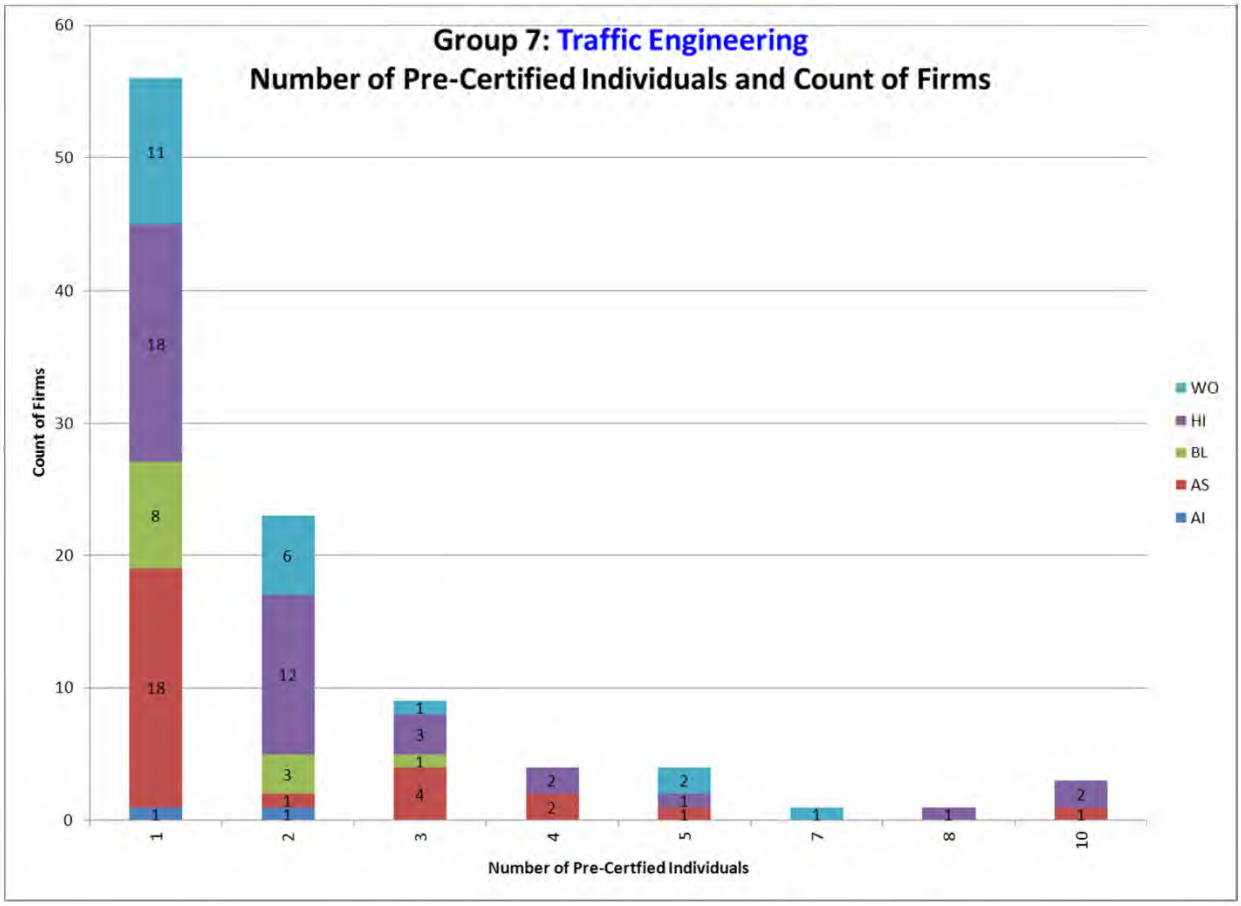


Figure D.14: Group 7 – Traffic Engineering, Number of Pre-Certified Individuals and Count of Firms

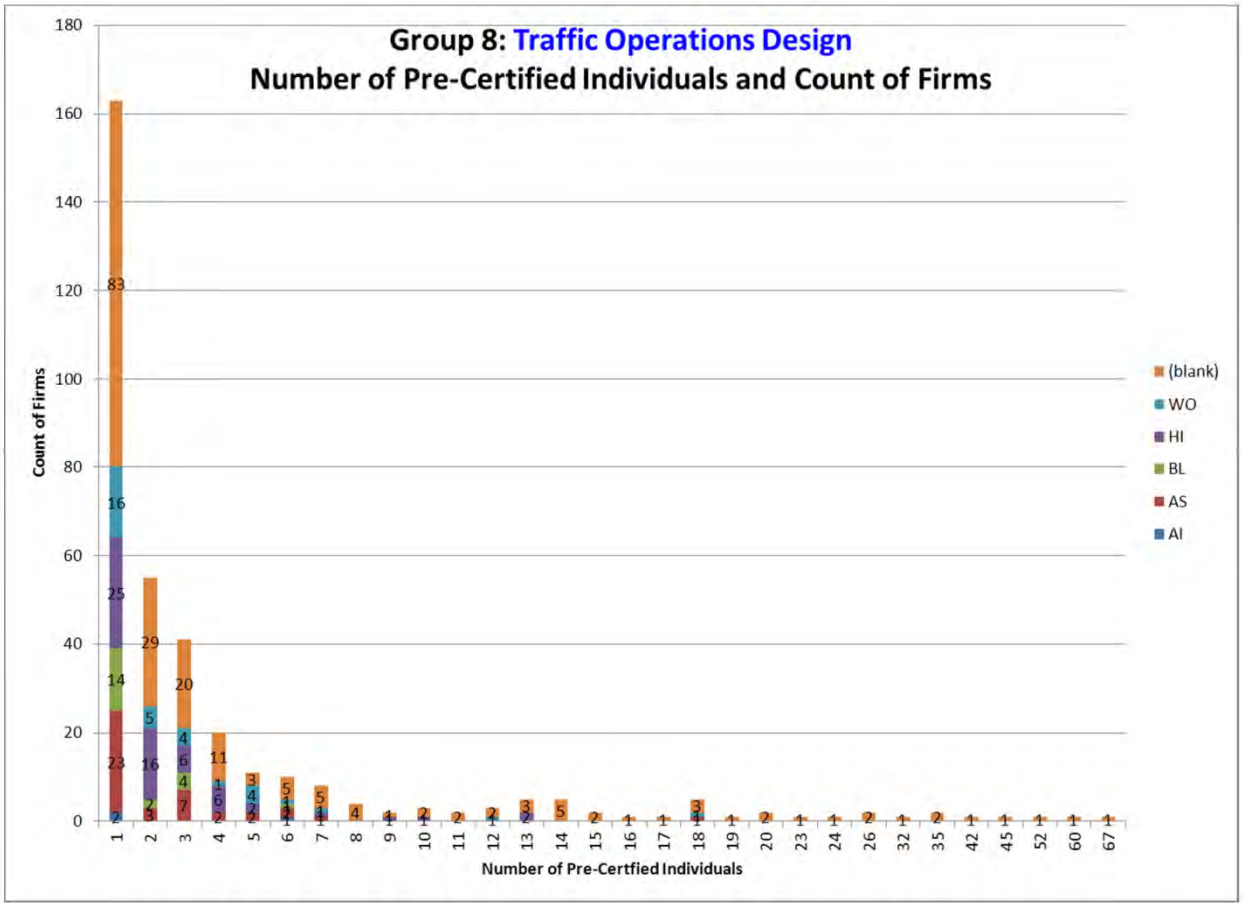


Figure D.15: Group 8 – Traffic Operations Design, Number of Pre-Certified Individuals and Count of Firms

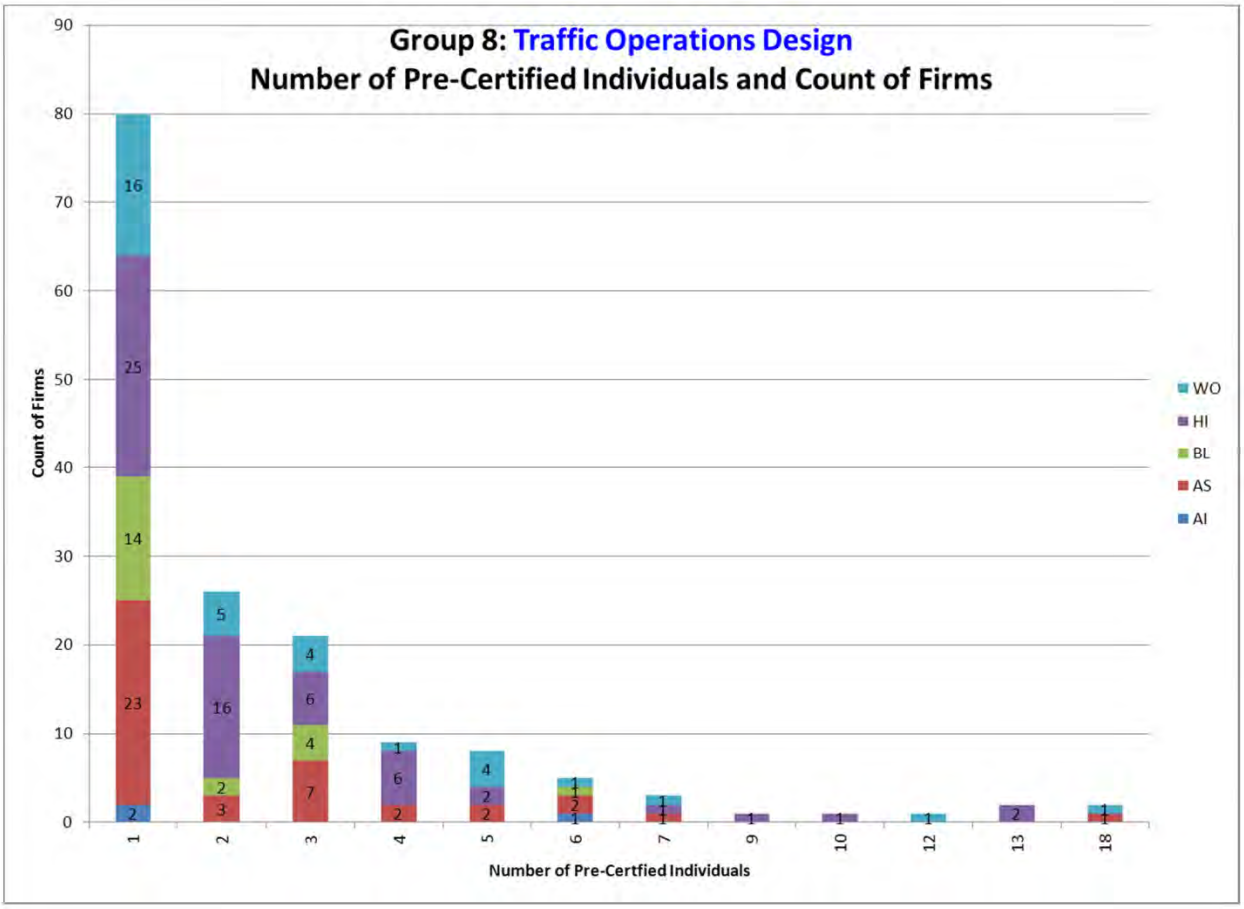


Figure D.16: Group 8 – Traffic Operations Design, Number of Pre-Certified Individuals and Count of Firms

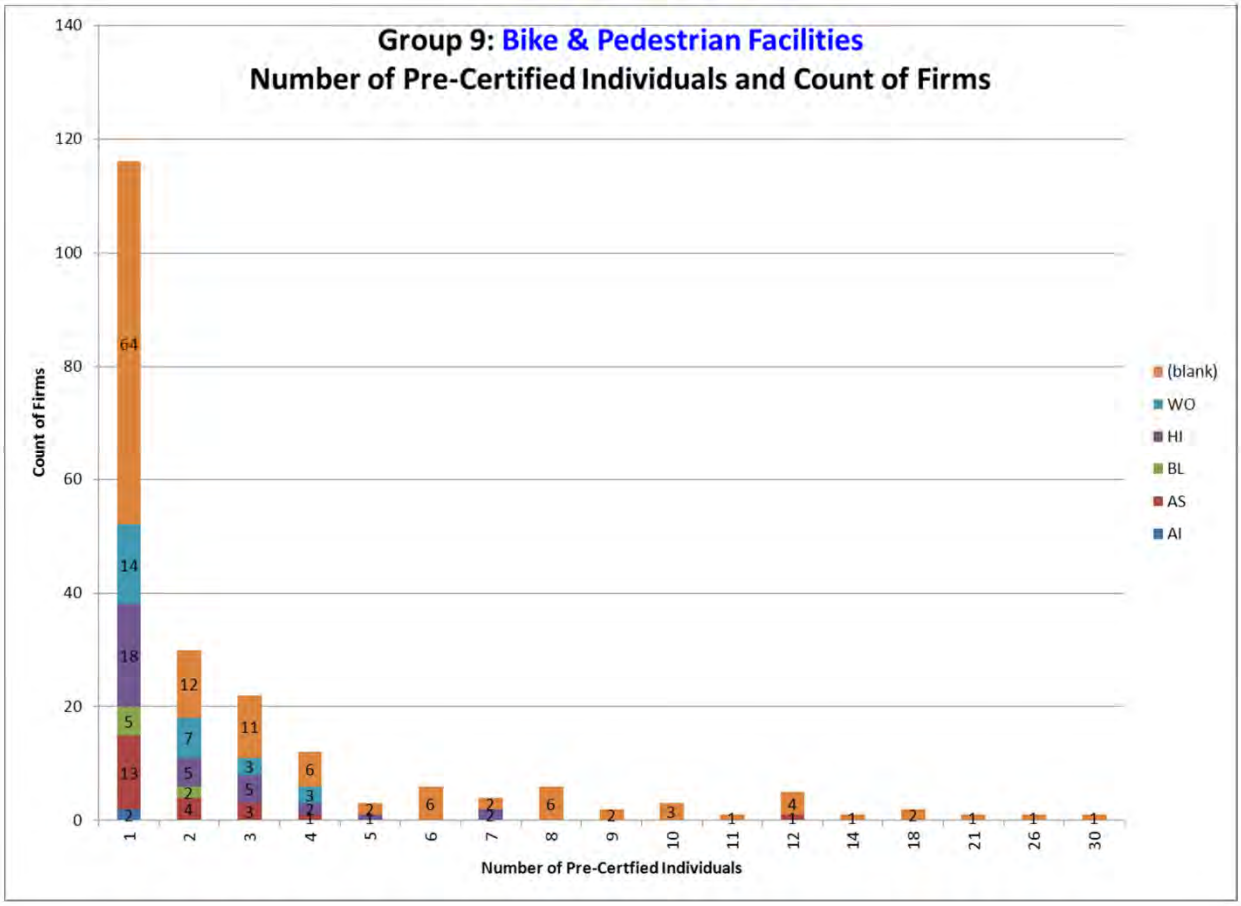


Figure D.17: Group 9 – Bike & Pedestrian Facilities, Number of Pre-Certified Individuals and Count of Firms

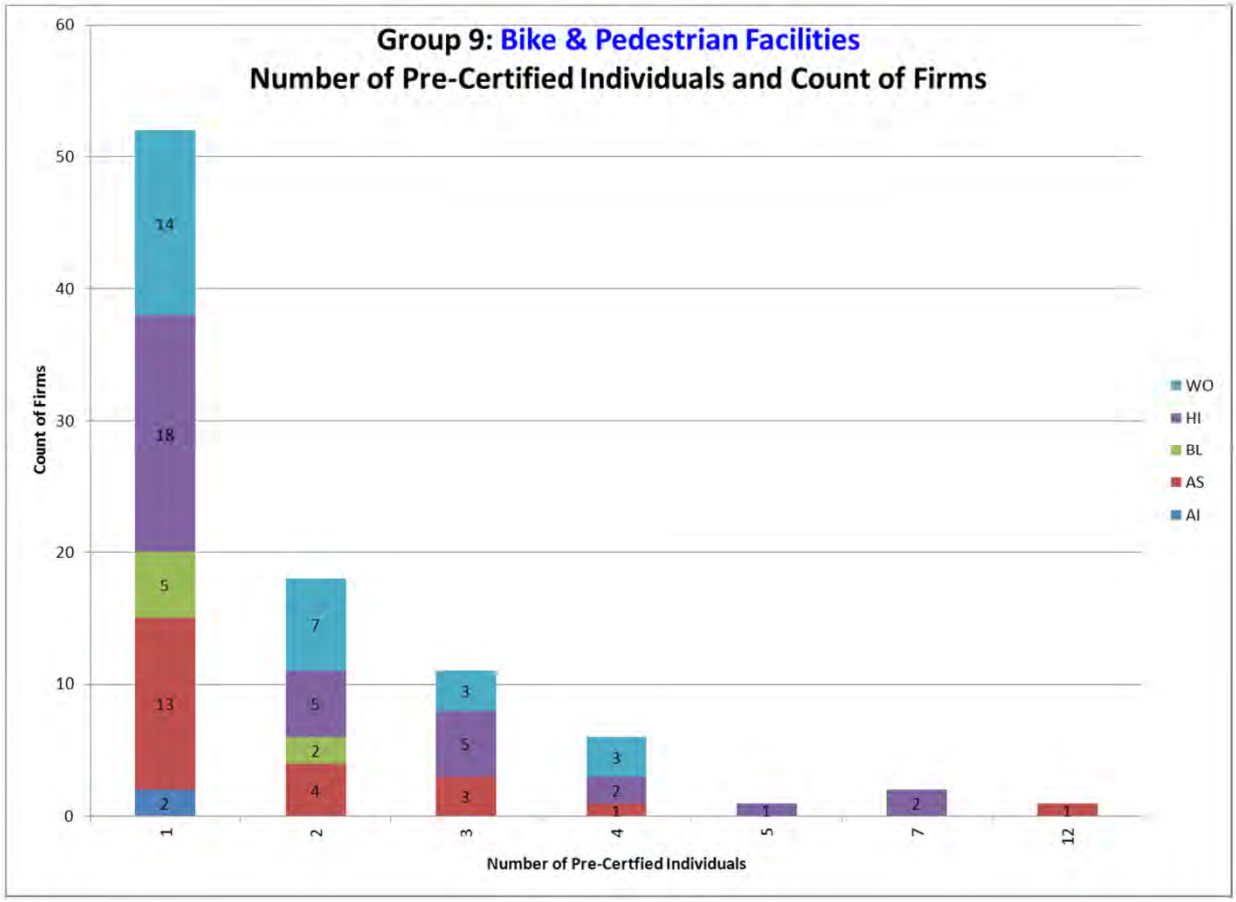


Figure D.18: Group 9 – Bike & Pedestrian Facilities, Number of Pre-Certified Individuals and Count of Firms

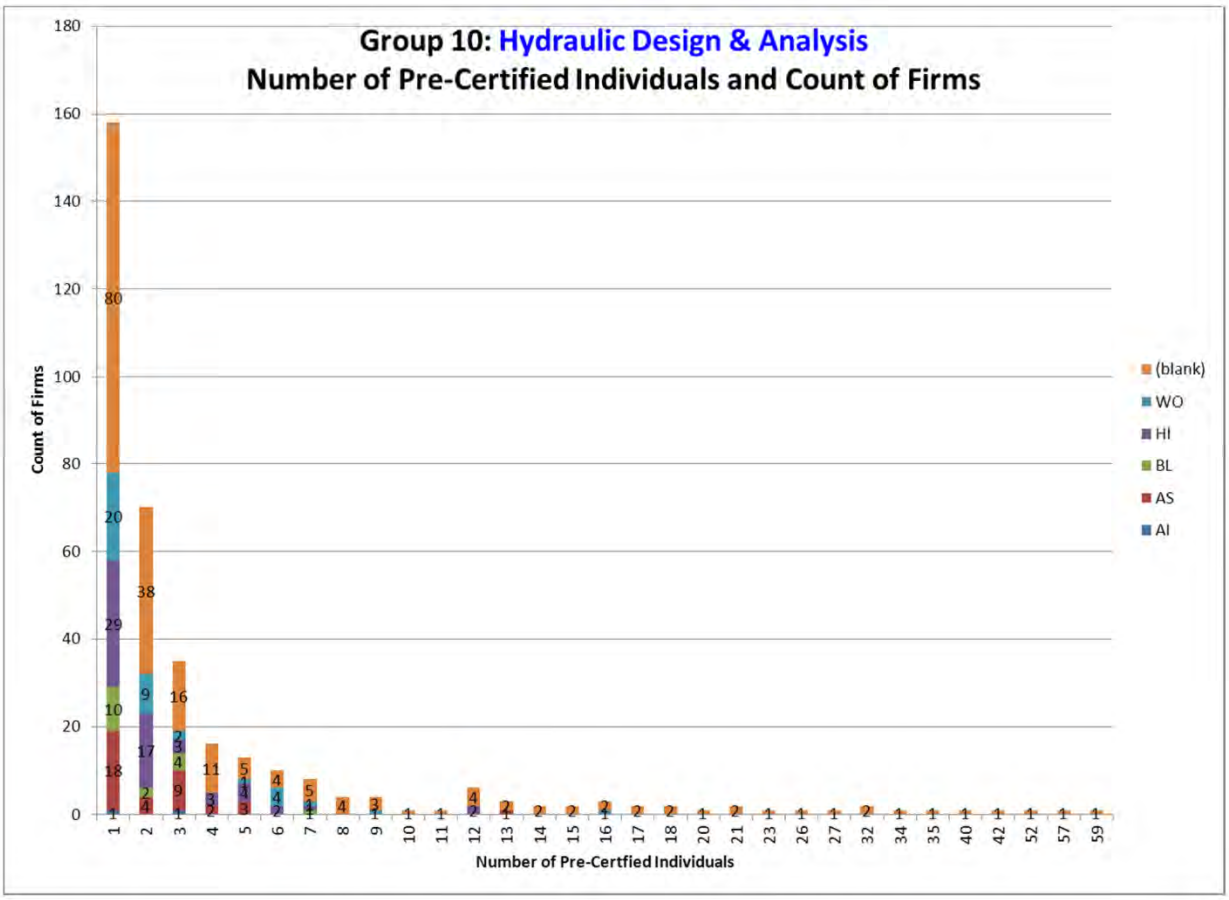


Figure D.19: Group 10 – Hydraulic Design & Analysis, Number of Pre-Certified Individuals and Count of Firms

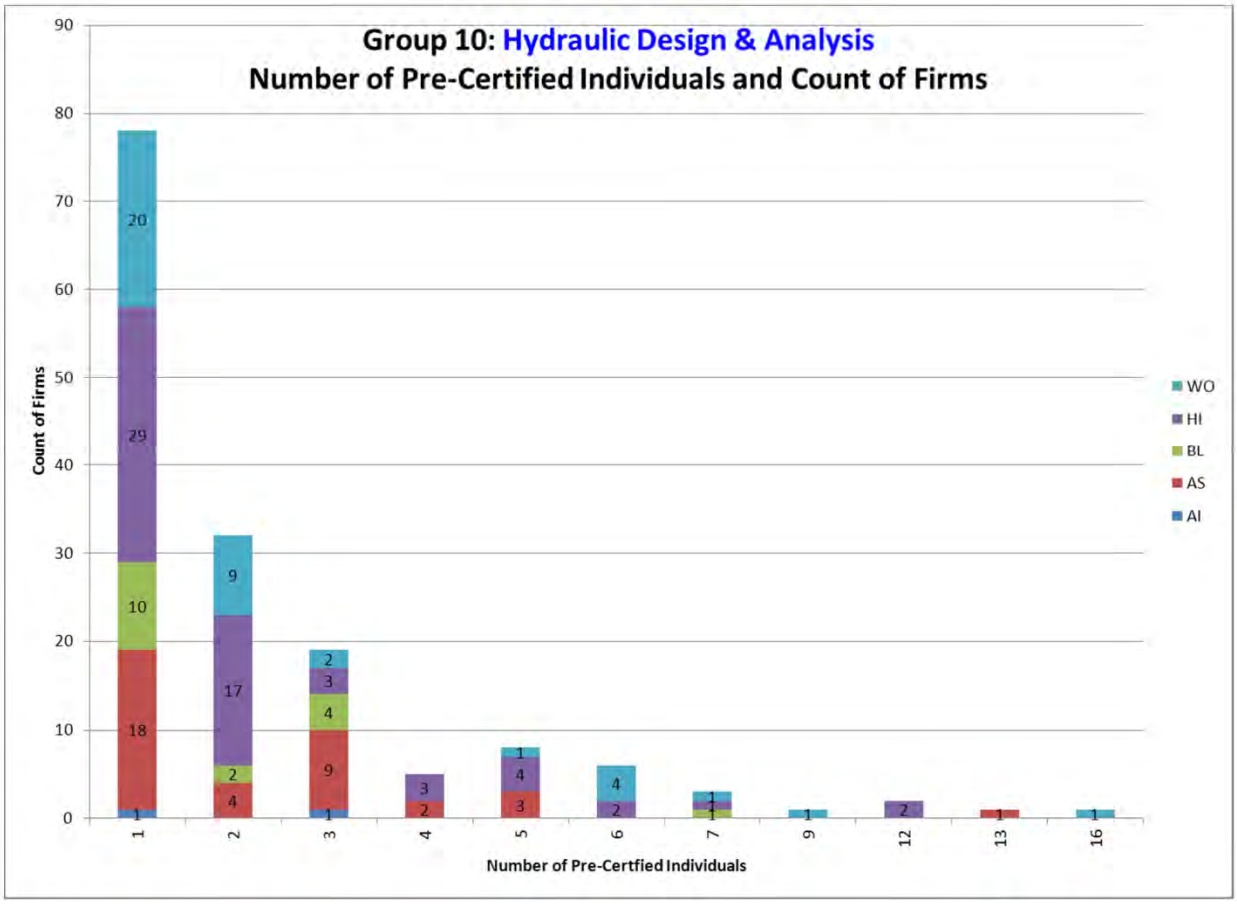


Figure D.20: Group 10 – Hydraulic Design & Analysis, Number of Pre-Certified Individuals and Count of Firms

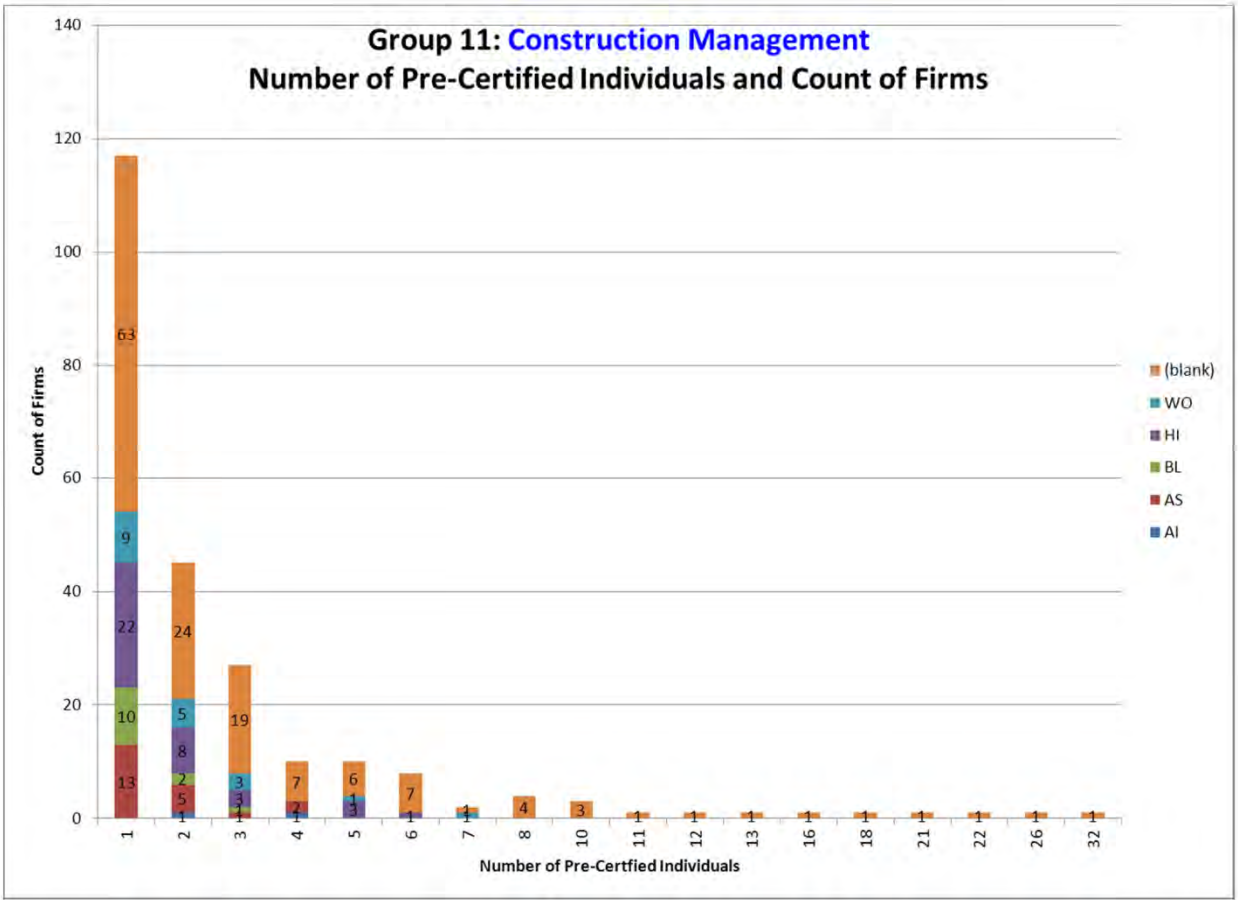


Figure D.21: Group 11 – Construction Management, Number of Pre-Certified Individuals and Count of Firms

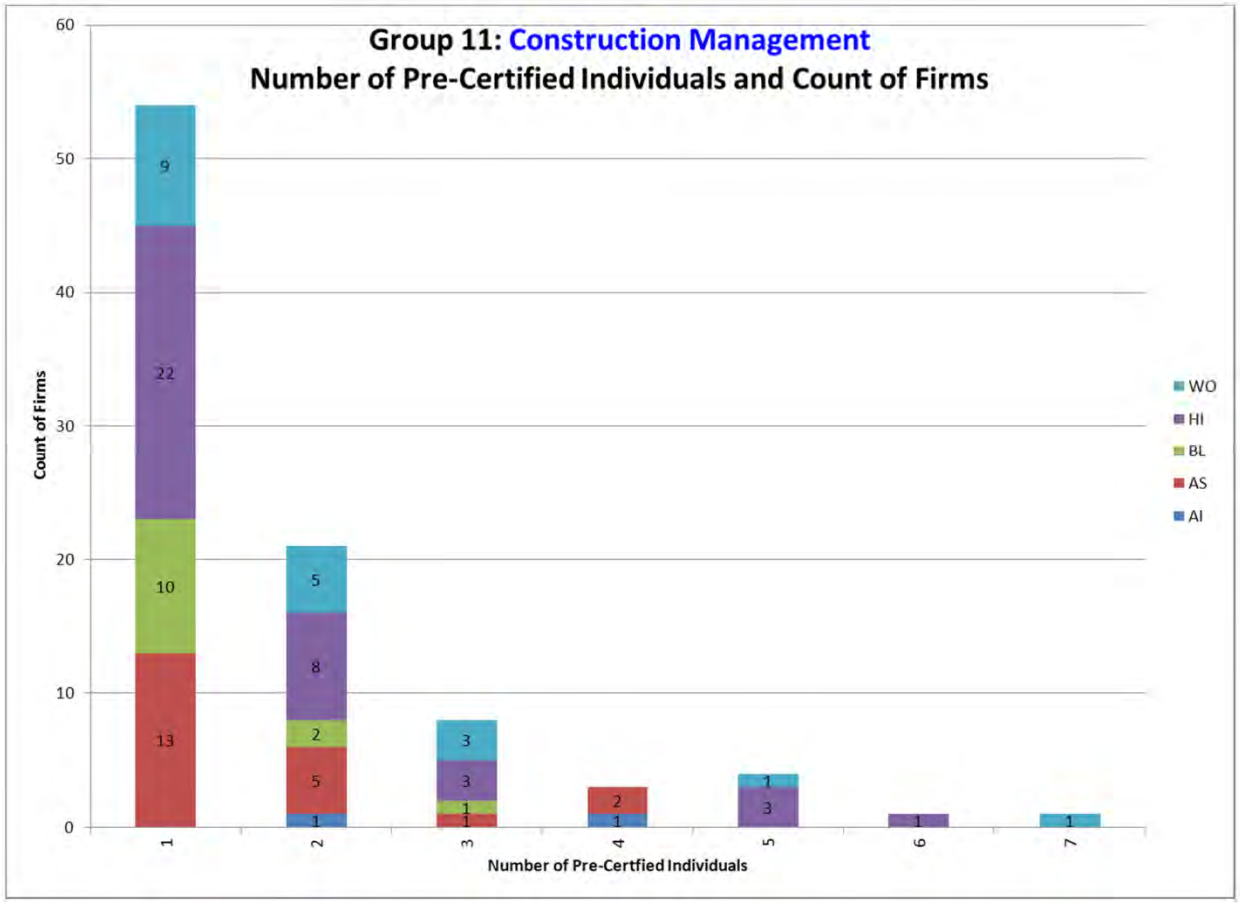


Figure D.22: Group 11 – Construction Management, Number of Pre-Certified Individuals and Count of Firms

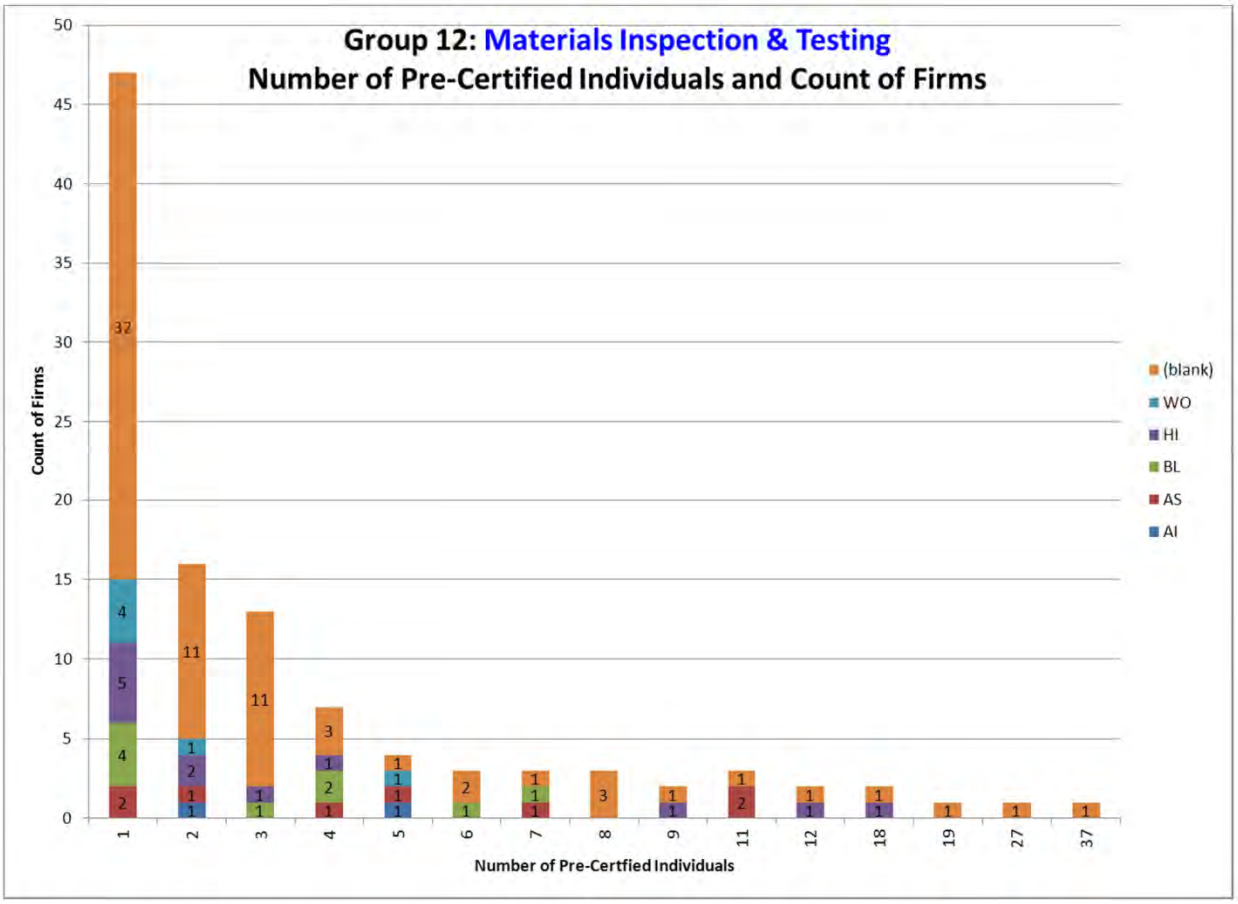


Figure D.23: Group 12 – Materials Inspection & Testing, Number of Pre-Certified Individuals and Count of Firms

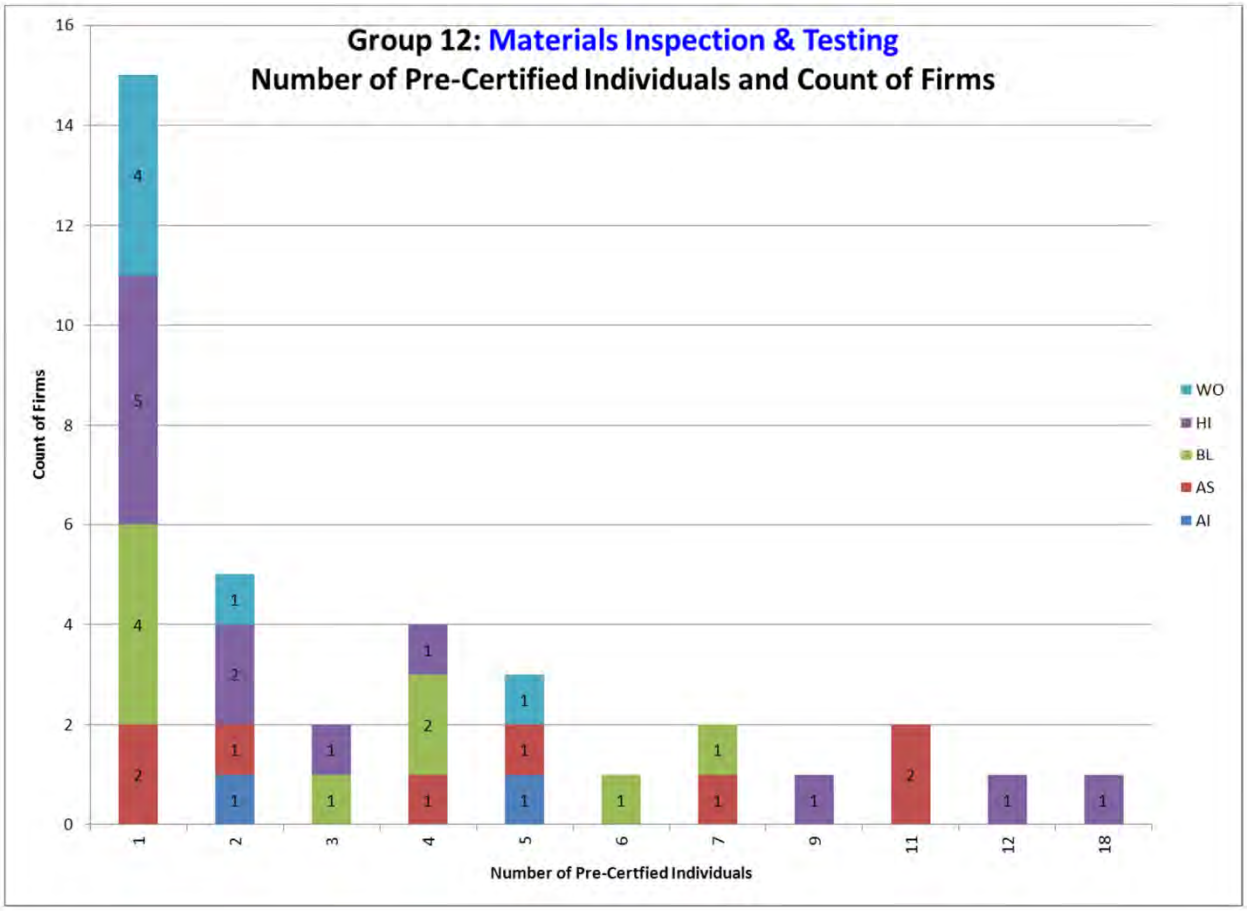


Figure D.24: Group 12 – Materials Inspection & Testing, Number of Pre-Certified Individuals and Count of Firms

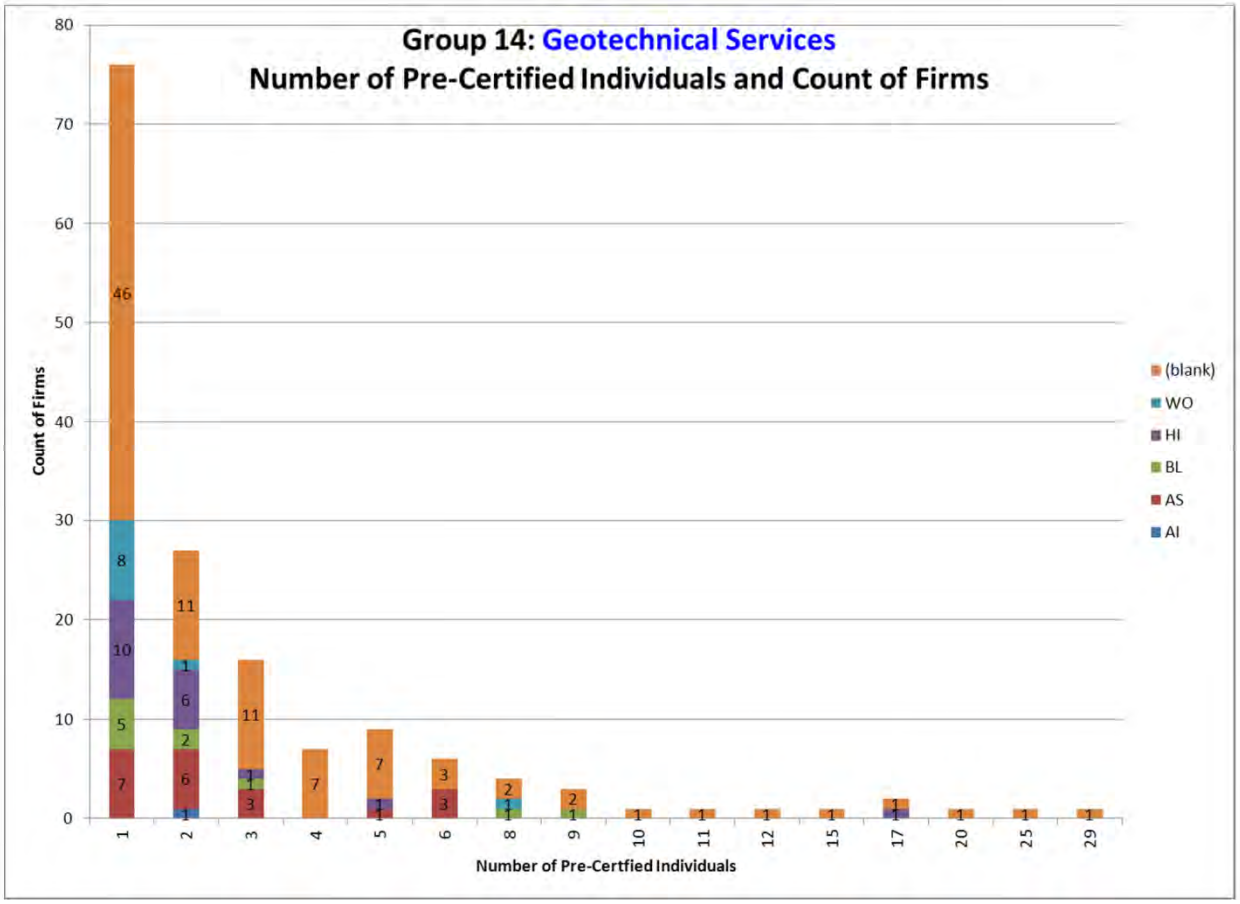


Figure D.25: Group 14 – Geotechnical Services, Number of Pre-Certified Individuals and Count of Firms

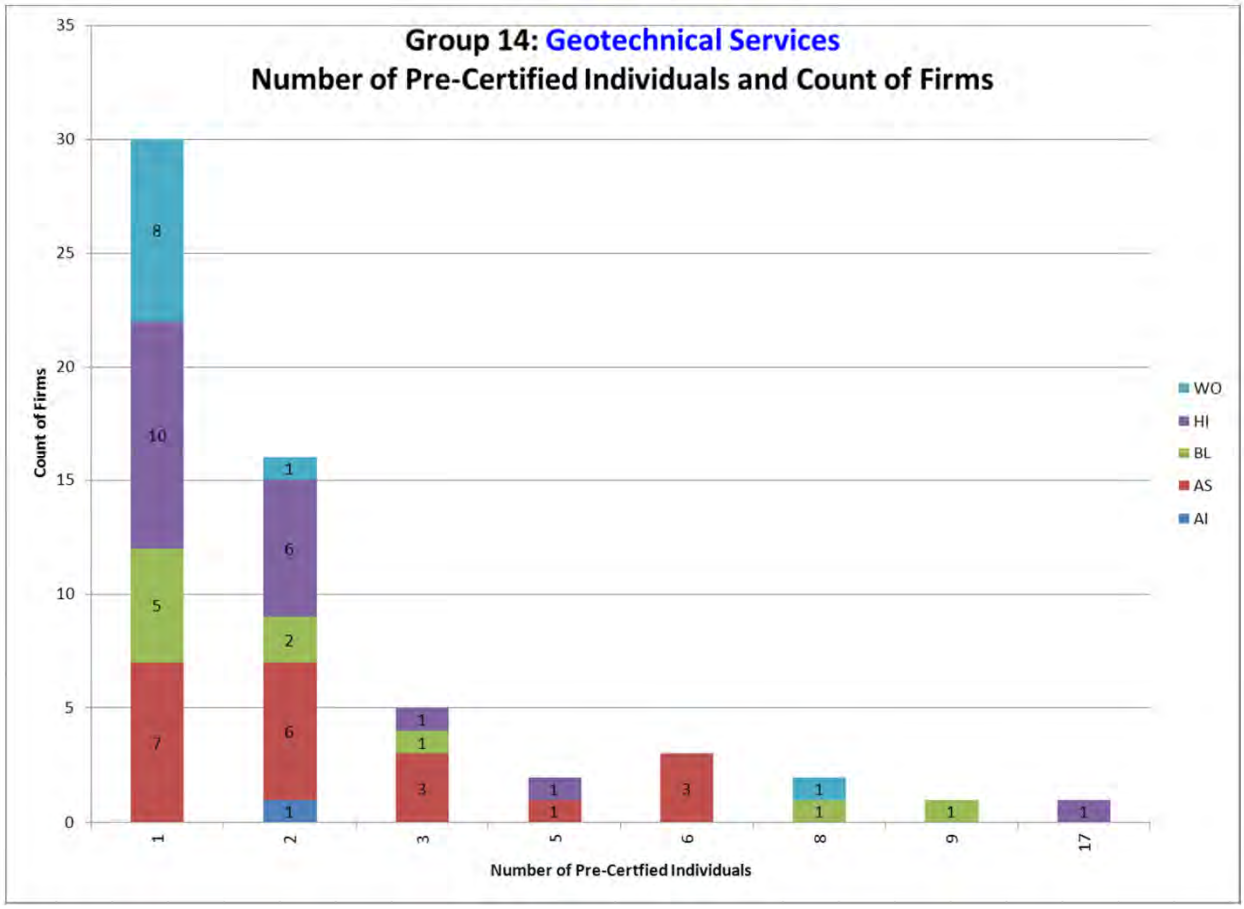


Figure D.26: Group 14 – Geotechnical Services, Number of Pre-Certified Individuals and Count of Firms

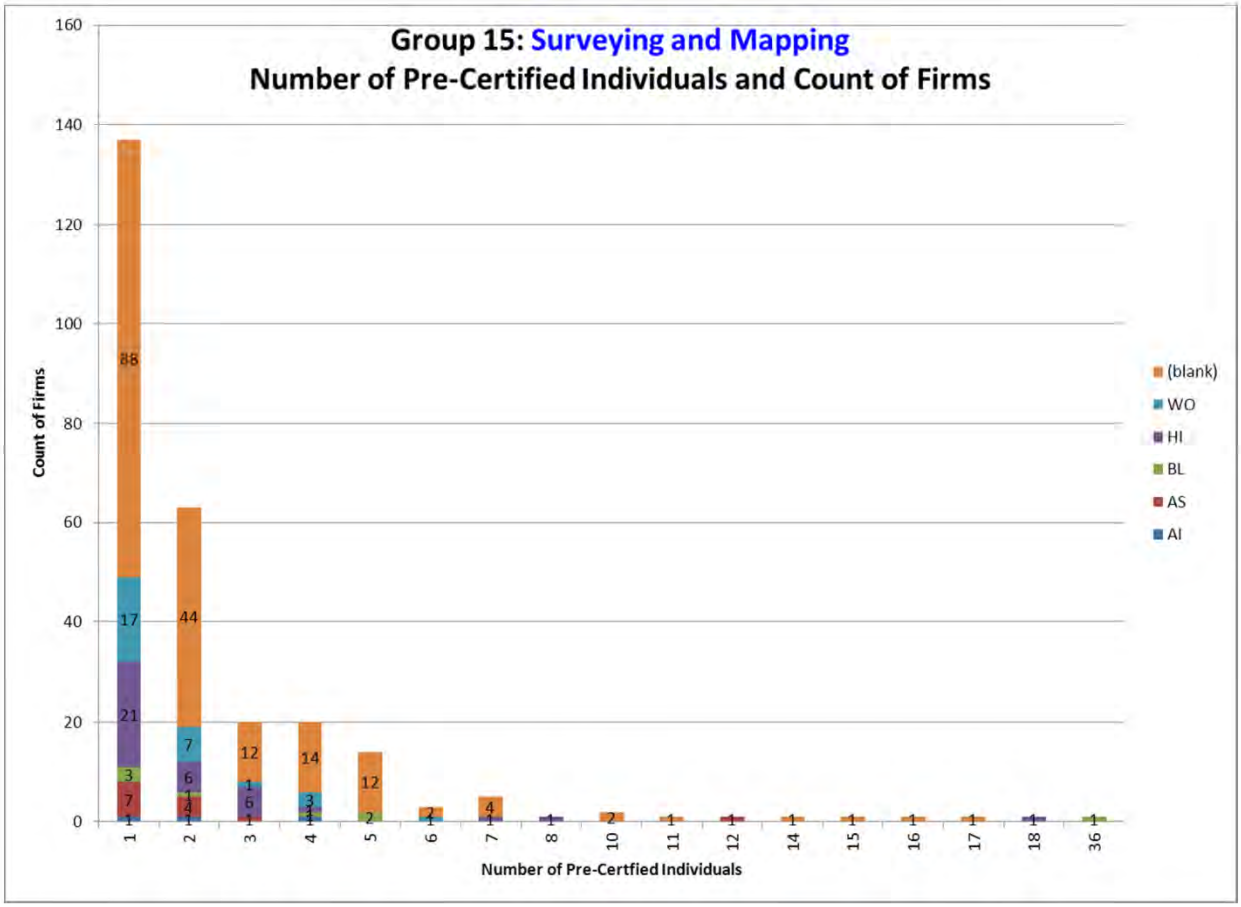


Figure D.27: Group 15 – Surveying and Mapping, Number of Pre-Certified Individuals and Count of Firms

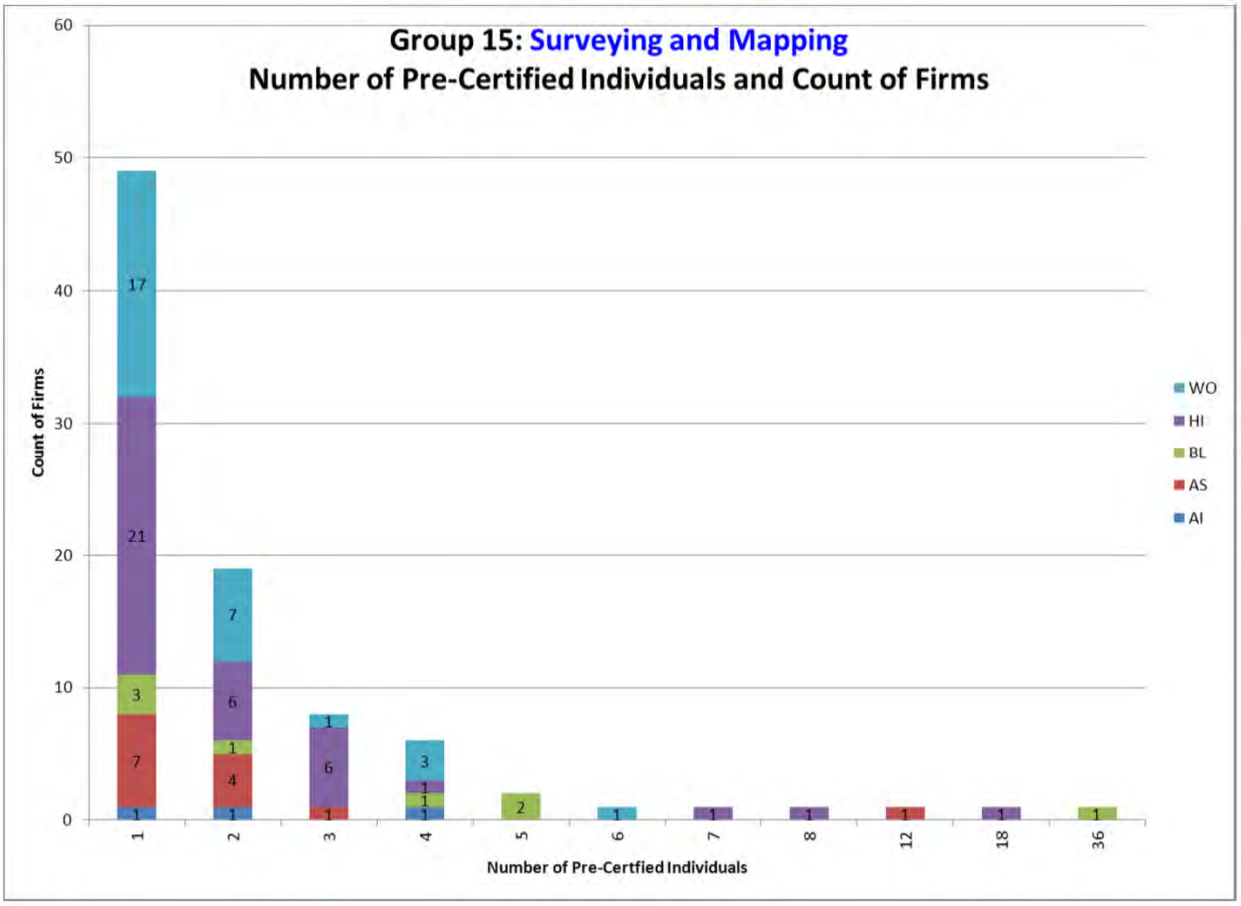


Figure D.28: Group 15 – Surveying and Mapping, Number of Pre-Certified Individuals and Count of Firms

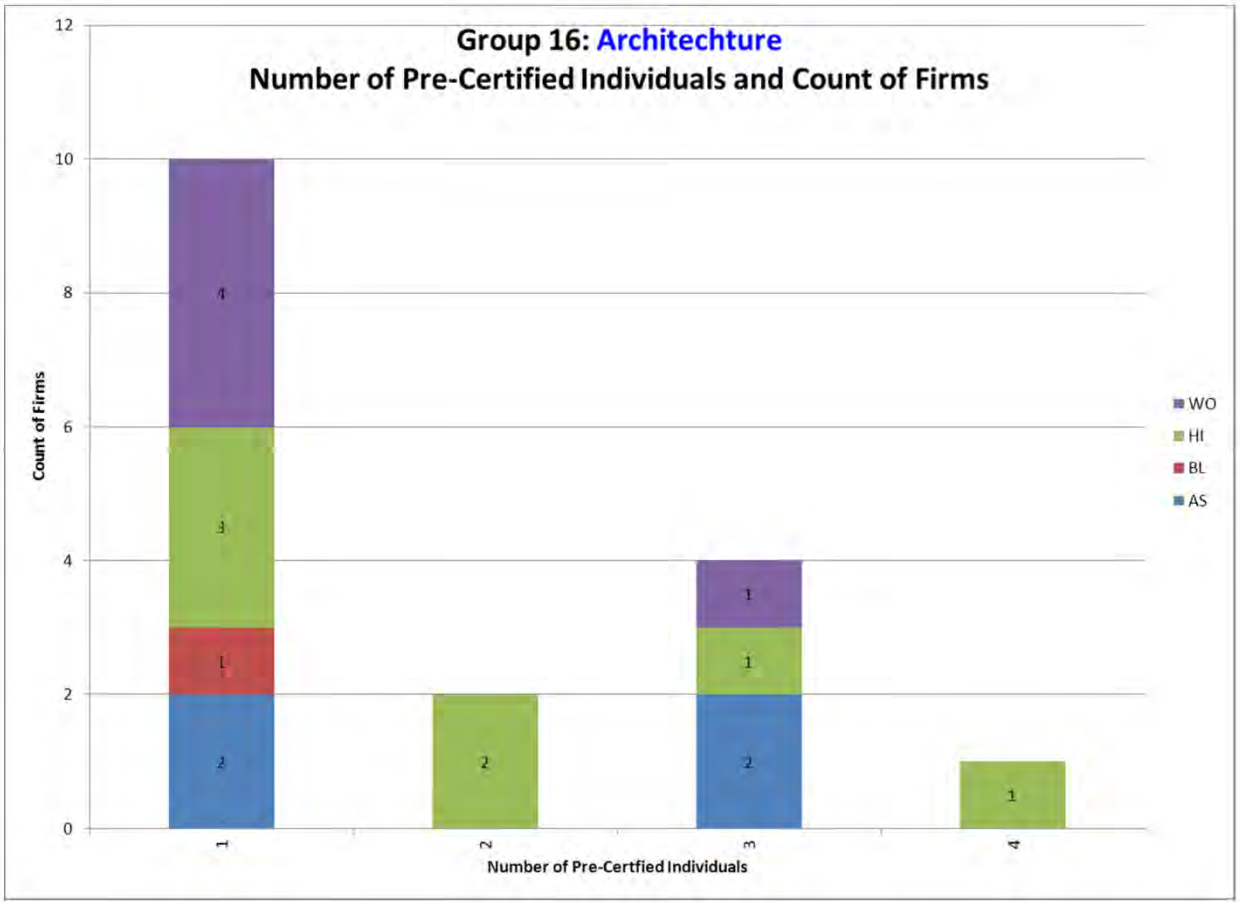


Figure D.29: Group 16 – Architecture, Number of Pre-Certified Individuals and Count of Firms

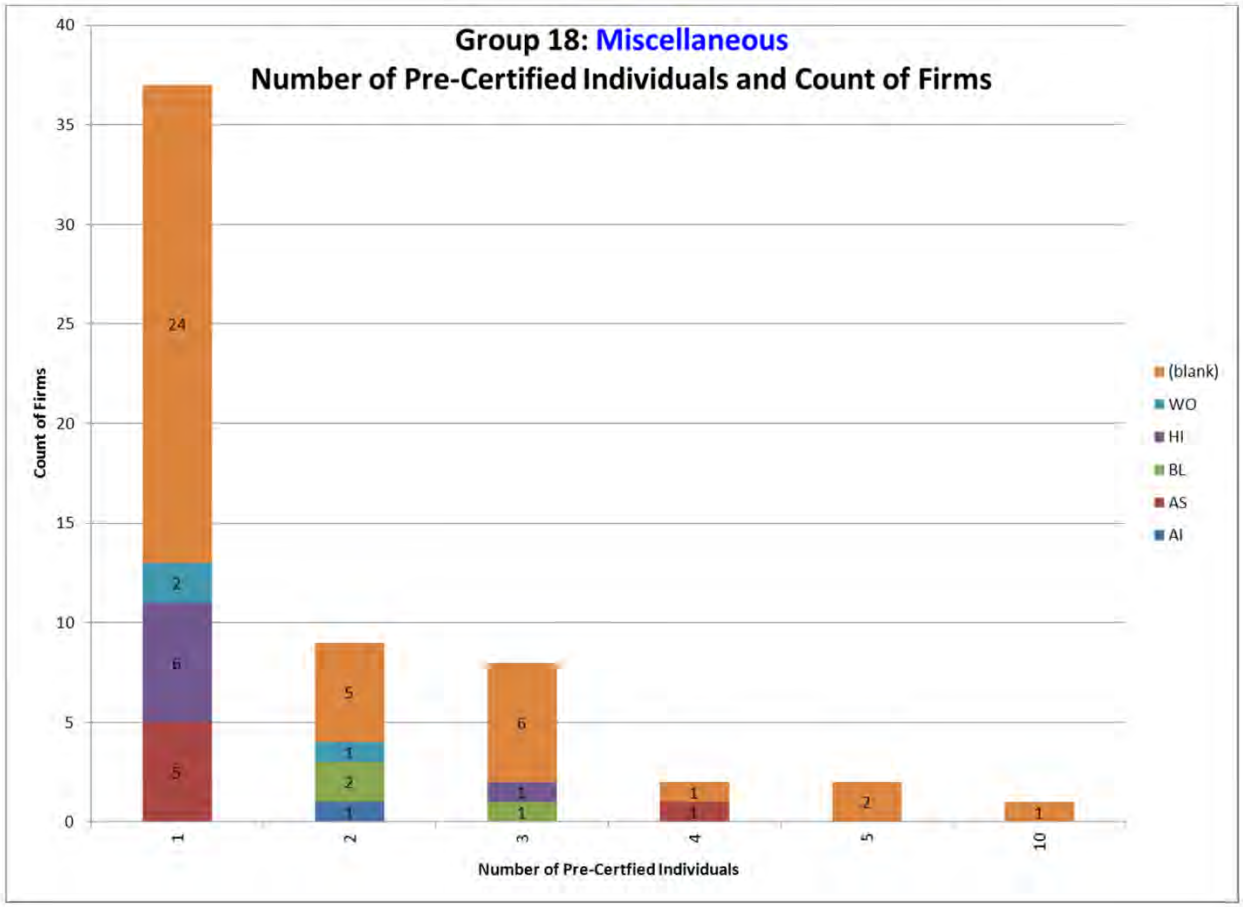


Figure D.30: Group 18 – Miscellaneous, Number of Pre-Certified Individuals and Count of Firms

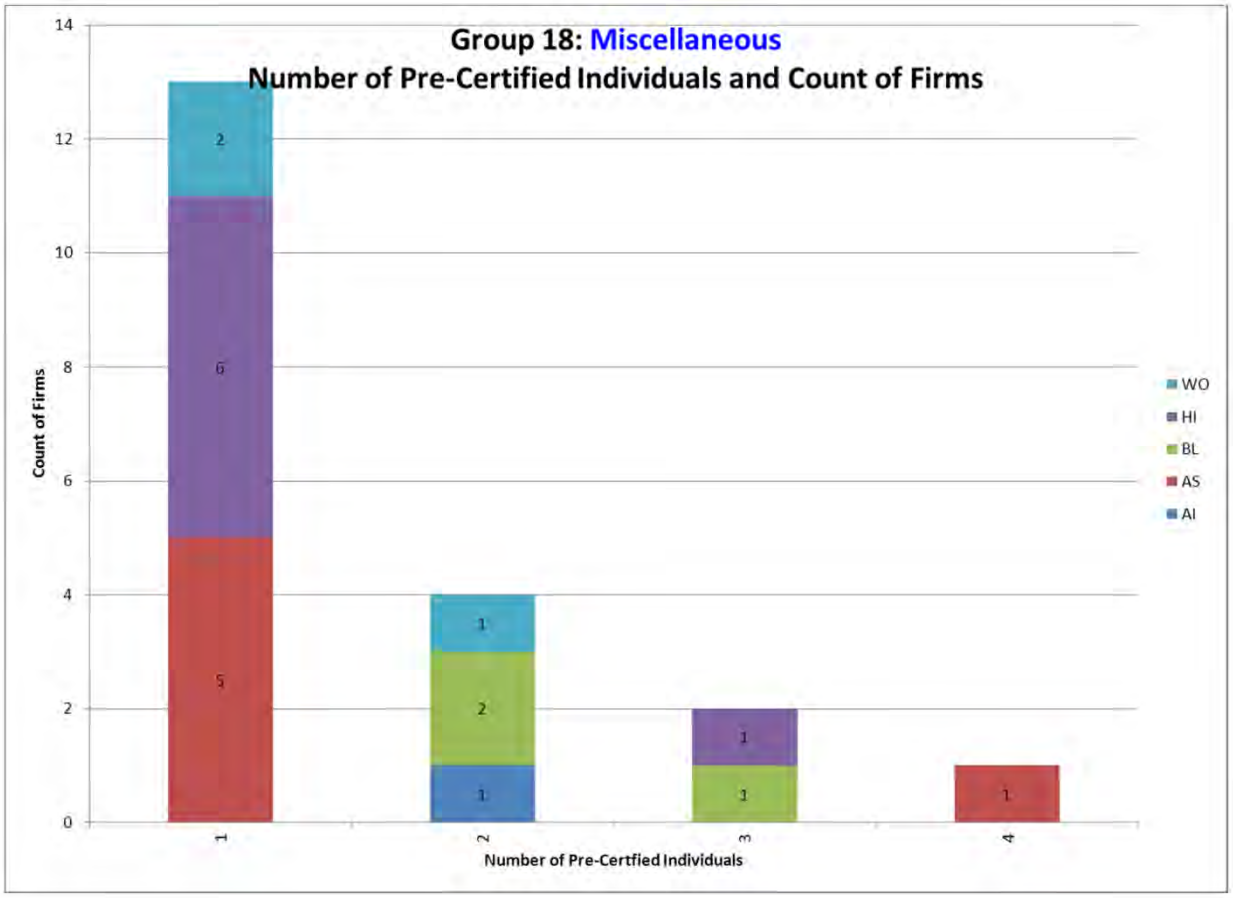


Figure D.31: Group 18 – Miscellaneous, Number of Pre-Certified Individuals and Count of Firms

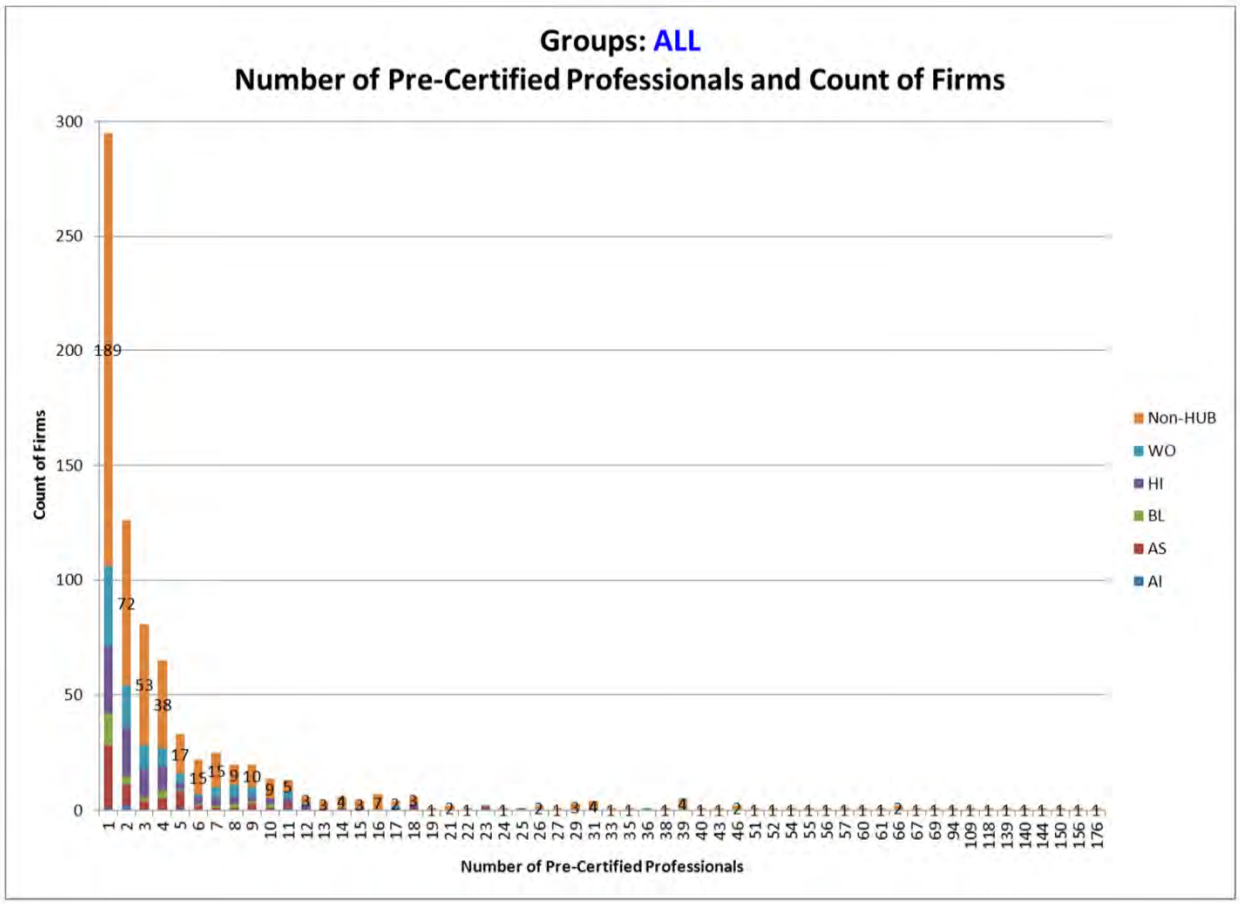


Figure D.32: Groups – All, Number of Pre-Certified Individuals and Count of Firms