

Leading Industry Sectors in the North Carolina Economy: A Criteria Based Approach to Industry Targeting

	Employment	Location Quotient	10 year Employment Growth	Wages or Salary
Potential Industry Target	2010 Jobs	2010 National LQ	Projected Growth	2010 Average
Advanced Battery Development	5,810	0.83	1,792	\$73,205
Aerospace	29,293	0.64	7,090	\$64,650
Automotive Transportation	25,428	1.12	3,918	\$48,496
Biofuels	403	0.38	-166	\$46,297
Biotech*	50,983	1.06	6,847	\$71,338
Business Headquarters*	69,981	1.32	4,721	\$77,756
Chemicals, Rubber and Plastics	69,407	1.62	1,469	\$59,690
Commercial Agriculture	84,426	1.16	-5,039	\$35,099
Datacenters	10,783	1.19	4,880	\$77,358
Financial Services*	118,804	0.94	17,579	\$64,635
Furnishings	40,222	2.54	-11,620	\$33,944
Trucks and Construction Equipment	8,579	1.12	6	\$56,022
Household Appliances	1,786	1.00	1,810	\$44,924
Hydroelectric and Tidal	4,539	0.79	600	\$55,480
Insurance	44,620	0.71	-138	\$60,478
Marine Trades	4,515	0.39	-1,157	\$46,864
Motorsports	10,009	1.27	2,655	\$77,945
Nuclear	7,965	1.09	434	\$60,709
Pharmaceuticals	15,027	2.31	2,151	\$87,275
Smart Grid	14,396	0.86	3,155	\$94,613
Software Development and Personal Communication Technology	85,578	0.86	12,392	\$80,604
Solar	10,418	0.83	2,450	\$63,999
Textiles	47,946	3.87	-6,268	\$33,376
Wind	3,011	1.88	186	\$56,611
<i>Elimination Factors</i> <i>*indicates exclusion after additional considerations</i>	<i>Under 12,500</i>	<i>Under 0.5</i>	<i>Under 3,000</i>	<i>Under \$35k</i>

Conclusion

Software Development and Personal Communication Technology, Smart Grid, Automotive Transportation Manufacturing, and Aerospace are promising sectors for a targeting strategy in North Carolina. This study estimates the current size, potential for growth, existing concentration and job quality (by wages) of the core functions within these industry sectors and they perform "best" by these measures.

The list of potential target sectors could be further reduced with asset mapping -- identifying existing strengths and weaknesses in the sector. In addition, the "clustering" potential of these sectors could be analyzed. Clustering analysis looks at the relationships core firms have to other firms along

their value chains. Economic development theory suggests regions with clustered firms have a distinct competitive advantage because firms that spatially cluster enjoy cost savings from proximity that can lead to higher productivity and profits.

Identifying leading sectors is common practice in economic development, but there is no best approach to determine why certain industries are "better" for North Carolina than any other. Across the State, many regions are thriving with high paying jobs, while other areas struggle to attract jobs and remain less developed. An industry targeting strategy would not necessarily be the right approach to stimulating these underdeveloped areas. But information in this report should nonetheless become useful in the Department's broad economic development strategies.

Prepared by:

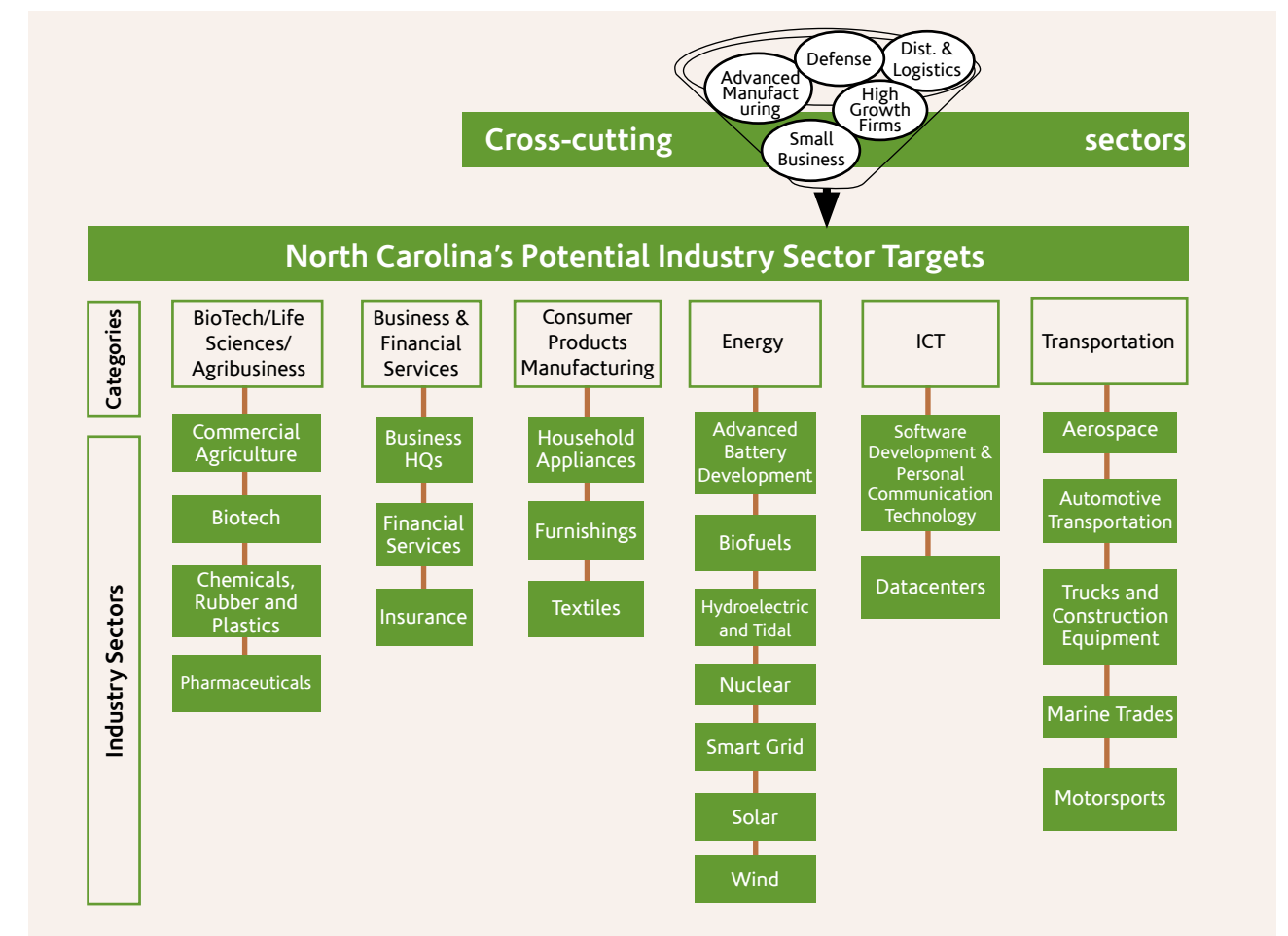


On behalf of the North Carolina
Economic Development Board



In 2010, the North Carolina Department of Commerce's Economic Development Board identified Industry Sector Targeting as an important strategic pursuit. To initiate this targeting strategy, the Board formed a Targeting Task Force to identify North Carolina's most promising industry sectors. Initially the Task Force, made up of Board members and supported by Commerce staff, segmented the State's total economy into *Categories* and then into more discrete and measurable *Industry Sectors* as a means to evaluate performance within existing and emerging industry types (see graphic below). To make the Board's work useful to a wider audience, Commerce staff was asked to prepare this document.

North Carolina is a vibrant state with a rapidly growing population and a diverse economy. There are over four million people in the State's civilian labor force; approximately 20 percent of the workforce contributes to the twenty-four industry sectors analyzed in this report. Industries such as Retail and Wholesale Trade, Government, and cross-cutting sectors such as Advanced Manufacturing and Defense -- which make up the other 80 percent of the workforce -- are important parts of the State's economy, but are either not measurable by established industry definitions or are not appropriate as targets for this type of strategy.



Note: Chemicals, Rubber and Plastics overlaps with multiple industry sectors; therefore, there is double-counting when overlap could not be avoided.

Industry Definitions

This analysis was conducted using NAICS Code definitions. NAICS, or the North American Industry Classification System, is used by Federal agencies to classify similar establishment activities into hierarchical industry definitions. The U.S. Census Bureau assigns one NAICS Code to each establishment based on its primary activity – usually the activity that generates the most revenue for the establishment. This allows for quantitative analysis of the U.S. economy and its sub-regions.

For this analysis, groupings of NAICS Codes were selected to create core industry sector definitions. While the terms “industry” and “sector” may be used interchangeably, in this report industry sector refers to a specific group of NAICS Codes chosen by the researchers and the N.C. Economic Development Board to reflect their understanding of the State’s industries. In practice, defining an industry can be an iterative process that depends on the final needs of the user. It is important to note that defining an industry in a certain way will impact data outcomes.

Industry sectors are defined by the **core** industries contained within them. For instance, dishwasher manufacturing is a part of the NAICS Code Household Appliances. Industries that are suppliers to the core industry functions are not included in our definition, so the industry NAICS for the software used in an automatic dishwasher is not included.

A limitation to this analysis is that some sectors are clearly definable by NAICS Codes while others are not. Generally, emerging industries are more difficult to define. For example, it is easier to define the nuclear power industry than it is to define the wind energy industry. Because emerging industries are more difficult to precisely define with NAICS, emerging sectors are likely over-counted. It is helpful to think of the analysis in this study for the emerging sectors – such as the smart grid and solar industries – as **potential** results that could occur as the sector becomes more fully developed. Established sectors like textiles and furnishings have closer to actual estimates in this study. Although effort was made to limit double counting, the goal

of the analysis was not to eliminate duplication; rather it was to determine what the core activities of each industry sector are.

NAICS Codes are evaluated continuously and updated every five years to accommodate changes in the economy. The next update will be in 2012. The NAICS Codes used in defining each of these twenty-four industry sectors relied on multiple sources including published research, industry trade associations, the Department of Commerce’s proprietary analytical tools, industry experts and Targeting Task Force members.

Data Analysis and Methodology

This analysis identifies and measures areas of North Carolina’s economy that could potentially be targeted as part of an economic development strategy. The twenty-four sectors analyzed here represent a statewide survey of industries and are, to varying degrees, established, emerging or declining in the North Carolina economy. Nearly all industries with the highest economic development potential in terms of job creation and concentration are included within these twenty-four sectors.

Of course, all twenty-four sectors will continue to be important to the North Carolina Department of Commerce and its regional economic development partners, but limited resources necessitate a focused effort in a targeting strategy. Targeting strategies work best when they are proactive, benchmark-directed, time-limited and measurable. Targeting will occur within a suite of approaches taken by the Department of Commerce and will not become the Agency’s exclusive strategy.

Four metrics were used to analyze the relative growth and size of each industry sector in North Carolina. These metrics are common tools economic development analysts use (among many potential measurements) to examine an industry’s relative importance. The four metrics approved by

the Economic Development Board for this study are:

- Current employment
- Current wages
- Projected employment changes (2010 – 2020)
- Location Quotients (for employment)¹

$$LQ = \frac{e_i/e}{E_i/E}$$

Taken together, the four data points for each sector provide a more robust picture of all sectors.² Once the four variables were calculated, a process of elimination identified the leading industries.

Thresholds were created based on natural breaks in the data. Industry sectors with low location quotients (>0.5) were removed, as were sectors with average wages below \$35,000. Sectors with fewer than 12,500 current total jobs were eliminated with the expectation that there may not be enough current industry presence to further target the sector. Lastly, only industry sectors with projected ten year growth of 3,000 employees or more were considered.

These threshold criteria eliminated all but eight industry sectors. Afterwards, staff considered other qualitative factors such as the degree of targeting activities currently taking place in the industry, whether the sector was concentrated in only one portion of the State, and whether there were adequate resources in place to strategically target the industry sector. Additional consideration was given to “spillover effects” the sectors could have in the economy in terms of attracting more supplier firms to North Carolina.

The chart on the following page illustrates the metrics for each industry sector. Green shading indicates elimination. For example, Marine Trades was eliminated because the industry sector did not

meet the current employment, location quotient or projected growth thresholds.

Biotech, Financial Services and Business Headquarters (indicated by a *) were removed because of qualitative factors. The Biotech sector was eliminated because it is regionally concentrated and the Biotechnology Center already exists to support growth of the sector. Business Headquarters and Financial Services were removed because of the challenge in shaping targeted recruitment strategies around them.

The four industry sectors that most meet the criteria for this project are:

1. **Software & Personal Communication Technology**
2. **Smart Grid**
3. **Automotive Transportation Manufacturing**
4. **Aerospace**

¹Location quotient compares the regional share of economic activity in a particular industry and subregion (in this case, North Carolina) to its share in a larger region (the United States). If the ratio is larger than 1.0, the concentration of the industry in the state is greater than in the nation as a whole.

²The four variables were computed using the Economic Modeling Associates EMSI tool, 4th Quarter 2010, covered employment.