



**Labor Education Alignment Program (LEAP)
2014 Annual Report**

Tennessee Department of Economic and Community Development

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In 2013, the Tennessee General Assembly adopted Public Chapter 338 which established a Labor Education Alignment Program (LEAP). LEAP created a statewide, comprehensive structure enabling students in technology centers and community colleges to participate in technical training developed with input from area employers. Senate Majority Leader Mark Norris led the charge in this endeavor.

The primary goal of this program is to create long-term relationships between employers and area community colleges and/or Tennessee Colleges of Applied Technology (TCATs) to identify and address the challenge of job candidate “skills gaps” in the local workforce pool. By ensuring that post-secondary educational institutions are producing the credentials employers need through alliance and data driven decision-making, Tennessee can meet the needs of current employers and also be more effective in recruiting new industry to the state.

Pursuant to Section 10 of Public Chapter 338, The Department of Economic and Community Development (ECD) will submit a report to partner agencies on demonstrated workforce needs within existing and prospective businesses where the department has conducted project activity.

Tennessee Momentum

Tennessee was named the #1 state of the year in 2013 for economic development by *Business Facilities* magazine, a testament of the state’s internationally competitive workforce. Private sector jobs have grown 9.03 percent during Governor Haslam’s administration, and 2.08 percent from 2013.¹ Tennessee ranks 12th among all states in the nation for job growth during both of these time periods. Tennessee also ranks as the #1 state in the Southeast for 6.97 percent growth of Gross Domestic Product (GDP) during Governor Haslam’s administration,² and was recently named the #1 state in the nation for 9,215 job commitments made through foreign direct investment in 2013.³

Tennessee is on an unprecedented trajectory in economic development, and its educational institutions are building the workforce pipeline to support business recruitment and expansion. Tennessee was named the fastest-improving state in the nation in the 2013 National Assessment of Educational Progress (NAEP) Nation’s Report Card.

Employer demand from Tennessee’s workforce pipeline will continue to grow and multiply. In the last four years (January 2011 through November 2014), TNECD has secured 673 commitments from companies to create nearly 84,000 new jobs and invest \$15.0 billion in capital.⁴ Development of the workforce required to fill this significant inventory of open positions requires Tennessee institutional alignment.

¹ Growth of private sector employment from 2010–Q3 2014, and from 2013–Q3 2014. Source: U.S. Bureau of Labor Statistics, Current Employment Statistics (CES).

² Growth of Real GDP (to adjust for inflation), from the U.S. Bureau of Economic Analysis

³ Global Location Trends annual report from the IBM Institute for Business Value

⁴ Company commitments secured from January 2011 through November 13, 2014.

Advanced Industries in Tennessee⁵

Employing more than 131,300 Tennesseans,⁶ advanced industries are an important force in Tennessee's economy. Ensuring Tennessee has a competitive and sufficient workforce to support the growth of innovation- and STEM- intensive industries is pivotal to the state's future economic growth.

The Brookings Institute, through its Advanced Industries (AI) Series, defines 23 discrete industries which are a "critical, innovation-intensive subset of the economy." This includes 17 manufacturing and six services industries which "display above-average R&D spending as a share of total sales and employ a workforce in which the average worker is expert in at least one discrete STEM field." These industries "are crucial drivers of global competitiveness– and therefore prosperity– in the United States... These industries comprise the nation's industrial innovation sector. These industries transform lives and the economy through the introduction and diffusion of new technologies, processes, and solutions."

Tennessee employs 85,350 people in advanced manufacturing, and 45,980 in advanced services industries. The AI workforce in Tennessee has grown significantly over the last year, ranking eighth in the nation and fourth among states in the Southeast for 4.4 percent growth (2012-2013). Still, Tennessee's economy has significant gains to make in these fields. The AIs represent 5.75% of total employment, a percentage which ranks seventh highest in the Southeast and 29th highest in the nation.

Workforce Strengths and Needs – Tennessee Analysis⁷

The following report examines 320 occupations in the State of Tennessee that typically require a postsecondary non-degree award or greater for entry-level positions. The average hourly wage of these occupations is \$30.03, indicating these are well-paying positions. Metrics incorporated in the analysis include wages, job growth, annual openings, regional competitiveness, and regional employment concentration. These measurable inputs are utilized in varying combinations to identify six indicators of Tennessee's workforce strengths and needs.

The index places increased significance on occupations that are high-wage and high-growth, as these metrics indicate high-quality jobs that are attractive to job-seekers, are attractive to higher education institutions, and are indispensable components to growing organizations. TNECD has also identified the top 25 occupations for each of its targeted industry clusters and utilizes these national employment patterns to highlight Tennessee's workforce needs and strengths.⁸ Occupations within STEM fields are also highlighted in this analysis.

⁵ Information on Tennessee's Advanced Industries are based on guidelines established by the Brookings Institute through its Advanced Industries Series – *Powering Advanced Industries, State by State (2014)*

⁶ Source of employment estimates for Advanced Industries: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW). Data available through 2013.

⁷ LEAP Occupational Analysis conducted by TNECD Research utilizing EMSI. The full occupational methodology is included on page one of the report.

⁸ TNECD's targeted industry clusters include: (1) Aerospace and Defense; (2) Automotive; (3) Business Services (HQs, R&D, Data Centers); (4) Chemicals, Plastics and Rubber; (5) Energy Technology; (6) Entertainment and

Each occupation is assigned a workforce strength and need score. A high strength score indicates an occupation is critically important to Tennessee's economy and has an adequately-trained labor pool to fill vacancies and support industry growth. A high need score indicates an occupation is a significant component of Tennessee's economy and industry, and requires additional workforce development to support Tennessee's competitiveness. These occupations should be targeted by education institutions for increased training in related programs to produce the necessary workforce. A high need score may indicate that employers may be lacking qualified candidates to fill vacancies in these occupations, or indicate occupations where Tennessee's workforce could be more competitive to support industry growth.

STEM (Science, Technology, Engineering and Math)

There is a high prevalence of Science, Technology, Engineering and Mathematics (STEM) fields among the occupations requiring a postsecondary degree award or greater. Of the 320 occupations reviewed, 48.1% are identified as STEM or STEM-related⁹ (94 are STEM occupations, and 60 are STEM-related occupations). This sample accounts for 92.8% of all STEM and STEM-related positions, as they identified by the U.S. Census Bureau and EMSI. This finding clearly shows the need for rigorous STEM education in all schooling prior to post-secondary.

Strength and Need Indicators

Strength Indicator Number 1 contains occupations that have high wages, and have grown in net employment from 2009-14, due in part to the positive competitive effect of Tennessee's economy. In these occupations, Tennessee surpasses the expected change; a figure calculated using national occupational and demographic trends. These occupations are the ideal positions for a current job seeker. Tennessee shows strong competitive growth in the engineering field including industrial, civil, electrical, nuclear engineers, architectural, mechanical, aerospace, sales, mining and geological, ship, and biomedical engineers.

Strength Indicator Number 2 contains occupations critical to TNECD's targeted industries that have a high regional concentration. It is notable to highlight the General and Operations Managers occupation appears in all 10 of TNECD's targeted industry clusters. A business is placed in a cluster based upon its primary business activity, which shows that general and operation managers are both a strength in Tennessee and a need in occupations TNECD focuses on recruiting. It is also notable to see the 2.78 location quotient for nuclear engineers, again showing the strength for Tennessee in the workforce for this occupation.

Need Indicator Number 1 contains occupations with high wages and a positive growth trend despite a negative competitive effect in Tennessee. The causes of this negative effect are not specifically defined

Media; (7) Food and Agribusiness; (8) Healthcare and Medical Devices; (9) Transportation, Distribution and Logistics; and (10) Other Manufacturing.

⁹ Occupations are identified as STEM and STEM-related based on definitions by the U.S. Census Bureau and Economic Modeling Specialists International (EMSI). According to a combination of these sources, there are 96 STEM occupations and 66 STEM-related occupations.

and could be due to a variety of regional trends such as a lack of the industry mix to support the occupation or the workforce to fill the positions within these occupations. Most notable in this data is the skills gap presented in information technology occupations. This includes software developers, application developers, systems software, computer occupations, computer network architects, database administrators, and computer hardware engineers. The occupations listed have a high opportunity for growth and expansion and present great opportunity for Tennessee.

Need Indicator Number 2 contains occupations critical to TNECD's targeted industries that have a low regional concentration of employment. All of these occupations have a location quotient of less than 1, indicating a lower concentration of these occupations in Tennessee when compared to the national average. Software developers, medical scientists, aerospace engineers, computer hardware engineers, and multimedia artists all have a location quotient less than 0.4, which shows a much lower proportion of employment in these occupations compared to the rest of the nation.

Need Indicator Number 3 contains occupations with a high wages, a high number of annual openings, and a low regional concentration. These occupations are in high demand, and Tennessee does not currently have the workforce available to meet this demand. The occupation with the largest gap is software developers, with a location quotient of 0.38. This result aligns with the findings of Need Indicator Number 1.

Need Indicator Number 4 contains occupations where net employment has decreased in Tennessee, despite having a projected increase according to national trends data. The negative competitive effect due to regional trends has prevented these occupations from growing as projected.

Multipliers

There are two tables in the report that contain data on the multipliers used in the occupational index. The first table lists the occupations categorized as high-wage, high-growth occupations. To qualify for this designation, the occupation must have an average hourly wage of \$30.03 or higher and also must have grown in employment by 10% or more over the previous five years. The second table depicts occupations that are in the top 25 in terms of percentage of industry employment in one or more of TNECD's targeted industry clusters. These multipliers attempt to amplify the importance of high quality occupations that are important and will be integral parts of the industries that TNECD is attracting to the state. For example, the accountants and auditors occupation is a growing occupation that pays an above average hourly wage; the occupation is also among the top 25 occupations for employment in all ten TNECD clusters. Therefore, the multiplier will increase the occupational index score for the occupation due to its current and future importance to the state economy.

Occupation Index Scores

The final data compiled in this report contain occupational index scores. These tables show occupations with the highest workforce need scores, highest strength scores, and those with high score in both categories simultaneously. These tables show occupations that are most critical to labor-education alignment.

A high strength score indicates high quality, in-demand occupations where Tennessee has a strong workforce. Businesses will require further development of qualified candidates for these occupations as industry continues to grow and expand.

A high need score indicates high quality, in-demand occupations where the state's workforce has the greatest gaps. The market for these occupations exists today, however there may not be enough qualified candidates to fill vacancies. Additionally, demand for these occupations will continue to grow as more businesses within TNECD's targeted industries continue to locate and expand in Tennessee.

In these tables, STEM occupations well-represented, accounting for 23 of the 37 occupations listed (62%).

Conclusion: Aligning to Fulfill

In 2014, Governor Bill Haslam challenged Tennessee with a critical mission: the Drive to 55. The goal of this initiative is to equip 55 percent of Tennesseans with a college degree or certificate by the year 2025. Through Tennessee Promise, high school students are offered two years of tuition-free community or technical college beginning with the Class of 2015. Tennessee is the only state in the nation to provide this opportunity. As part of Tennessee Reconnect, adults will be able to attend and earn a certificate at any of the 27 Tennessee Colleges of Applied Technology (TCATs) completely free of tuition and fees. Tennessee Labor Education Alignment Program (LEAP) will help ensure that the postsecondary institutions are producing the skills and credentials that Tennessee employers actually need. This \$10M grant opportunity was created to eliminate skills gaps across the state in a proactive, data-driven, and coordinated manner by encouraging collaboration across education and industry and by utilizing regional workforce data to identify and then fill skills gaps across the state. Drive to 55 is not just a mission for higher education, but a mission for Tennessee's future workforce and economic development.

In 2014, Tennessee Governor Bill Haslam also created the Governor's Workforce Subcabinet, and under his leadership, this group has been tasked with overseeing the LEAP grant application process and dispersal. Comprised of the Department of Labor and Workforce Development, the Tennessee Higher Education Commission, the Department of Economic and Community Development, the Department of Education, the Department of Human Services, and the Tennessee Board of Regents, this diverse team works together to deliver a cohesive workforce development strategy statewide. Programs such as Workforce 360, a comprehensive workforce communication strategy, support this initiative.

The data in this 2014 LEAP Report highlight the strengths and needs of Tennessee occupations across the state, and these data can be used to support the creation of labor and education alignment programs to fulfill skills gaps in current and near future workforce needs.