2013 North Carolina Clean Energy Industry Census







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North Carolina Sustainable Energy Association:

Founded in 1978, the North Carolina Sustainable Energy Association is a 501(c)3 nonprofit membership organization of individuals, businesses, government, and non-profits interested in North Carolina's sustainable energy future. Located in Raleigh, but active statewide, the North Carolina Sustainable Energy Association is the leading nonprofit in North Carolina devoted to driving public policy change and market development in ways that will create clean energy jobs, business opportunities, and affordable energy.

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INTRODUCTION

n 2008, the North Carolina Sustainable Energy Association (NCSEA) undertook a first of its kind survey of the clean energy industry in order to quantify its impact on the state's economy and report the findings. The 2013 North Carolina Clean Energy Industry Census (North Carolina Census) represents the sixth edition of this annual report prepared by NCSEA.

2013 is the inaugural year of an expanded geographic scope for the census. NCSEA's North Carolina Census served as a template for this year's broader four state effort, the Southeast Clean Energy Industry Census (Southeast Census).¹ The Southeast Census surveyed companies, institutions, and organizations (collectively referred to as "firms" in this report) in North Carolina, Georgia, South Carolina and Virginia to understand employment, revenue, and policy drivers of various sectors and activities within each state's and the southeast region's clean energy industry. This report presents and analyzes the North Carolina Census results. Please visit <u>www.cleanenergyindustry.org</u> for information on the Southeast Census results.

Data is self-reported by firms who classify themselves among a selection of clean energy business sectors and activities. Data in this report is only presented in aggregate in order to protect the privacy of these firms. Readers interested in additional analysis on census data and related market intelligence should contact NCSEA staff directly at <u>info@energync.org</u> with their questions.²

Table 1: Business Sectors analyzed by NCSEA, 2013

Business Sector	Abbreviation
Solar	Solar
Wind	Wind
Biomass	Biomass
Hydroelectric	Hydro
Geothermal/Ground Source Heat Pumps	Geothermal
Smart Grid or AMI/AMR Infrastructure	Smart Grid
Energy Efficiency/Building Sciences	EE Bldg
Energy Storage (including fuel cells)	Storage
Alternative Fuels or Clean Fuel Vehicle Conversion	Vehicles

Table 2: Overview of North Carolina Clean Energy IndustryCensus Results, 2013

2013 North Carolina Clean Energy Industry Census Overview				
Number of Responding Firms	Statewide Clean Energy Employees	Statewide Clean Energy Revenue		
570	18,404	\$3,584,441,125		

This report aims to provide a snapshot of the current state of the clean energy industry in North Carolina by addressing common questions such as:

- How many firms are currently working in the various sectors within the clean energy industry, and what are their business activities?
- How many people are employed by these firms?
- How much revenue are these firms generating?
- What are the drivers for growth in this industry going forward?

NCSEA created the industry census to help measure the impact of North Carolina's clean energy policies, and identify where policies are or are not achieving the results policymakers, economic developers and industry envisioned. Presenting analysis on employment, revenues, geographic presence, export activity, business hurdles, and growth potential in the industry, the North Carolina Census report has become an invaluable resource for stakeholders with a myriad of uses including:

- Benchmarking the overall industry and specific sectors.
- Supporting decision-makers in answering policy questions.
- Promoting the success of clean energy policies, businesses, and industries.
- Identifying policy challenges and possible solutions.
- Tracking the development of clean energy markets in North Carolina.

During the period from 2007-2012, policies such as the Renewable Energy and Energy Efficiency Portfolio Standard³, the Renewable Energy Investment Tax Credit⁴, and the Utility Savings Initiative⁵ allowed our clean energy industry to access the energy market, compete on price and quality, and build out a supply chain to the benefit of the entire North Carolina economy.

Economic impact studies and this annual industry census have shown North Carolina's clean energy industry and the policies that enable them to perform are a net benefit to both the state's economy and electricity ratepayers. In February 2013, RTI International and La Capra Associates collaborated on a report quantifying the impacts of these initiatives and found the following⁶:

- Clean energy development has resulted in a net gain of 21,163 job years.⁷
- Clean energy policies have generated \$113 million in state revenues.
- Energy efficiency programs saved the government an estimated \$427 million in taxpayer money.
- Enough energy has been generated or saved through renewable energy and energy efficiency projects (8.2 million MWh) to power all the homes in Charlotte, Raleigh, and Fayetteville for an entire year.

Included in this years Census report are key North Carolina findings from analysis of data collected through the 2013 North Carolina Census, which captured full or partial responses from 570 firms operating within North Carolina. This represents

EMPLOYMENT

he clean energy industry continued its trend of expansion and economic development in North Carolina throughout 2013. North Carolina's clean energy industry has added jobs each of the past six years, partially mitigating what would have been even greater employment losses across North Carolina and the nation during the Great Recession.¹⁰ approximately 52% of the estimated 1,100 firms currently conducting clean energy related business in North Carolina.⁸ This edition of the report, however, does not attempt to estimate the impacts of non-respondents. This report and the North Carolina data available at www.cleanenergyindustry.org present only the aggregated data provided by the 570 North Carolina clean energy firms that participated in the 2013 North Carolina Census. As a result, all estimates of employment, revenues, and demographics in this report are inherently conservative in nature, thus the true economic impact of the clean energy industry is indeed larger than what is presented here. The total number of firms providing data for a particular calculation is noted throughout the report, and response rates for all analyses are based on the estimated 1,100 clean energy firms operating in North Carolina.⁹ Please refer to Appendix A for greater detail of survey methodology.

Table 3: Business Activities analyzed by NCSEA, 2013

Business Activity	Abbreviation
Research and Development	R&D
Manufacturing and Production	Manufacturing
New Energy Efficient Design and Construction	EE Construction
Energy Efficiency Retrofitting of Existing Buildings	EE Retrofitting
Renewable Energy Systems Retailer or Distributor	RE Retailer
Renewable Energy Systems Installer Designer Developer	RE Installer
Power Generation Owner or Operator	Generation
Education, Services, and Consulting	Services

The 562 responding firms (51% response rate) that provided employment data account for a reported 18,404 full-time equivalent (FTE) employees in North Carolina representing an increase of over 20% from 2012 numbers (15,200 FTE).¹¹

The clean energy industry currently employs 18,404 full-time equivalent employees in North Carolina, up more than 20% from 2012.

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EMPLOYMENT BY SECTOR

Clean energy firms operating in North Carolina occupy a diversity of business sectors, led by Energy Efficiency and Building Sciences (356 firms, 33% of respondents), Solar (240 firms, 22%), and Geothermal/Underground Heat Pumps (122 firms, 11%).

Energy Efficiency and Building Sciences also led employment with 5,411 FTE (33%). Solar firms are also well represented, with the third highest employment numbers in 2013, accounting for 2,422 FTE (15%). Notably, Smart Grid or AMI/ AMR Infrastructure firms rank last in the number of firms in the marketplace (43 firms, 4%), but are second in employment with 4,177 FTE (25%). Table 4: North Carolina Clean Energy Organizations andEmployment by Business Sector, 2013

Sector	# of Responding Firms	% of Responding Firms	Clean Energy FTE	% State Clean Energy FTE
Solar	240	22%	2,422	15%
Wind	64	6%	632	4%
Biomass	94	9%	1,277	8%
Hydro	39	4%	953	6%
Geothermal	122	11%	480	3%
Smart Grid	43	4%	4,177	25%
EE Bldg	356	33%	5,411	33%
Storage	47	4%	544	3%
Vehicles	70	7%	678	4%
Sector Totals	1,075	100%	16,573	100%

The Smart Grid sector had the highest employment in 2013 with just over 97 FTE per firm. Hydroelectric firms were second with an average of nearly 24 FTE, followed by Energy Efficiency and Building Sciences with approximately 15 FTE per firm.



2013 Clean Energy Organizations by Business Sector

Figure 1: Distribution of Organizations by Business Sector, 2013

2013 Clean Energy FTE by Business Sector



Figure 2: Distribution of Employment by Business Sector, 2013

EMPLOYMENT BY ACTIVITY

Firms participate in a wide variety of clean energy business activities in North Carolina, with the largest portion of respondents (287 firms, 20% of total) reporting involvement in New Energy Efficient Design and Construction, Energy Efficient Retrofitting of Existing Buildings (269 firms, 19%), and Education, Services, and Consulting (248 firms, 18%). Interestingly, the business activities that had the greatest number of firms did not necessarily have the highest employment. Education, Services, and Consulting led the way in employment in 2013 with 4,587 FTE (27% of the clean energy workforce), significantly higher than the 2,727 FTE (16%) reported in New Energy Efficient Design and Construction, and the 2,457 FTE (15%) in Research and Development.

Manufacturing firms were the leading employers in 2013 with nearly 20 FTE per firm. Education, Services, and Consulting followed closely with 18.5 FTE, as did Research and Development firms with 15 FTE.

Table 5: North Carolina Clean Energy Organizations andEmployment by Business Activity, 2013

Activity	# of Responding Firms	% of Responding Firms	Clean Energy FTE	% State Clean Energy FTE
R&D	157	11%	2,457	15%
Manufacturing	104	7%	1,983	12%
EE Construction	287	20%	2,727	16%
EE Retrofitting	269	19%	1,614	10%
RE Retailer	91	6%	453	3%
RE Installer	200	14%	2,352	14%
Generation	56	4%	580	3%
Services	248	18%	4,587	27%
Activity Totals	1,412	100%	16,753	100%

2013 Clean Energy Organizations by Business Activity

RE Retailer

7%

EE Retrofitting

19%

EE Construction

20%

RE Installer

14%

Manufacturing

7%

Generation

4%

R&D

11%

Services 18%





Figure 3: Distribution of Organizations by Business Activity, 2013

Figure 4: Distribution of Employment by Business Activity, 2013

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EMPLOYMENT GOING FORWARD

Going forward, the perspective for 2014 employment growth across the clean energy industry looks very favorable with firms reporting they will add jobs across all business sectors and activities.

Between 64% and 68% of firms involved in Power Generation, Research and Development, and Manufacturing and Production expect to add jobs in 2014.

Business sectors with fewer firms currently participating are anticipating to be job providers in the future. Energy Storage, Alternative Fuels and Clean Fuel Vehicle Conversion, and Smart Grid or AMI/AMR Infrastructure each report that over 60% of firms are somewhat or very likely to add jobs over the next twelve months. In addition, between 64% and 68% of clean energy firms involved in Power Generation, Research and Development, and Manufacturing and Production expect to add jobs in 2014.

These results show that each clean energy business sector in North

Carolina grew in 2013 and will continue to grow through 2014. Industry clusters appear to be maturing and innovating, as indicated by the projected growth in the Smart Grid and AMI/AMR Infrastructure sector, as well as activities of Research and Development, and Manufacturing and Production.

REVENUE

his year's census captured revenue numbers from 443 firms (40% response rate) in North Carolina that cumulatively reported approximately \$3.6 billion in gross revenues.

NCSEA estimated that \$3.6 billion in gross revenues were generated by the 443 clean energy firms in North Carolina disclosing their income.

REVENUE BY SECTOR

Among business sectors, Solar is again a leader, generating \$1.1B in 2013 to account for 30% of all earnings in the industry. It is followed closely by Energy Efficiency and Building Sciences with \$985M (28%) in revenues, and Smart Grid or AMI/AMR Infrastructure with \$611M (17%). The next highest earning sector is much lower with Energy Storage grossing \$265M in revenues.

Table 6: North Carolina Clean Energy Revenues by Business Sector, 2013

Sector	# of Responding Firms	% of Responding Firms	Clean Energy FTE	% State Clean Energy FTE
Solar	240	22%	\$1,059,567,129	30%
Wind	64	6%	\$88,848,435	3%
Biomass	94	9%	\$230,956,574	7%
Hydro	39	4%	\$104,959,113	3%
Geothermal	122	11%	\$88,527,387	3%
Smart Grid	43	4%	\$611,421,713	17%
EE Bldg	356	33%	\$984,712,339	28%
Storage	47	4%	\$265,376,745	8%
Vehicles	70	7%	\$66,934,200	2%
Sector Totals	1,075	100%	\$3,501,303,633	100%

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Figure 5: Clean Energy Revenues by Business Sector, 2013



Vehicles 2%

3%

Biomass 7%

Wind

3%

RE Installer

15%



Solar 30%

REVENUE BY ACTIVITY

Clean energy revenue distribution across business activities shows again that Research and Development (\$678M), New Energy Efficient Construction (\$671M), and Education, Services and Consulting (\$667M) are core

2013 Clean Energy

Revenues by Business Activity

to the clean energy industry. These three activities, combined with Renewable Energy Installation, Design, or Development account for nearly 75% of all the clean energy revenue generated by business activity in North Carolina over the last year.



Figure 7: Clean Energy Revenues by Business Activity, 2013



Figure 8: Clean Energy Revenue Distribution by Business Activity, 2013

EE Retrofitting

7%

RE Retailer

5%

EE Construction

19%

It is worth noting that the majority of firms in the North Carolina clean energy industry are specialized and have relatively small annual revenues. Data shows that 43% (213) of firms rely on clean energy activities for 100% of their revenues, and account for 82% (\$2.9 billion) of total clean energy income within the state. Additionally, 38% (189) of firms earned less than \$100,000 in clean energy revenue, but only made up 0.15% (\$5.5 million) of the statewide total revenue. In contrast, the three firms deriving greater than \$500M of revenue from clean energy business made up only 0.6% of respondents, but brought in nearly 42% (\$1.5 billion) of all revenues.

North Carolina clean energy firms remain small and specialized on the whole.

GEOGRAPHY

his year's census confirmed 620 widely distributed clean energy office locations throughout North Carolina belonging to 505 responding firms (46% response rate). Importantly, every region of the state is home to at least one clean energy firm.

GEOGRAPHY BY MICROECONOMIC REGION

In an effort to more closely match forthcoming changes in how the NC Department of Commerce characterizes economic development regions of the state, this year's census includes a breakdown of firms into sixteen Micro-Economic Regions within North Carolina.¹² Responses to the Census indicate that clean energy firms have office locations in each of the sixteen MicroEconomic Regions. Of these regions, the Triangle J Council of Governments contains the greatest number of clean energy offices (169), with the Centralina Council of Governments (93), Piedmont Triad Regional Council (67), and the Land-of-Sky Regional Council (58) also having a leading industry presence.



Figure 9: Map of North Carolina's Micro-Economic Regions

Clean energy firms have office locations in each of the economic and micro-economic regions in North Carolina.

Table 7: Clean Energy Office Locations and FTE by Micro-Region, 2013

Micro-Region	Offices	FTE	Micro-Region		FTE		
Triangle J Council of Governments	206	9,265	Albermarle Commission	13	628		
Centralina Council of Governments	114	1,908	Mid-Carolina Council of Governments	13	117		
Piedmont Triad Regional Council	87	490	Eastern Carolina Council of Governments	12	105		
Land-of_Sky Regional Council	64	466	Kerr-Tar Regional Council of Governments	10	786		
Cape Fear Council of Governments	40	206	Southwestern Commision	8	70		
Western Piedmont Council of Governments	15	50	Isothermal Planning & Development Commision	5	1,146		
High Country Council of Governments	14	104	Upper Coastal Plains Council of Governments	3	15		
Mid-East Commission	13	836	Lumber River Council of Governments	3	1		
Grand Total: 620 Offices, 16,194 FTE							

GEOGRAPHY BY ECONOMIC DEVELOPMENT PARTNERSHIP

Looking at the distribution of firms by regional economic development partnership areas, the Research Triangle contains the greatest number of clean energy offices (218), followed by the Charlotte Region (127) and the Piedmont Triad (87).¹³

Please be aware that the NC Department of Commerce is continuing work to define the most effective geographic areas for economic partnership within the state. Therefore, it is likely that some of the regions presented in these figures will be modified in the future.

Table 8: Clean Energy Office Locationsand FTE by Economic DevelopmentRegion, 2013

Region	Offices	FTE
Research Triangle	218	10,082
Charlotte Regional	127	2,284
Advantage West	93	1,460
Piedmont Triad	87	490
Southeast	54	293
Northeast	22	1,446
Eastern	19	139
Grand Total	620	16,194



Figure 10: Map of North Carolina's Economic Development Regions

EXPORTS

hile, the majority of North Carolina clean energy goods and services remain close to home, the clean energy industry has achieved a significant and increasing penetration into regional, national and international markets. Approximately 49% (435 firms) of all responding firms indicated that they participated in local markets within 100 miles of their office locations, 27% (245) entered regional markets up to 500 miles away, 16% (145) of firms have a national reach, and about 8% (68) operated internationally.

Table 9: Distribution of Market Participation by Business Sector, 2013

Sector	Local Markets	Regional Markets	National Markets	International Markets
Solar	42%	30%	20%	9%
Wind	30%	31%	24%	15%
Biomass	35%	32%	21%	12%
Hydro	41%	30%	21%	8%
Geothermal	54%	27%	12%	7%
Smart Grid	31%	27%	29%	14%
EE Bldg	53%	27%	13%	7%
Storage	27%	26%	27%	19%
Vehicles	37%	25%	23%	15%

Table 10: Distribution of Market Participation by BusinessActivity, 2013

Activity	Local Markets	Regional Markets	National Markets	International Markets
R&D	37%	27%	23%	13%
Manufacturing	39%	26%	21%	14%
EE Construction	55%	25%	14%	6%
EE Retrofitting	55%	27%	13%	5%
RE Retailer	45%	29%	17%	8%
RE Installer	47%	29%	17%	7%
Generation	47%	30%	18%	5%
Services	41%	31%	19%	9%

Participation in each market, however, was not equally distributed across all business sectors and activities. Firms active in energy storage, alternative fuels, and smart grid infrastructure had broader reach, as opposed to geothermal and hydroelectric activities, which were grounded in local markets. Additionally, Research and Development, and Manufacturing and Production firms had better than average penetration into national and international markets, while firms working in energy efficiency operated mostly in local markets.



Figure 9: Distribution of Companies Participating in various markets, 2013

FUTURE GROWTH

he clean energy industry in North Carolina has experienced rapid growth since the first census report in 2008 with increases in the number of firms, revenues, and employment. In an effort to determine what will drive continued growth across the industry, NCSEA solicited opinions from census respondents.

3 of 4 clean energy firms in North Carolina indicated that Standardized and Streamlined Permitting would benefit the industry.

Firms indicated that they would consider a wide range of both policy and market factors when deciding to add jobs during the next year. Access to incentives is their primary consideration, with 54% of all firms naming it as a factor in their decision. Additionally, 53% of firms indicated that consumer awareness will be critical to growing their business and therefore play a role in their hiring.

Also vital to the continued employment growth in North Carolina's clean energy industry will be matching the skills of the available workforce to the needs of the firms operating in the space. Across all business sectors and activities, 39% of firms observed a gap in Engineering and Design skills. An additional 33% of all firms indicated a gap in Customer Service and Sales expertise, and 26% of all firms indicated that they are lacking employees versed in Energy Auditing. The latter point is likely a result of the high number of firms focusing on Energy Efficiency and Building Sciences. These are areas of potential job growth as well as an indication that more training may be needed in these skill areas.

Finally, firms were given an opportunity to indicate which policies are the most important to their business. While there were a wide variety of responses across firms, one stood out as important to the industry as a whole. In 2013, nearly three of every four clean energy firms in North Carolina suggested that Streamlining and Standardizing Permitting are needed in order to improve the industry and market. This was a trend noticed by NCSEA, as the percent of firms indicating the importance of improved permitting has increased steadily since 2009.

Skill Gaps:

- Engineering and Design
- Customer Service/Sales
- Energy Auditing
- High Performance Building
- Electrical Systems/Wiring

In an effort to resolve this issue for one of the most active sectors of the North Carolina clean energy market, NCSEA has collaborated with the North Carolina Solar Center to develop a Template Solar Ordinance. The intent of this template approach is to facilitate the adoption of a consistent and applicable solar development ordinance for cities and counties throughout North Carolina. For more information on the Solar Ordinance please refer to <u>http://energync.org/</u> <u>resources/publications/</u> to view the document.

"The numbers in this year's Census leave no doubt that the clean energy industry is continuing to emerge as a valuable contributor to the state's economy," said Ivan Urlaub, Executive Director for NCSEA. "But growth like this doesn't happen by accident or chance. It is the result of entrepreneurs, investors and workers receiving a clear message that North Carolina is 'open for business,' and that only comes about through good clean energy policy."

CONCLUSION

he clean energy industry in North Carolina has approximately 1,100 operating firms, 570 of which responded to the 2013 North Carolina Census questions representing approximately 52% of the industry. Located throughout the state, these firms engage in a wide array of business activities, and represent a diversity of revenue and employment levels, as well as growth opportunities. NCSEA calculates that these firms generated \$3.6 billion in revenue, and employed more than 18,404 full-time equivalent positions in 2013. Firms have office locations across all economic regions of the state, and supply products and services to local, regional, national, and international markets.

Education, Services, and Consulting firms lead the way in terms of employment and revenues, followed by Research and Development, and New Energy Efficient Design and Construction. The greatest proportional increase in clean energy jobs is expected in three activities critical to North Carolina's ongoing economic resurgence, including Manufacturing and Production, Research and Development, and Power Generation. And while Solar and Energy Efficiency and Building Science tend to be major business sectors based on the high number of firms participating, Smart Grid or AMI/AMR Infrastructure firms continue to punch above their weight relative to the rest of the clean energy industry in terms of both employment and revenue. With 60% of Smart Grid and Energy Storage firms anticipating job growth in 2014, North Carolina continues to be a leading industry hub for Smart Grid and possesses a potentially emerging Energy Storage market. It is therefore important that North Carolina energy policies are shaped in a way that supports these industries. Plans for deployment of smart grid infrastructure should be well thought-out, and regulations regarding the large amount of data advanced metering creates will need to be developed.

Importantly, all sectors of the clean energy industry anticipate adding additional jobs in 2014. These jobs, however, hinge on both political and market factors related to incentive access and consumer awareness. Additionally, look for job postings in Engineering and Design, Customer Service and Sales, and Energy Auditing, as those are skills gaps that firms are looking to fill.

Further, the clean energy industry will look for streamlined and standardized permitting procedures to improve the ease of conducting business in North Carolina.

Finally, firms both incumbent and entering North Carolina will look for a stable regulatory landscape that allows the clean energy industry to continue the growth trend it has been experiencing since the NCSEA began aggregating census data in 2008. Uncertainty in the policy arena could have negative effects as firms will be hesitant to invest in an unpredictable marketplace.

Endnotes:

1. The Southeast Census is a partnership between the NCSEA, South Carolina Clean Energy Business Alliance (SCCEBA), Southface in Georgia, and the Virginia Energy Efficiency Council (VAEEC).

5. Utility Savings Initiative – Available at: www.energync.net/utility-savings-initiative

^{2.} Since 2008, NCSEA has expanded its data collection to include over twenty unique datasets measuring a diversity of market factors such as costs, projects, and resources. On a fee-for-service basis, NCSEA can assist private, public and non-profit entities needing more customized intelligence into clean energy market and policy in North Carolina.

^{3.} NC Renewable Energy and Energy Efficiency Portfolio Standard - Available at: www.ncuc.commerce.state.nc.us/reps/reps.htm

^{4.} N.C. Gen. Stat. § 105-129.15 et seq. Available at: http://www.ncleg.net/EnactedLegislation/Statutes/HTML/ByArticle/Chapter_105/Article_3B.html

^{6.} The Economic, Utility Portfolio, and Rate Impact of Clean Energy Development in North Carolina - Available at: www.energync.org/assets/files/RTI%20Study% 202013.pdf

^{7.} One job year represents full-time employment for an individual over 12 months. Two job years could be equivalent to an individual being employed full-time for two years, or two individuals being employed full-time for one year.

^{8.} Based on further analysis, NCSEA determined that there are an additional 530 clean energy firms active in North Carolina that did not participate in the 2013 North Carolina Census.

^{9.} e.g. Responses from 443 firms yields a response rate of 40% (443/1,100=0.40)

^{10.} National data available at: <u>www.bls.gov</u>, North Carolina specific data: www.nccommerce.com/lead

^{11. 2012} North Carolina Clean Energy Industries Census - www.energync.org/assets/files/2012Census.pdf

^{12.} NC Regional Councils – Available at: http://www.ncregions.org/regional-map/

^{13.} North Carolina Economic Development Regional Partnerships – Available at: <u>www.nccommerce.com/about-our-department/partners-allies</u>; the number of office locations is smaller than past annual results because only responding firms are included in this year's results, even though the address of non-responding firms is known.

APPENDIX A: METHODOLOGY

Identifying Clean Energy Firms in North Carolina

- NCSEA compiled a preliminary list of companies, organizations, and institutions potentially conducting clean energy business in NC.
- NCSEA performed research assessing whether each identified firm was indeed involved in a clean energy business sector included in the Census.
- For firms deemed to be within the scope, NCSEA identified primary and secondary contacts and obtained their e-mail and telephone information.
- NCSEA shared its preliminary list of clean energy firms with its partners Southface, SCCEBA, and VAEEC in order to eliminate duplicate entries.
- The final list of North Carolina clean energy firms was delivered to the North Carolina State University Center for Urban Affairs and Community Services (NC State). NC State conducted the online survey and follow-up phone calls.

Performing the Survey

NCSEA sent a survey e-mail to each North Carolina firm, which included a hyperlink to the online survey, as well as unique login and password credentials. NCSEA sent multiple reminder e-mails to those North Carolina firms that had not completed the online survey. NC State commenced phone interviews with North Carolina firms that had not yet completed the online survey. The survey closed on October 14, 2013. Results in this report are specific to business conducted within North Carolina only. Please see <u>cleanenergyindustry.org</u> for aggregate results from all states included in the census.

Calculating Full-Time Equivalent Employees

NCSEA uses "full time equivalent" employees, or FTEs, as opposed to the number of individual employees. FTE is representational of a single 30 hour per week block of employment. We calculate FTE employees by multiplying a company's total number of North Carolina employees at the time of the survey by the percentage of time that the company spends operating in the clean energy industry. FTEs provide a high degree of flexibility for accurately modeling the equivalent man-hours spent working on clean energy. For example, two employees who spend 50% of their time on clean energy would be calculated as a clean energy FTE of 1.0.

Calculating Annual Revenue

NCSEA asks firms to report total North Carolina clean energy revenue and the percent of revenue that is directly attributable to clean energy activities for the previous fiscal year. Therefore, all revenue data presented here is for the last complete calendar year, 2012. Firms that do not want to provide a specific clean energy revenue figure are allowed to select a total revenue range. Revenue calculations in this report rely on the following methodology:

- Firms are asked to manually enter an estimate of their total revenues from clean energy business in North Carolina during the previous year.
- If a firm does not wish to provide an estimate of their exact revenues from clean energy they are given the option to select a range encompassing their total revenue, as well as the percentage of their total revenue derived from the clean energy industry.
- Firms that opted to select revenue range are assigned the median value for each of their respective brackets. In other words, a company falling in the "less than \$100,000" and brackets would be classified as "\$50,000."
- <u>Except</u> in the case of firms selecting "\$500 million or more" as their revenue bracket. Firms in the "\$500 million or more" bracket are assigned an income of \$500 million.
- The assigned revenue is then multiplied by that firm's indicated percentage of total revenue deriving from the clean energy industry to calculate their total clean energy revenue.
- The clean energy revenue for all firms is added together to generate the aggregated revenue from reporting firms.
- In the event that a firm entered both a numerical value for revenue and a revenue range, the range was given priority to prevent double counting.

Allocation of FTE and Revenue

Like 2012, the 2013 census allowed for companies to report the percent of time they spend on multiple clean energy business sectors and activities. Therefore, total number of firms by business sector or business activity is a larger number than unique firms that participated in the Census. This methodology allows NCSEA to attribute both FTE and revenue across business sectors and activities by multiplying the percent of time that a company spends on a particular sector or activity by the total number of FTE and total revenue respectively. Staff time provided by each respondent is therefore the best proxy for allocating FTE and revenues across clean energy sectors and activities.

Some organizations did not provide FTE information by business sector or business activity. Therefore, totaling FTEs by sector or activity yields a number smaller than the total clean energy FTE.

