Nuclear Energy The in Carolinas

Survey Results and Evaluation of the Nuclear Energy Industry in The Carolinas

NEI
NUCLEAR ENERGY INSTITUTE

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SIS INTERNATIONAL RESEARCH

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I. Executive Summary

I. Executive Summary

SIS International is pleased to present the following findings of this survey of Carolina nuclear companies.

Sixty one surveys were completed by companies that were involved in some aspect of the nuclear energy industry in the Carolinas. The results were as follows:

- The vast majority (91%) of companies surveyed operate domestically with no international offices or employees stated. Most companies had one office in the Carolinas, but several had offices in many other states in the US.

- Stated revenue from nuclear energy varied throughout the sample. Eighteen companies claimed to make 90% of their revenue from nuclear energy. An almost equal amount (17) claimed to have made 10% or less of their revenue from nuclear energy.

- Respondents were from a variety of industries related to nuclear energy. Most companies were involved either in an aspect of planning and engineering, or in recruitment and professional training/consulting. There was also a sizeable percentage of firms that manufactured parts or components for the industry. A few companies were legal or advocacy firms.

- While many companies are involved in a variety of hiring practices and programs, most companies stated that they were not planning to fill more than ten vacancies this year. Additionally, over half of companies surveyed stated that their change in employment in the past five years either did not change significantly or, in some cases, decreased.

- When respondents were asked about issues that should be addressed in the industry the following themes emerged as differences between domestic and international practices:
  - Over regulation of the industry domestically, making production and manufacturing of materials difficult and lowering demand
  - International competition, specifically within the Asian sector and the new initiatives being taken by the United Arab Emirates in their nuclear energy program, is becoming more difficult to contend with. Competition is causing a loss of domestic business and an exodus of American talent. Global competition is common concern in several aspects of the study.

II. Survey Sample Size and Distribution

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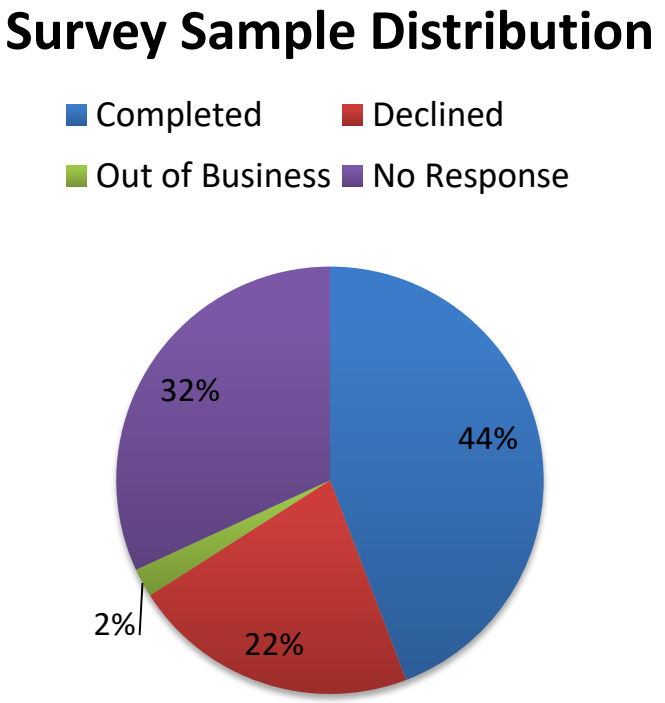
- Of the companies contacted, 61 completed and returned the survey.
- Forty respondents were based in North Carolina. Twenty-One were based in South Carolina.
- Calls started in June and concluded in Mid-October
- Thirty companies declined the survey for various reasons including non-involvement with the nuclear energy industry, or lack of time.
- Three businesses were found to be out of business or had declared bankruptcy recently.
- Forty-Four businesses did not respond to repeated attempts to reach out.
- Nine surveys were completed over the phone. The remaining fifty two respondents completed the survey online.

Status:	Number of Companies:
Completed Survey	61
Declined to Complete Survey	30
Out of Business or Potentially Out of Business	3
Did Not Respond	44
Total:	168

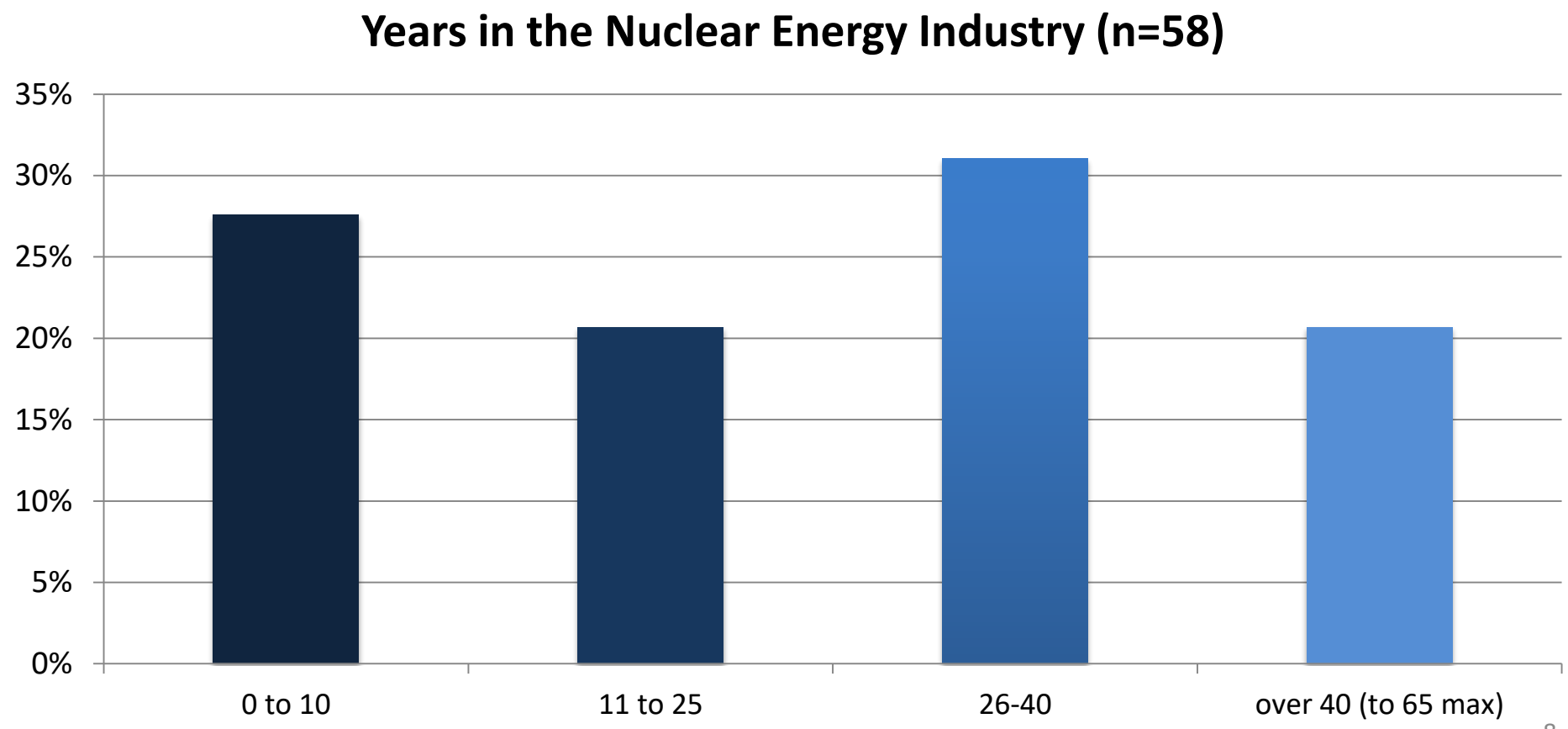


III. Section A: Business Profile

III. Section A: Business Profile

How many years has your company or organization been engaged in some aspect of the nuclear energy industry?

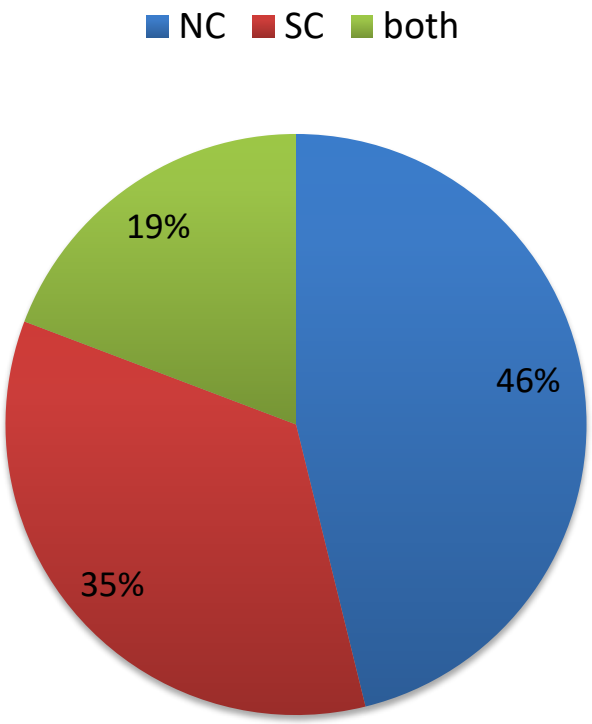
Number of years in business for respondent companies ranged from one year to 65 years.
The number reflects the number of years in some aspect of the nuclear energy industry, not number of years in business.



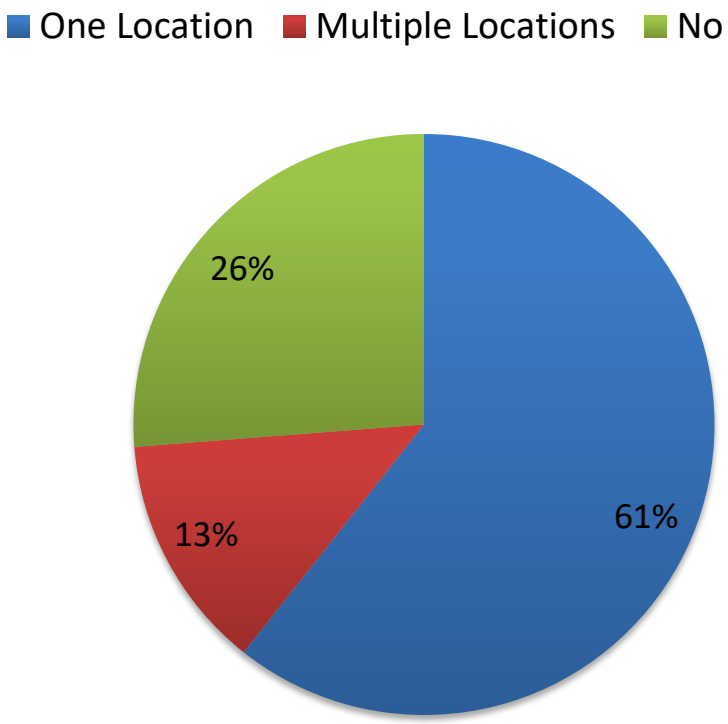
Describe Your Company or Organization's Employee Distribution in North and/or South Carolina.

Companies were close to evenly distributed in the Carolinas, with six more in North Carolina than South Carolina. Ten companies had locations in both. Most companies however, only had one location.

Company Distribution in the Carolinas (n=52)



Number of Carolina Locations (n=61)



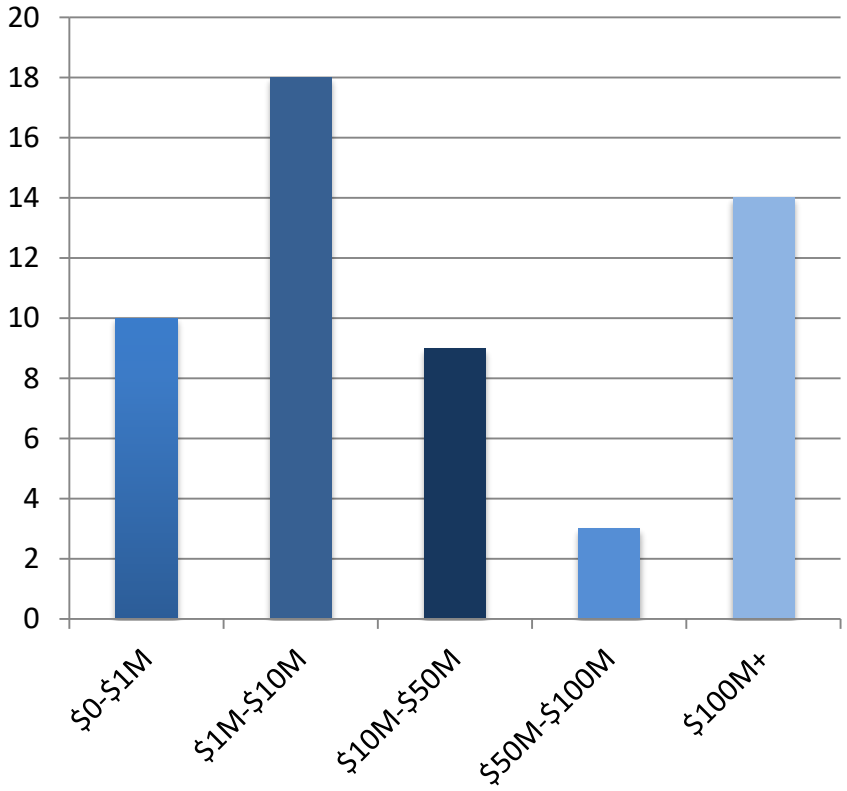
III. Section A: Business Profile

Revenue Distribution

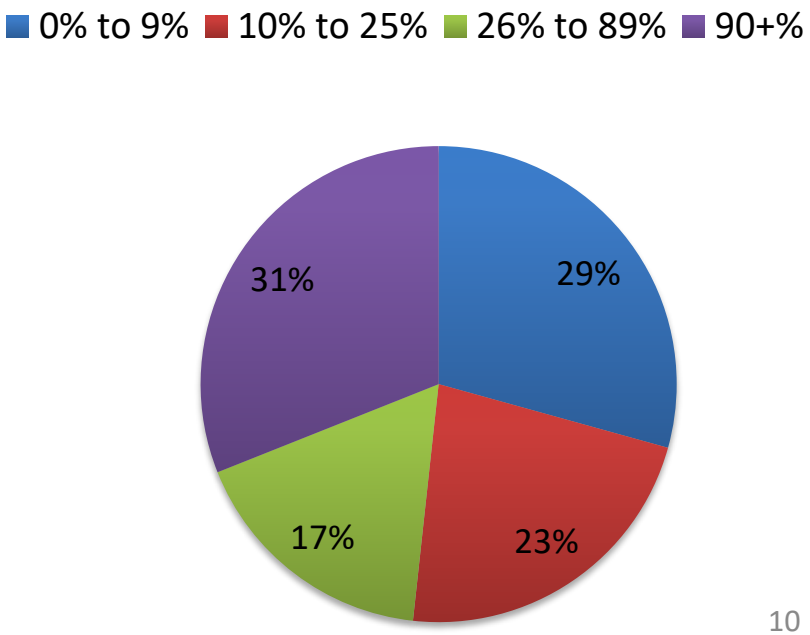
- 14 companies claimed to make over $100 million in revenue while 18 companies claimed to make between $1 million and $10 million.
- An almost equal number of firms stated that the percentage of revenue that was nuclear was 90% (n=18) as was less than 10% (n=17)

Total Revenue Distribution (n=54)

(Number of companies in Revenue Bracket)



Percentage of Business Revenue From Nuclear Energy (n=58)



IV. Section B: Workforce and Recruitment Practices

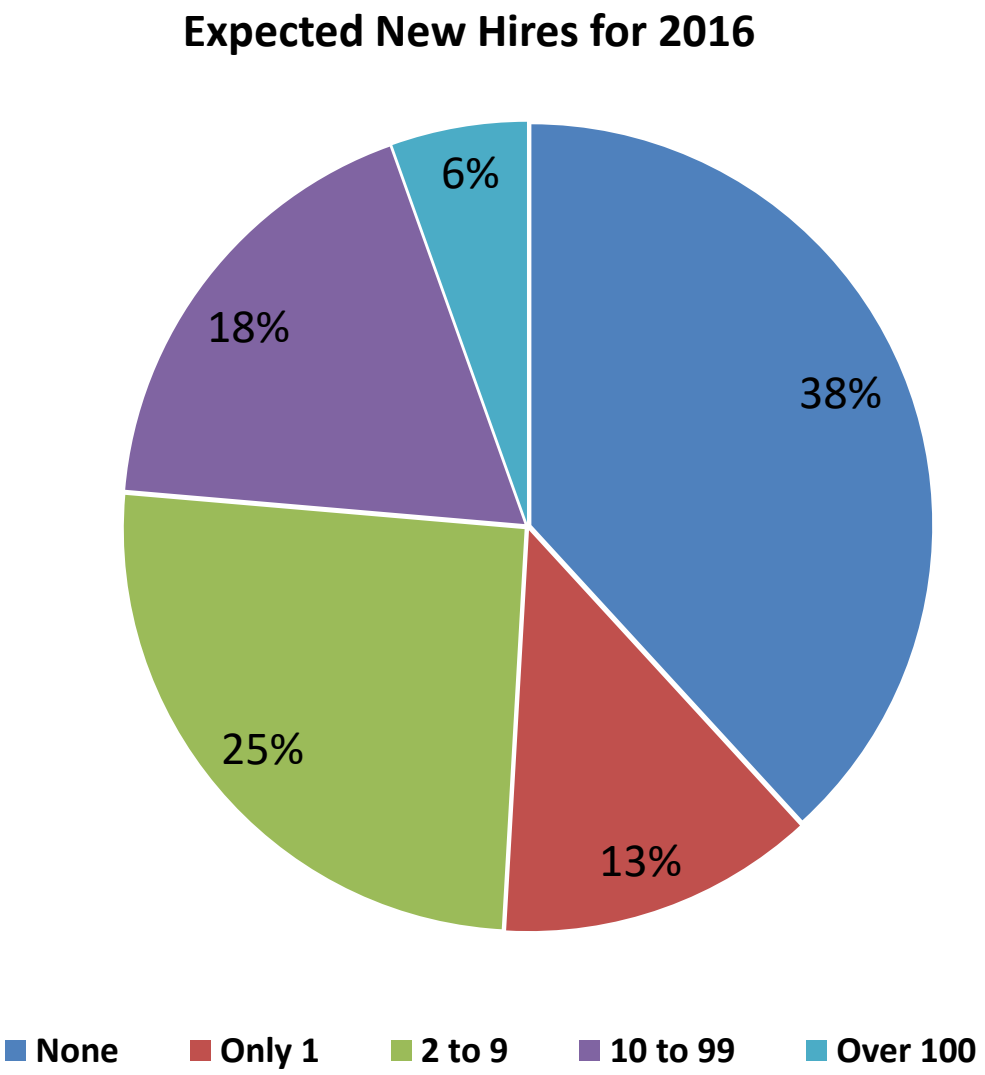
Section B: Workforce and Recruitment Practices

Expected Employee Vacancies Filled in 2016

Over half of respondents surveyed claimed that they were filling zero or one vacancy in their company this year (2016).

Twenty-One companies were filling fewer than ten vacancies.

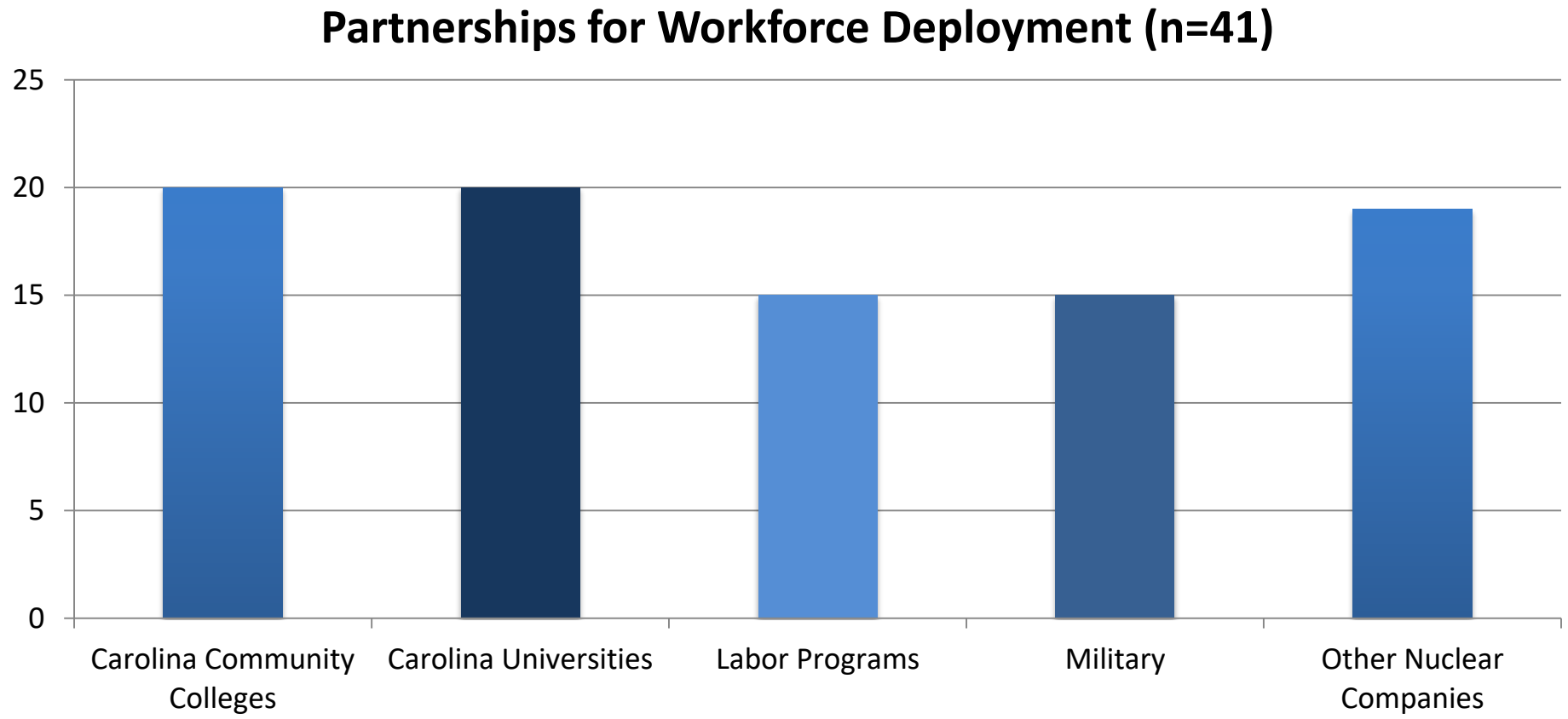
- Weirich is a temporary placement firm that provides engineering / technical and professional individuals to Prime Contractors for the Department of Energy. Hires depend on client demands.
- Five other companies did not provide information



Section B: Workforce and Recruitment Practices

Does your company or organization partner with any of the following as part of your workforce development plan?

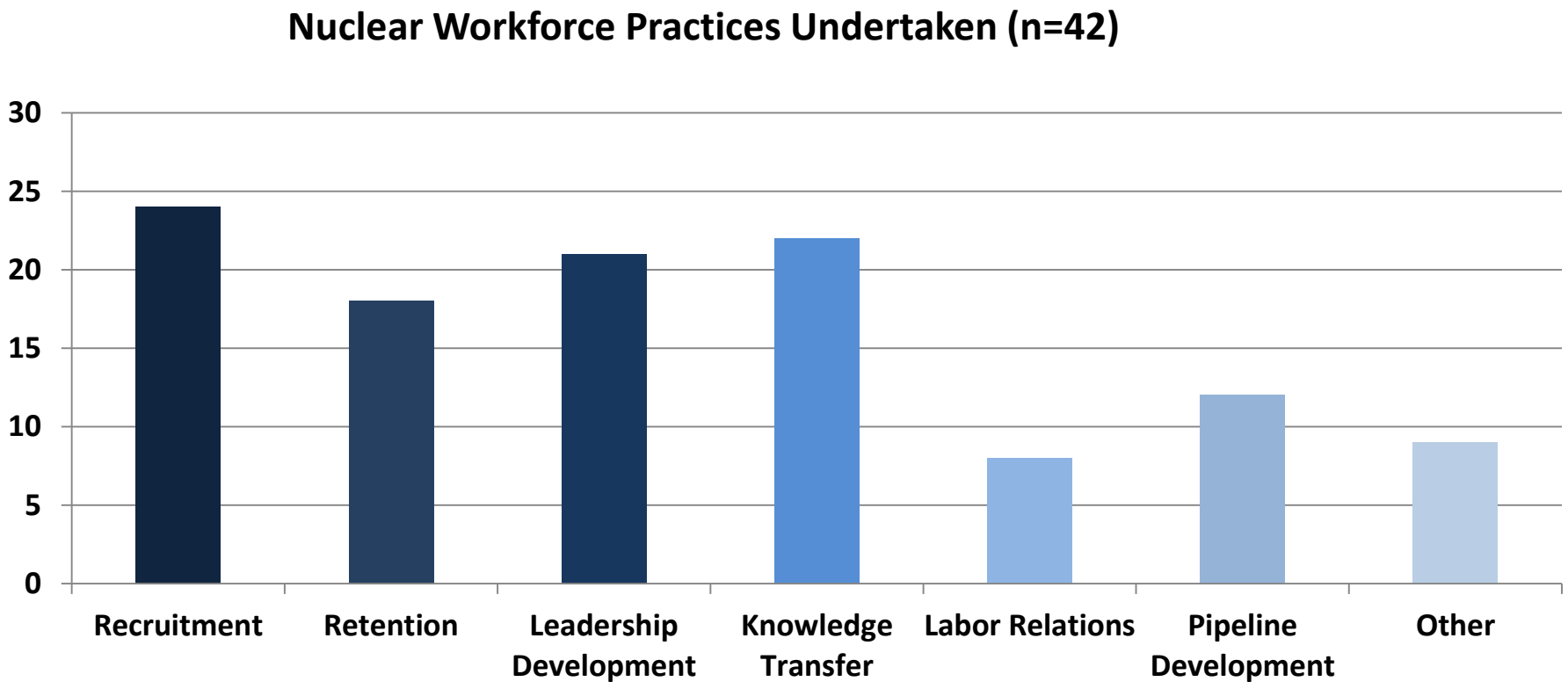
Of the respondents who gave answers (n=41), many recruited from either Carolina Community Colleges (n=20), Universities (n=20) or Both (n=10).



Section B: Workforce and Recruitment Practices

Which Nuclear Workforce Programs and Practices does your company or organization currently participate in/undertake?

- Many companies engaged in recruitment and knowledge transfer services.
- Twenty-Five companies did not respond to the question.
- Respondents who denoted “other” did not specify.

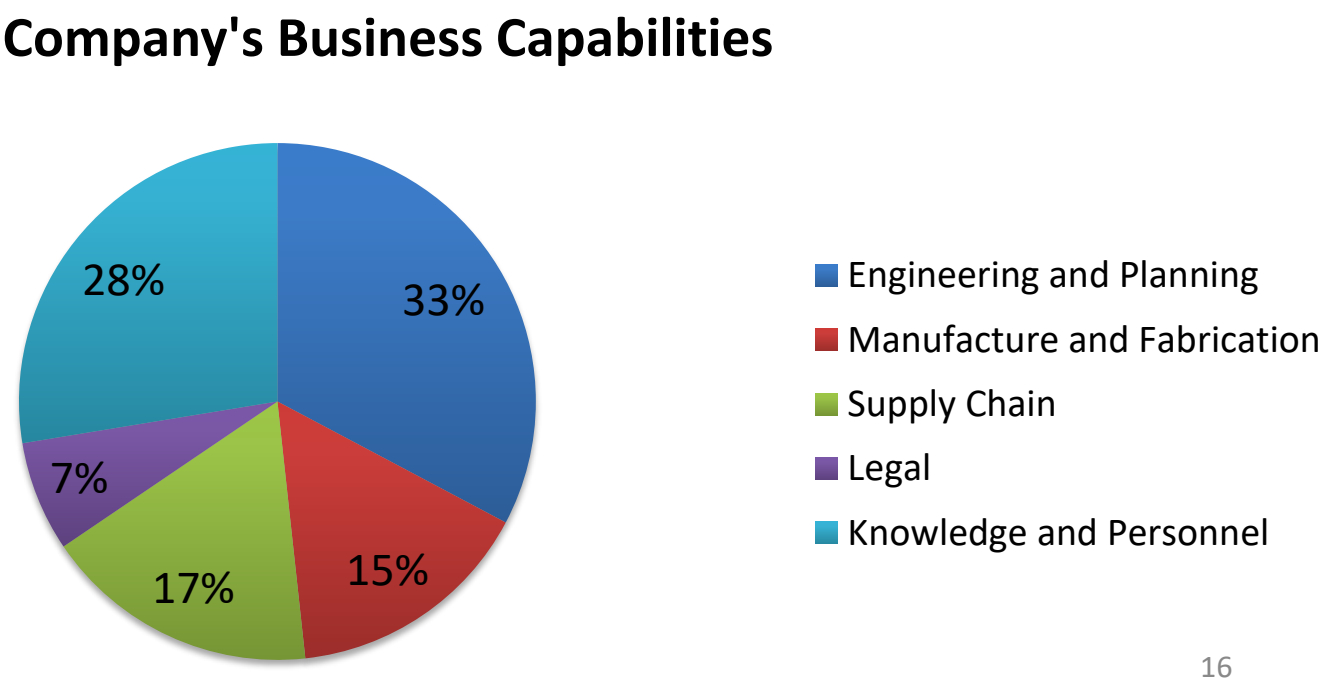


V. Section C: Carolina's Nuclear Business Environment

How would you describe your nuclear business capabilities?

- Respondents were asked to describe their business capabilities and given examples such as "Consulting, Engineering, Procurement, etc." Most responses fell within the examples provided.

- Capability categories provided in the chart below were arrived at using thematic elements from all responses. There was some overlap with companies in certain sections, particularly with "Engineering and Planning" and "Supply Chain". Companies were categorized by best fit.



Section C: Carolina's Nuclear Business Environment

How would you describe your nuclear business capabilities?

Engineering and Planning

Companies that claimed to do engineering as well as management aspects. Some of these companies were also distributors

Manufacture and Fabrication

Companies that actually built and produced materials and components.

Supply Chain

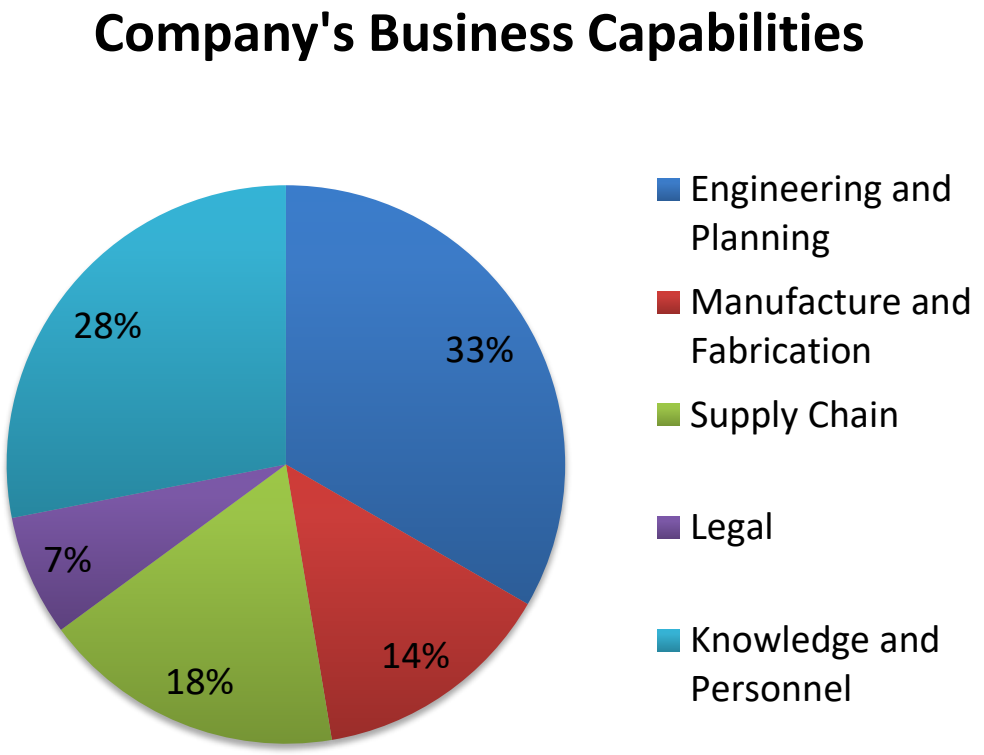
Companies that procured and distributed materials but did not necessarily manufacture them. Many of these companies also provided some management services

Legal

Companies that represented other companies within the industry in legal matters or advocacy

Knowledge and Personnel

Companies that provided personnel training or recruitment as well as consulting and R&D.



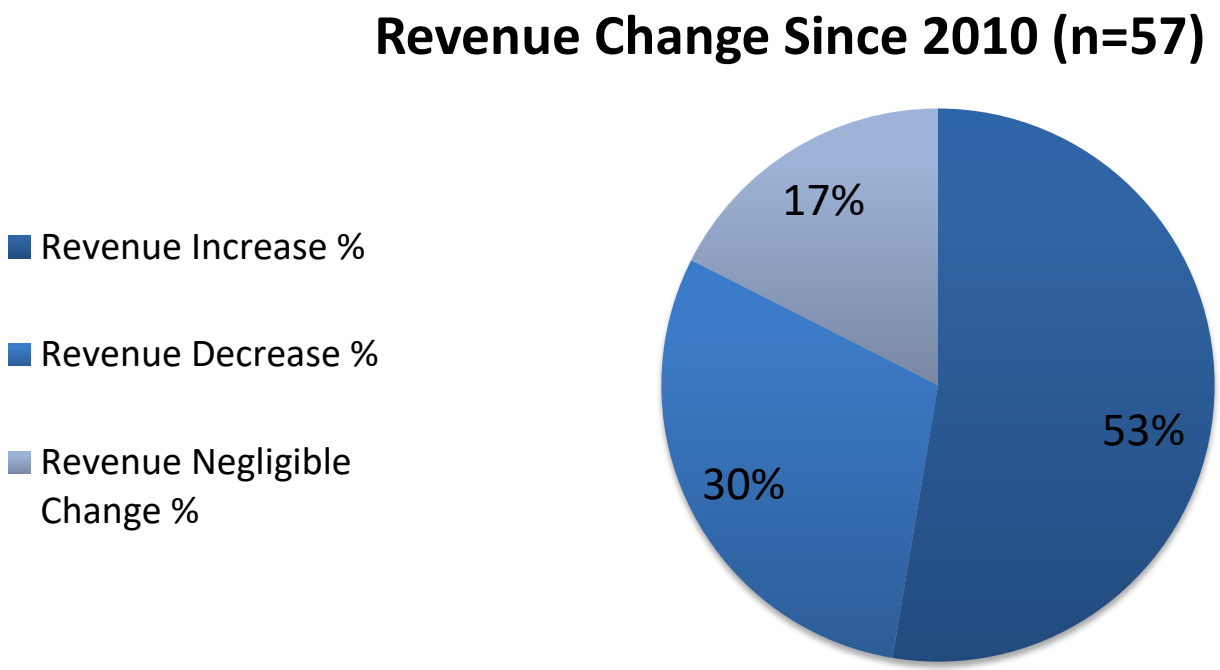
Section C: Carolina's Nuclear Business Environment

Business Capability	Company Name		Business Capability	Company Name	
Engineering and Planning	WEC Carolina Energy Solutions	Red Wolf Assoc.	Supply Chain	Ahlberg Cameras, Inc. (US)	Hoffer Flow Controls, Inc.
	AECOM Nuclear & Environment Technical Services	WACCO, Inc.		Basetrace	Engine Systems, Inc.
	Zapata, Inc.	RCS Corp.		Gerdau Ameristeel US, Inc.	Atkins
	Mechanical Equipment Co.	Kellers, Inc.		Avantech Inc.	Harris Rebar
	Electric Power Research Institute	REI Nuclear, LLC		Black and Veatch	Swagelok
	CB&I Areva MOX Services, LLC	Savannah River National Laboratory	Legal	K&L Gates	JETS Consultants
	AECOM	Ansgar Industrial, LLC		Heyward, Inc.	Citizens for Nuclear Technology Awareness
	UNC Charlotte	Specialty Valve & Controls	Knowledge and Personnel	Gilbert Browne & Assoc.	Central Piedmont Community College
	Siemens	Blue Castle Holdings		Engenuity/Nuhub	Mastering Business Development, Inc.
	4 Factor Consulting			Kraybill & Assoc.	University of South Carolina
Manufacture and Fabrication	Nuvia	Carver Machine Works		Weirich Consulting Services, Inc.	Operations Support Servicers, Inc.
	Edwards, Inc.	Advanced Machining LLC		Nuclear Human Resources Group	Orangeburg-Calhoun Technical College
	Bahnson, Inc.	P&G Manufacturing		Midlands Technical College	Spartanburg Community College
	Container Products Corp.	NWS Technologies,LLC		Lutech Resources	NC State University
	Prysmian Cables & Systems USA, LLC			Clemson University	SCRA

Section C: Carolina's Nuclear Business Environment

Since 2010, has your nuclear business increased, decreased or stayed the same in terms of the following: Overall Revenue?

- More than half of respondents reported that their revenue had increased since 2010.
- Businesses that provided legal representation or consulting to nuclear companies were much more likely to claim that their revenue increased.
- A disproportionately large number of companies that provided personnel training or supply chain services claimed that their revenue decreased.

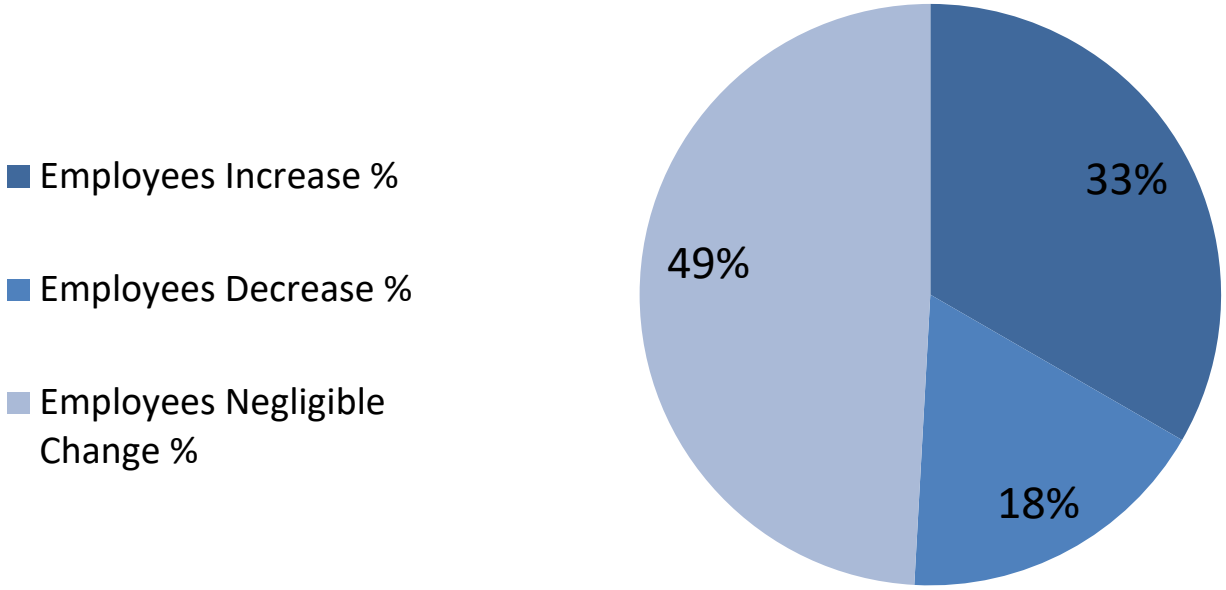


Section C: Carolina's Nuclear Business Environment

Since 2010, has your nuclear business increased, decreased or stayed the same in terms of the following: Total Employees?

- Almost half of respondents claimed that there was a negligible change in the number of employees in their company since 2010.
- Out of the companies that claimed that their number of employees increased, all but one also stated that their revenue had also increased.

Change in Number of Employees Since 2010 (n=57)

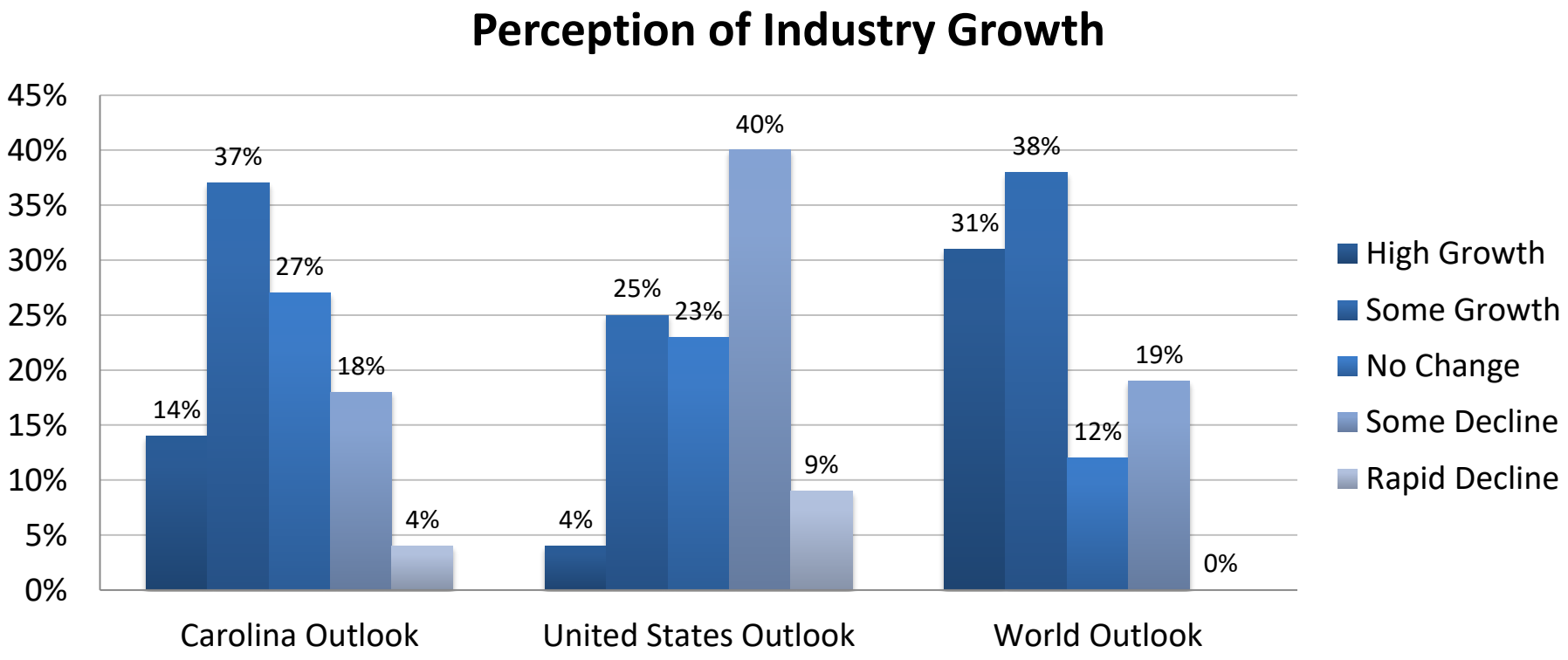


Section C: Carolina's Nuclear Business Environment

Describe your outlook of the nuclear energy industry's business climate:

- The reported outlook for the Carolinas and the US is somewhat less positive than the world outlook. No respondents claimed that the world's nuclear energy business was in "Rapid Decline" whereas 9% of respondents felt this way about the United States.

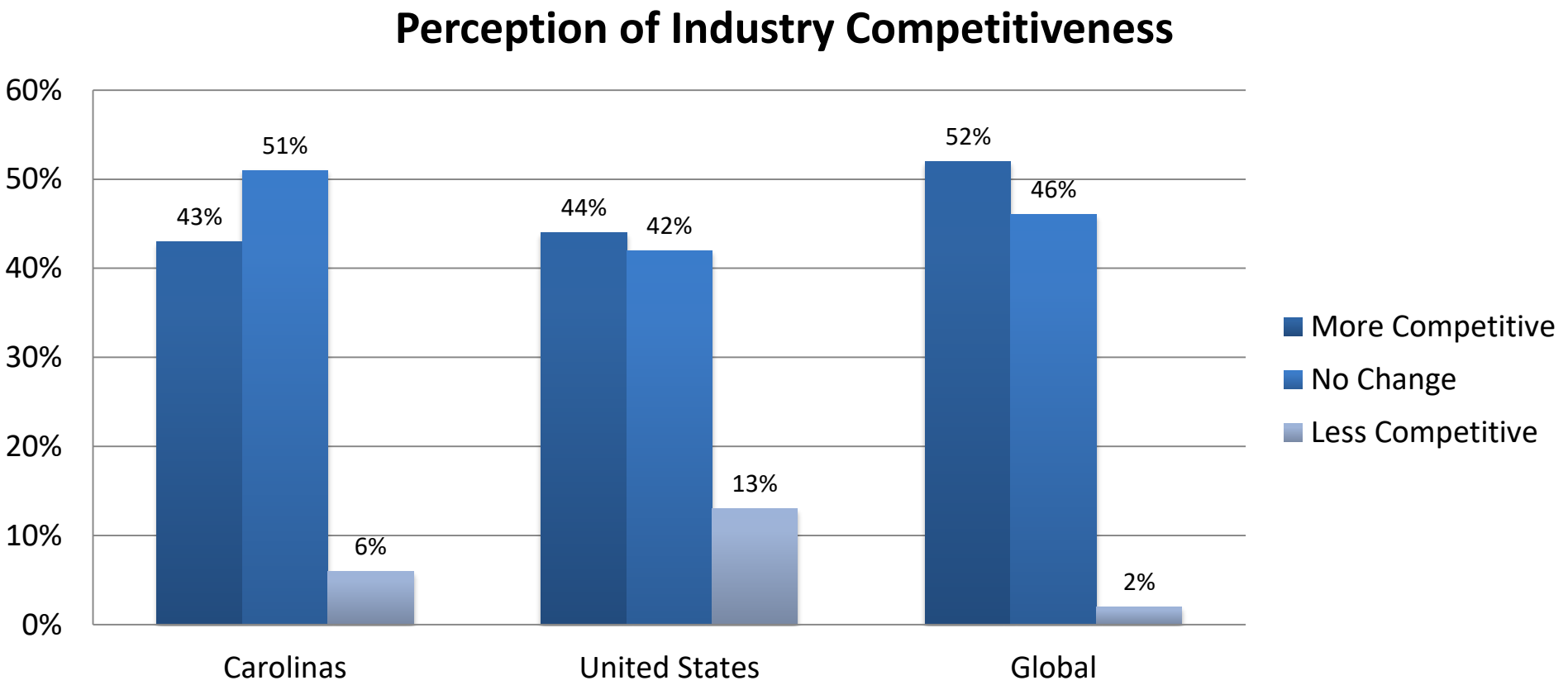
- The perception of growth in the Carolinas was more optimistic than growth in the rest of the United States. More respondents reported high and some growth in the Carolinas than in the rest of the United States.



Section C: Carolina's Nuclear Business Environment

Describe your outlook of the nuclear energy industry's business climate:

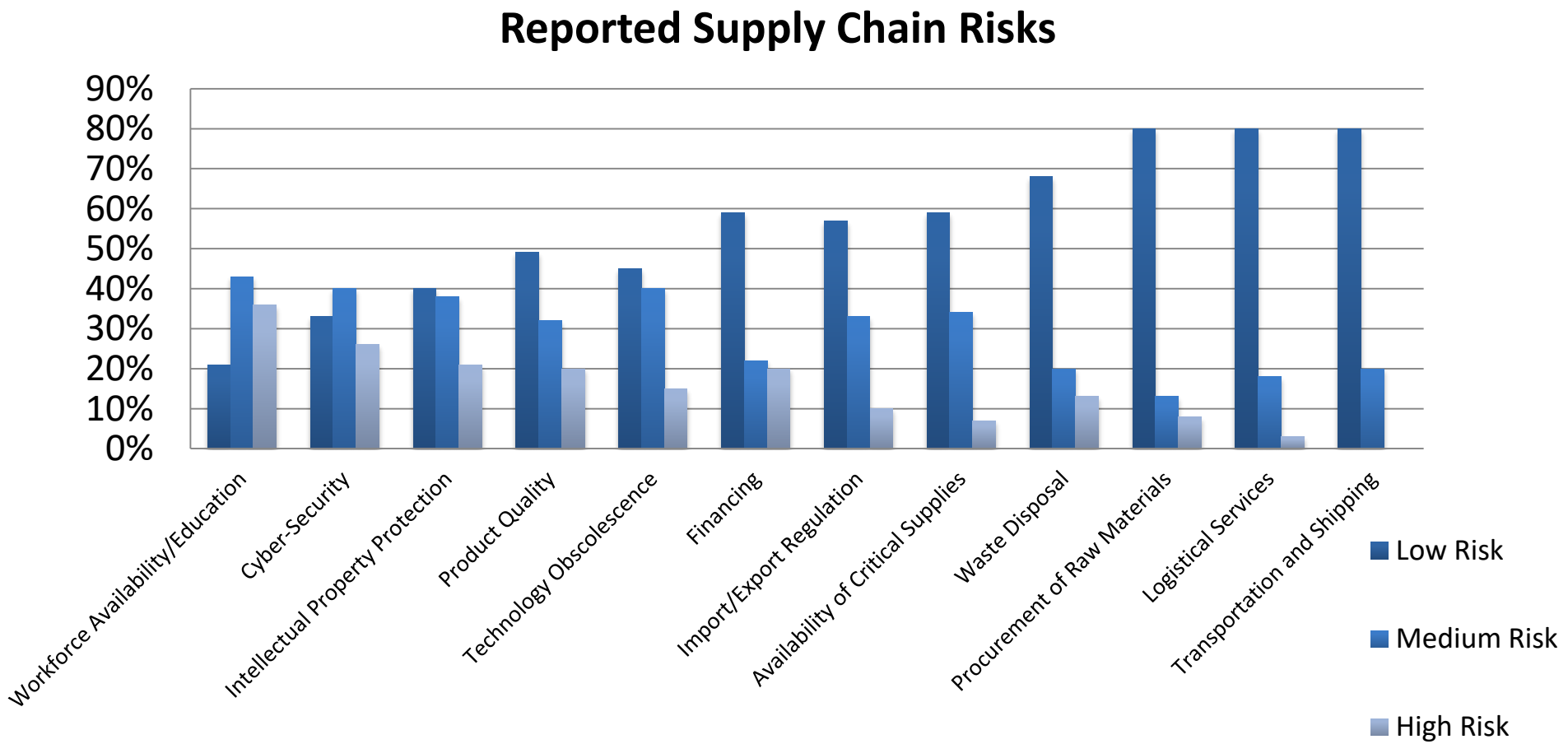
- Most companies surveyed saw at least one regional industry as having become more competitive
- Very few respondents saw the global industry as having become less competitive.



Section C: Carolina's Nuclear Business Environment

Describe your organization or company's Supply Chain Risks

- Transportation and shipping were largely described as low risks. Workforce Availability and Cyber Security were, on average, described as the biggest risks.



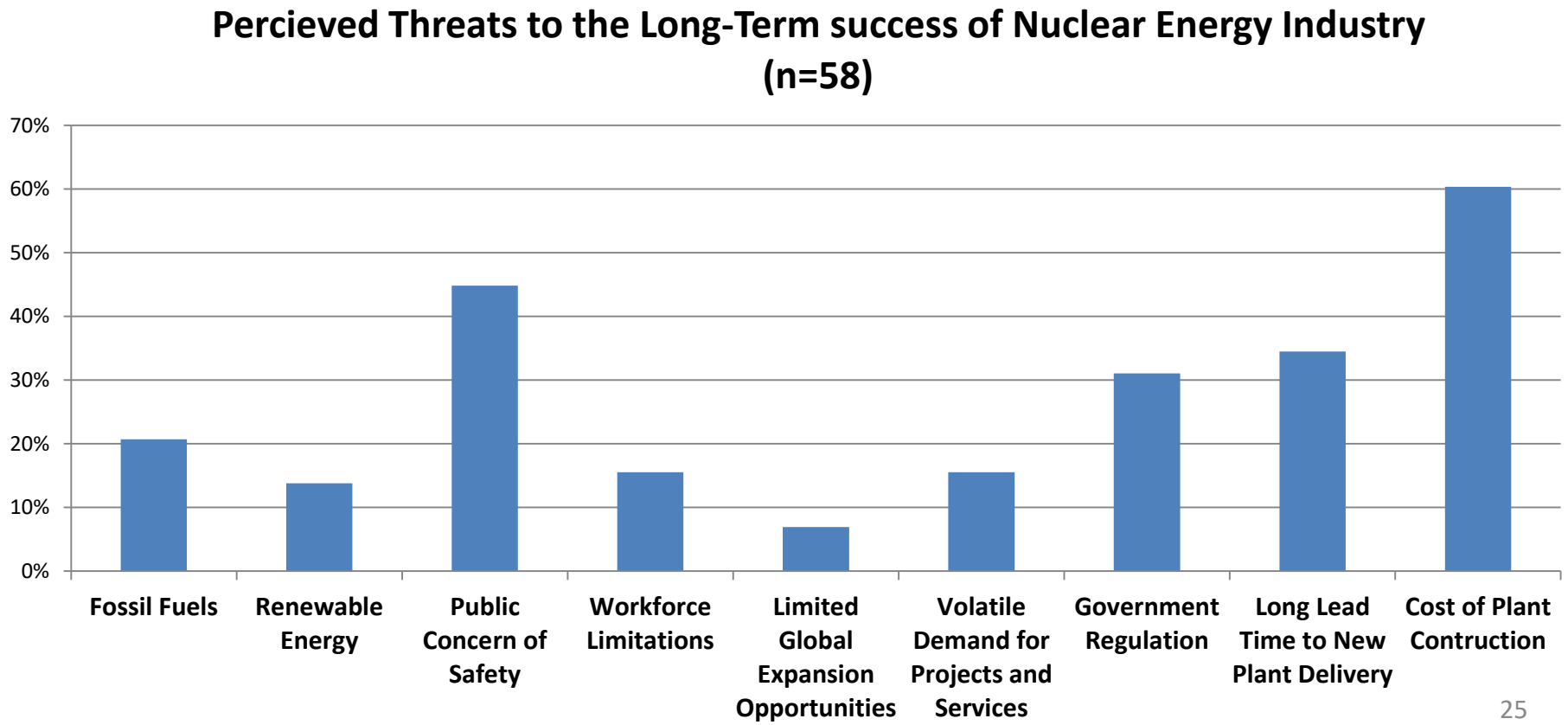
Respondent #3 denoted VAT taxes as a high risk

VI. Section D: Nuclear Energy Issues That Should Be Addressed

D. Describe Nuclear Energy Issues That Should Be Addressed

What are the greatest threats to the long term success of the nuclear energy industry?

- The most common concerns in the industry were the cost of plant construction and the public's concern with the safety of nuclear energy.
- Comparatively few firms saw limited global expansion opportunities as a threat to the industry.

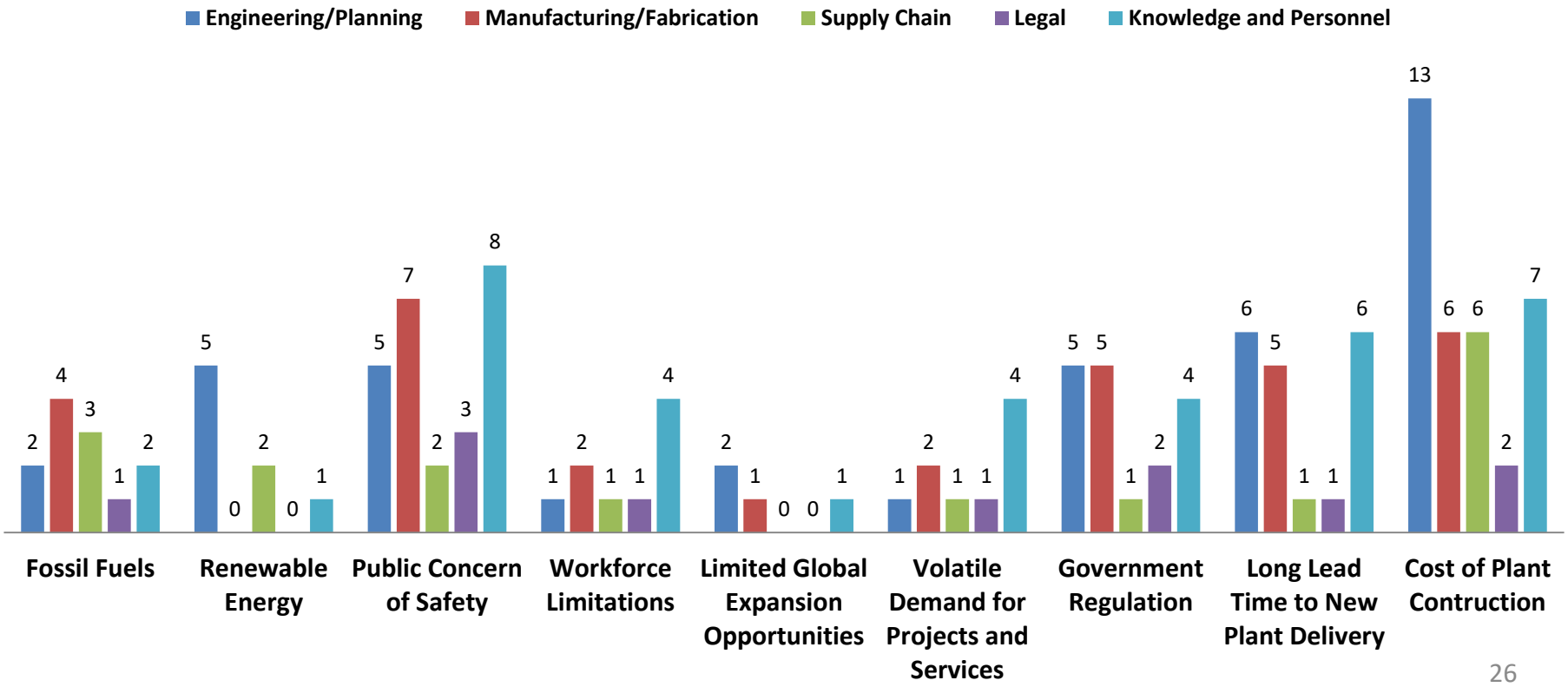


D. Describe Nuclear Energy Issues That Should Be Addressed

What are the greatest threats to the long term success of the nuclear energy industry?

- By number, almost every Engineering and Planning company described cost of new plant construction as a major threat to the industry
- A fair number of Knowledge and Personnel companies saw the public concern of the safety of nuclear energy as a threat to long term success.

Perceived Threats to the Industry by Business Capabilities



D. Describe Nuclear Energy Issues That Should Be Addressed

What are the greatest threats to the long term success of the nuclear energy industry?

- Companies were given an "Other" option in which they could describe threats to the long-tern success of the industry that were not listed in the questionnaire. Some responses are listed below:

Other factor cited (content unedited)	Business Capability Description
Democratic Party	Repair and Maintenance
Disposal of spent nuclear material; shutting down old plants safely.	Networking and Education
Lack of base load generation prioritization.	R&D
Plants shutting down means less customers.	Manufacturing of Industry Materials
Unrealistic low temporary natural gas prices; lack of carbon subsidy for nuclear compared to wind & solar.	Audit Training, 3rd Party Consulting

D. Describe Nuclear Energy Issues That Should Be Addressed

Describe one instance where an inconsequential federal or state nuclear energy regulation posed a serious business problem for your company or organization.

Several specific regulations arose that firms felt caused significant problems in their companies:

Theme	Statements	Notes
Government Regulation	"Lack of political leadership… to resolve federal government budget issues and the continuous use of sequestration" "There have been delays in contracting for federal grants"	Several comments across the survey were made about government regulations. Regulations are perceived to be too stringent in ways that are unnecessary. Federal grant applications were also mentioned as being prohibitively time consuming by multiple firms.
Consistency	"Inconsistent application of nuclear safety culture expectations across the industry." "The DOE is uneven in its treatment of vendors for the nuclear business. They tend to favor large more established companies and tilt the bidding process in their favor."	All companies that had issues with consistency worked in a facet of fabrication.
Licensing	"NRC Licensing for small research reactors is [an] excessively long process" "Renewing active licenses"	Not only obtaining licenses, but renewing licenses for research and reactor access are difficult and drawn out processes that discourage involvement in the industry.

D. Describe Nuclear Energy Issues That Should Be Addressed

What do you believe to be the most significant US nuclear industry commercial loss to foreign competition in the past few years?

The following themes arose in looking at what caused losses in the industry:

Theme	Description	Business Capability
UAE Barakah Nuclear Project	Three respondents claimed that the UAE's effort to erect four new Korean-built reactors caused the most significant loss.	Two of the companies that mentioned UAE were consulting firms.
Toshiba Buyout of Westinghouse	Westinghouse is a major American nuclear component maker. Two respondents believe the buyout is or will be a significant loss to the domestic nuclear energy industry. One of these respondents specifically mentioned that CB&I has already lost business to Toshiba.	The company that mentioned CB&I (Ansgar Industrial, LLC.) is a manufacturing company and specifically mentioned CB&I's structural manufacturing contracts.
Asian Sector Competition	Three respondents claimed that competition from China, Korea and Japan's Nuclear industries were causing losses to their companies. The meltdown in Fukushima was also cited as a cause of more stringent American policies.	The companies that mentioned these issues operate in different capacities.
Brain Drain/ Exodus of Young Professionals	Three companies claimed that young American job seekers in nuclear energy are going overseas where the nuclear energy industry is perceived to be more robust.	Both companies that mentioned this problem specifically were involved with Engineering, Procurement and Construction

D. Describe Nuclear Energy Issues That Should Be Addressed

What do you believe to be the most significant US nuclear industry commercial loss to foreign competition in the past few years?

Some specific comments on these issues are as follows

Themes	Statements	Notes
Asian Sector and Fukushima	"There is so much regulation now it is hard to compete against the Chinese and Koreans."	Vietnam was also mentioned as a competitor. The Fukushima meltdown paved the way for regulations that many in the industry find unfair and inhibiting. These responses were provided by one fabrication company and three firms involved in consulting.
Brain Drain	"Knowledge - we are losing our young educated individuals to foreign companies and countries" "We don't have a lot of talent so a lot of people from other countries get the jobs. Look at France, Russia, India, and China where plants are being built. Because they are subsidized, there are credit advantages for those state-controlled entities."	With the global nuclear energy industry growing, many young individuals are finding opportunities to work overseas in the industry. The companies that provided these responses differed in their business capabilities.

D. Describe Nuclear Energy Issues That Should Be Addressed

If you could have one federal nuclear policy change enacted in 2017, what would it be.

Themes	Statements	Business Capability
Policy Modification	"Get rid of the nuclear promise (30% reduction in operating costs)" Follow through on the NWPA and NWPAA	Two recruitment companies and three companies involved in fabrication suggested such changes.
"Zero Emissions" policy	"Equality with renewable energy on subsidies and federal support and regulation" "Subsiding Nuclear Development on par with renewables"	Zero emissions policies were brought up by companies of several industries.
Economic Policies	"Better financial credit for nuclear power (new builds + carbon credits)"	This comment was made WEC Carolina Energy Solutions, which operates under Westinghouse.
Recycling/Waste Management	"The ability to reprocess spent fuel rods" Four companies mentioned Yucca Mountain specifically	Half of the companies that mentioned Yucca Mountain were involved in an aspect of Engineering.
Licensing	"Streamlining the licensing process. Applicants have to wait 5-6 years at this point." "Streamline advanced reactor licensing."	Licensing issues were brought up in much the same was as they were in question D1, all by companies with different business capabilities.

Non-Participant Analysis

Non-Participant Analysis

A total of 24 firms declined to complete the survey

- Three firms stated that they were too busy to participate
- Five companies were simply not interested.
- Three companies contacted were out of business.
- Seven companies stated that the survey was not applicable to their company. One was not in the Carolinas. Three stated that their business was not nuclear or has very little connection.

Further Steps

Further Steps

Based on the data, we have several suggestions that may help the nuclear energy industry in the Carolinas.

- International competition is a point of concern for many of the companies surveyed. The international community has been said to be well ahead of the US as far as promoting their nuclear energy industries. It would be advisable to observe policies that are in place in countries that have advanced nuclear energy programs (Japan, France, United Arab Emirates) and try to replicate those policies in the US.
- Nuclear energy does not get some policy advantages that other forms of alternate energy (solar wind, etc.) receive. Several companies surveyed believe that this is unfair. The carbon tax was mentioned several times in surveys.
- Recycling and waste management were mentioned several times in the survey. Practices such as recycling spent fuel rods would be useful to companies to reduce waste and boost output. Several companies also mentioned that opening the Yucca Mountain storage facility would help their operations.
- Many young people who study nuclear energy go on to acquire jobs overseas given the perception that the nuclear energy industry is more robust overseas. Incentive programs for young experts would encourage new hires to stay in the US and apply their knowledge to the domestic industry.
- More research on developing Small Modular Reactors would be helpful with competing with the international community as some countries, respondents mentioned, are ahead of the US in developing them.