

CENTRALINA REGION TARGET CLUSTER OPPORTUNITY ANALYSIS: INSIGHTS FOR REGIONAL PANDEMIC RECOVERY

A REPORT ON ACTIVITIES FROM MAY 2021-FEBURARY 2022



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INTRODUCTION

The Centralina Economic Development District (“Centralina EDD” or “District”) is the designated Economic Development District for the nine-county Greater Charlotte region. The Centralina EDD has the responsibility to create, manage and implement the regional Comprehensive Economic Development Strategy (CEDS). The current CEDS will be updated in 2022 with a focus on building economic resilience through COVID-19 pandemic recovery.



To this end, the District was awarded funding from the Economic Development Administration (EDA) for a COVID-19 Economic Recovery Planning and Technical Assistance Grant under the Coronavirus Aid, Relief, and Economic Security (CARES) Act. **The primary objective under this grant was to complete a set of strategic assessments to inform the update to the 2017 Prosperity for Greater Charlotte CEDS. It is critical for our region to understand the economic impacts of the pandemic and explore ways to re-align the CEDS to support short-term recovery and long-term resilience.** The grant supported technical analysis led by the project consultant EY’s Economic Development Advisory Services (EDAS) team. The grant activities were conducted from April 2021 to January 2022. The three assessment components are as follows

- 1.) Regional targeted industry clusters update and validation;
- 2.) Supply chain disruptions within strategic industry clusters and realignment findings required for future resiliency;
- 3.) Artificial intelligence (AI) and technological workforce impacts and future realignments.

This executive summary provides a snapshot of the key findings from each of the three deliverables and points to the opportunities for the CEDS to support our regional clusters and address economic vulnerabilities. The full analysis for each assessment is included as appendices to this report; please note there are references throughout this document to where you can explore the data and findings in greater detail. Centralina EDD has also prepared county industry cluster portraits for use by economic development professionals, who are key stakeholders and county partners in the CEDS development and implementation.

PANDEMIC IMPACTS ON CENTRALINA'S INDUSTRY CLUSTERS

For in-depth discussion of the pandemic impact, charts and related data points, please see Appendix A Target Industry Cluster Opportunity Analysis, pages 5-8, 12-14.

Home to over 2.72 million people as of January 2020, the Greater Charlotte region is the 21st largest U.S. metro and ranked fourth in the nation for job growth between 2014-2019 with at least one million new jobs. Strategic economic growth is advanced by a multitude of organizations existing at individual county levels that compose a network of closely interrelated sub-regions acting together as a single globally competitive unit. Unlike other US metros, our region's economy is strikingly broad based with five growing industry clusters¹ in Advanced Manufacturing; Financial Services; Health; Logistics and Distribution; Information Technology. These industry clusters reflect the target industry clusters for the CEDS analyses.

Pre-pandemic (2014-2019), all five industry clusters posted employment gains, accounting for 40% of all jobs created in the region. Employment growth in these clusters outpaced the US by 5%-20%. In addition, a traditional solid stream of new traded-sector job announcements and investments carried the Greater Charlotte region through early March 2020. On paper, announced capital investment outpaced the first quarter of 2019 and traded-sector companies announced \$323 million in capital investment, compared to only \$93.6 million in the same quarter of 2019. Average annual wages for the target clusters also varies widely from \$53,991 for logistics and distribution to over \$129,000 for financial services; this diversity of wages pulls the regional average wage to \$62,916, just above the US average.

The pandemic brought an abrupt end to global economic momentum, and the Centralina region was no exception. The average unemployment rates in the region changed from 3.7% in March 2020 to a peak of 13.1% in May 2020 before gradually decreasing to approximately 5.9% in the 4th quarter of 2020. The pandemic's impact on the region's target clusters proved uneven. Both Financial Services and Logistics & Distribution managed to post employment gains despite strong recessionary pressures. Employment in other areas, however, proved less resilient;

¹ Clusters are the concentration of inter-related industries in a specific area that share markets, talent, raw materials, technologies, etc; they consists of companies, suppliers, educational and research institutions and other economic assets that all contribute to the growth of the industries in a cluster.

the Information Technology, Advanced Manufacturing, and Health clusters all suffered job losses in 2020. The pandemic also spotlighted the region's vulnerabilities related to a dependence on global supply chains which are key to our Advanced Manufacturing and Logistics and Distribution clusters. [A Charlotte Regional Business Alliance Economic Impact survey for the April to May 2020 period showed major supply chain challenges for industrial-based companies in addition to less than 30 days of operational capacity across all categories.](#) This condition existed and worsened throughout the remainder of 2020 and is only recently stabilizing. Another pandemic impact has been the “Great Resignation” and shortage of available workers across all sectors, but critically in Advanced Manufacturing and Health.

In summary, the pre-pandemic economic health of the Centralina region was strong as demonstrated by employment growth and capital investment across all five industry clusters. The impact of the pandemic hit all cluster initially and recovery has been uneven and challenged by supply chain and worker shortages throughout 2021. Despite this, there continues to be momentum in existing industry expansion and new investment in clusters such as Health (Eli Lilly in Concord), IT (Arrival in Charlotte) and Advanced Manufacturing (Sherwin-Williams in Statesville).

[Centralina's target industries are all poised to post significant rebounds in the years ahead and will contribute to the resiliency and growth of the Centralina region's economy.](#) Each of these clusters, for example, is well-positioned to leverage the region's assets in the face of economic, technological, and demographic changes which are likely to continue to drive change in the region's economy. The key findings section below outlines the insights from the three grant deliverables.

KEY FINDINGS FROM THE ASSESSMENTS

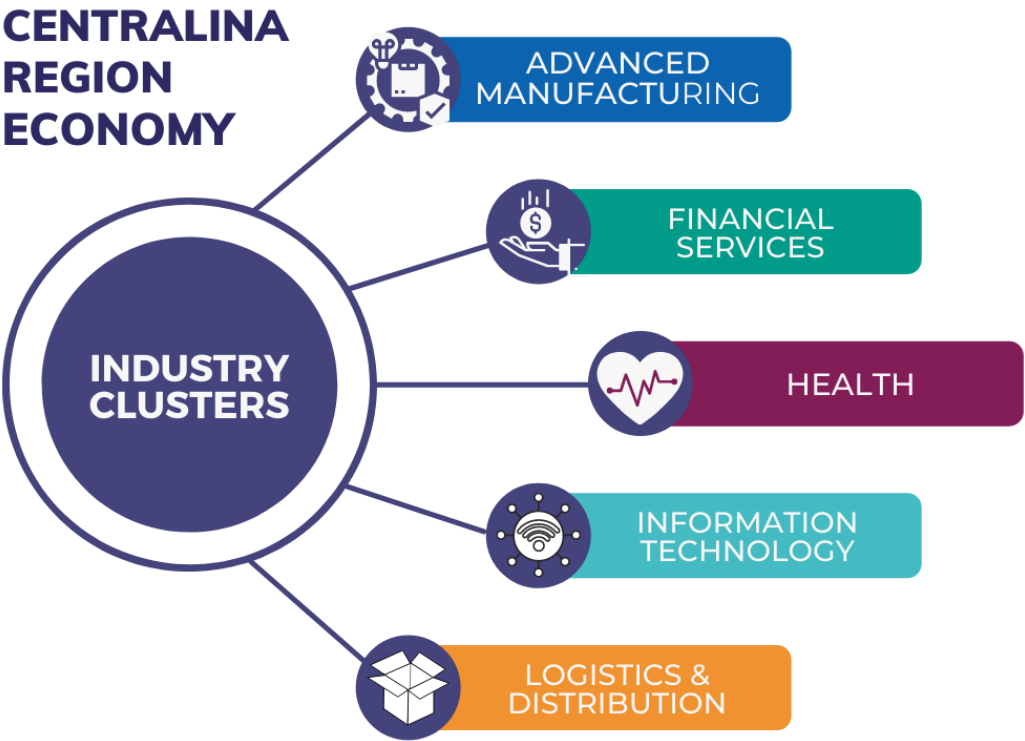
Target Industry Performance Assessment and Cluster Analysis

For in-depth discussion of the Target Industry Cluster Analysis see Appendix A pages 1-68.

EY conducted a performance assessment of the region's existing target industries and clusters, identified county-level trends and showed how global and national disruptors are affecting the industry clusters. Ultimately, the analysis² helped assess the economic impacts of the COVID-19 pandemic on the Centralina region's target

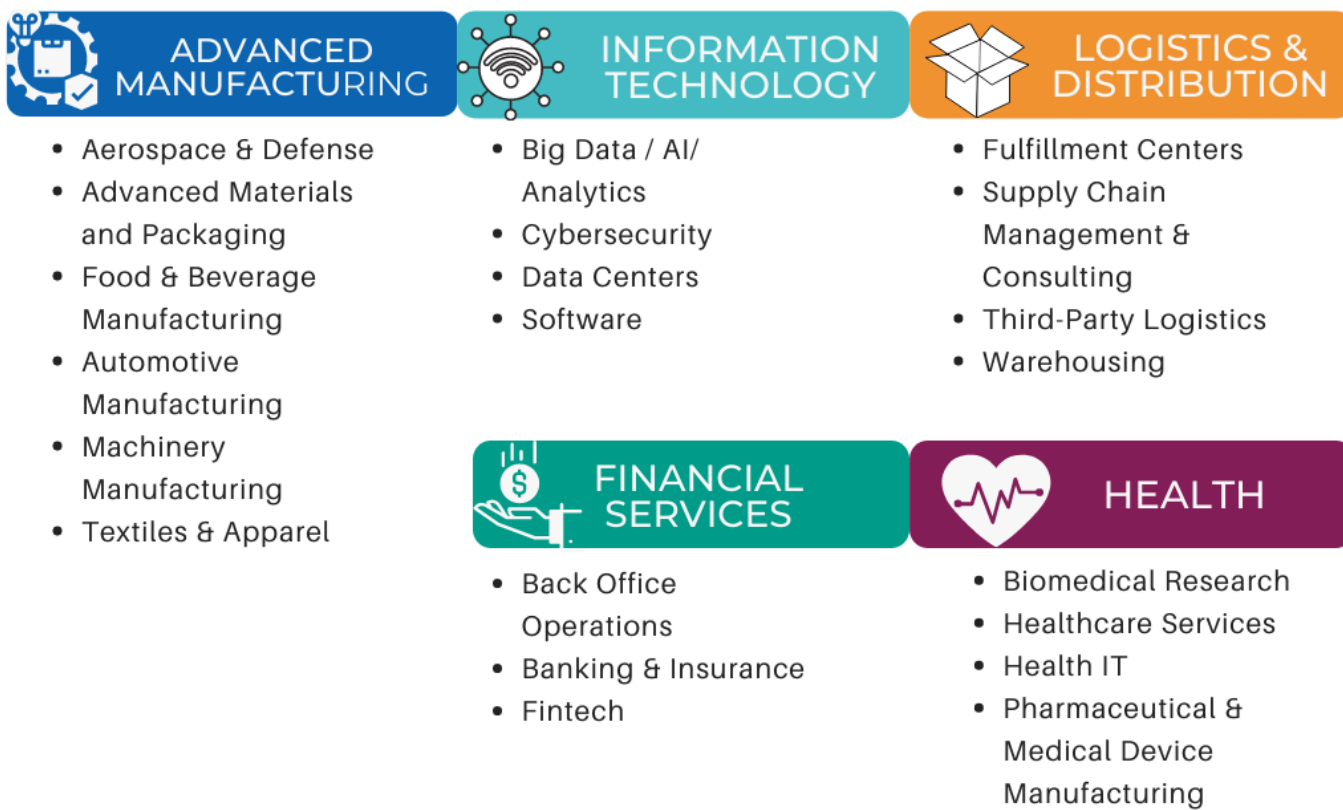
² The methodology of the analysis is outlined in pages 16-17 of Appendix A.

industries and can help ensure that the region is best positioned for growth during the subsequent recovery. **The analysis found all five existing industry clusters continue to be the foundation for our region's economic development strategy.**



The analysis affirmed these continue to be the industry clusters that drive regional growth and Centralina’s global competitiveness. These clusters have a strong growth trajectory, have performed well across all counties, and align with local values, which typically emphasize high-growth industries with healthy wages and capital investment.

The five industry clusters have several niche sectors that are established or emerging both region-wide and in specific counties.



While the niche sectors in the chart above highlight some new opportunities, these sectors represent a further evolution of the region's existing target industries. Target Cluster Profiles including growth and employment dynamics, an overview of industry disruptors, and profiles of niche sectors are outlined on pages 38-53 of Appendix A.

In terms of the geographic distribution of the five industry clusters, the chart below shows the region-wide presence of specific niche sectors in all nine counties.

INDUSTRY CLUSTERS & NICHE SECTORS

PRESENCE IN ALL NINE COUNTIES



ADVANCED MANUFACTURING

- Machinery Manufacturing



INFORMATION TECHNOLOGY

- Data Centers



LOGISTICS & DISTRIBUTION

- Third-Party Logistics
- Warehousing



FINANCIAL SERVICES

- Back Office Operations



HEALTH

- Healthcare Services

Other findings related to geographic distribution include:

- All nine counties have diversification of niche sectors within the Advanced Manufacturing cluster, with an average of four niche sectors per county. Gaston, Iredell, Rowan have the highest diversity of sector activity.
- In addition to back office operations, banking and insurance is strong across the counties, especially first ring suburban counties. Cabarrus, Iredell, Mecklenburg and Union have the highest diversity of sector activity
- The Health cluster niche sectors demonstrate synergy with other clusters such as IT and Advanced Manufacturing. Health IT is strong in the same counties that have a niche sector of Software in the IT cluster. Medical device manufacturing and pharmaceuticals are prevalent sectors in rural and suburban counties across the region. Cabarrus, Iredell, Lincoln and Union have the highest diversity of sector activity.
- The IT cluster has the greatest distribution across the region, with region wide data centers and software and cybersecurity present in more than half of the region's counties.

Macro Forces and Industry Disruptors

For an in-depth look at the industry disruptors see pages 29-36 in Appendix A.

As part of the industry cluster analysis, EY examined the global and national disruptive forces that impact the economic resilience of the region's clusters. In the years ahead, technological, economic, and demographic forces promise to transform our communities as well as the people and industries that power them. Increased federal spending, for example, may increase the competitiveness of aging places with antiquated infrastructure as well as fast-growing locales with

overburdened roads, bridges, and ports. The aging of America will continue to contribute to sustained healthcare spending while potentially worsening the talent shortages that already plague many industries. Continued advancements in artificial intelligence, for example, may lead to another wave of automation. In some instances, the macro forces and disruptors pose risks for existing market leaders as well as individual industries. In other areas, a rapidly evolving competitive environment will create new market opportunities. Communities that can help firms navigate these macro forces and industry disruptors will be well-positioned to thrive in the years ahead.

The top forces and disruptors identified for the Centralina region include:

Economic

- Federal Spending Boost
- The Retail Revolution
- The New Globalization

Demographic

- Help Wanted
- A Silver Tsunami
- On the Move

Technological






- The Internet of Things (IoT)
- Accelerating Change
- Artificial Intelligence & Automation

The nine macro forces and industry disruptors examined in the report are deeply intertwined. Mass deployment of autonomous vehicles, for example, will require investments in “smart” infrastructure. Talent shortages in fast-growing sectors such as transportation and logistics may increase the race to automate warehousing operations. In turn, the push towards automation will likely involve the maturation of the IoT technologies to produce new efficiencies.

On pages 38-53 of Appendix A., there is a cluster by cluster analysis of the impacts of these disruptors. The chart below summarizes the most impactful disruptors to our region’s five industry clusters. AI and the Internet of Things are the top technological disruptors followed by the aging workforce (Silver Tsunami) and labor market shortages (Help Wanted). Interestingly, the Where Work Gets Done disruptor that addresses the rise of remote work, was only a high impact factor for the IT cluster. This disruption analysis points to important vulnerabilities that the CEDS will need to address in the strategy development phase.

CENTRALINA REGIONAL ECONOMY

MOST IMPACTFUL DISRUPTORS

Industry Cluster	Technological Disruptors	Economic Disruptors	Demographic Disruptors
 ADVANCED MANUFACTURING	Artificial Intelligence Gets Real	Federal Spending Boost, New Globalization	
 FINANCIAL SERVICES	Artificial Intelligence Gets Real		Silver Tsunami
 HEALTH			Silver Tsunami, Help Wanted
 INFORMATION TECHNOLOGY	Artificial Intelligence Gets Real; Internet of Things; Electric Vehicles		Where the Work Gets Done, Help Wanted
 LOGISTICS & DISTRIBUTION	Artificial Intelligence Gets Real, Internet of Things	Retail Revolution	Help Wanted

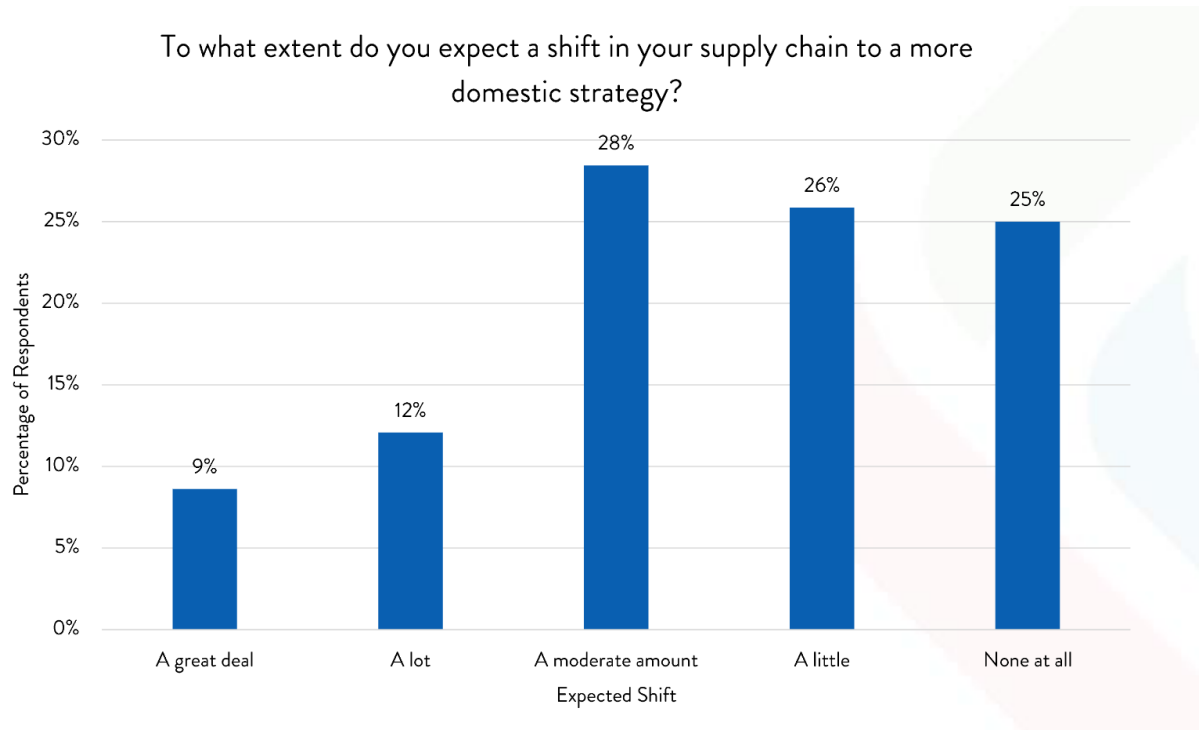
Supply Chain Analysis

For in-depth look at the survey data see Appendix B.

EY partnered with the Charlotte Regional Business Alliance to develop and distribute a supply chain survey to key manufacturers in 16 North and South Carolina counties represented by both Centralina EDD and the Charlotte Regional Business Alliance. In total, the survey collected results from 116 different manufacturing companies within this region during June-August 2021.

The most prevalent theme the 2021 Supply Chain Survey captured was centered around competitive location factors. A near unified 98% of survey respondents agreed that availability of qualified workforce was very important, with 78% indicating that it was extremely important. This tied directly to the next section of the survey: Long-term factors attributing to the overall competitiveness and the resiliency of supply chains. Over 74% of respondents indicated workforce upskilling was a very important long-term factor. Additionally, about 43% of respondents agreed robotics/automation was a very important factor.

Another important theme from the open-ended section of this survey, while not as prevalent as the labor issue but still important, was a desire to source many more components and inputs locally. Some of the most common components mentioned were raw materials, steel, metal, and plastics. **There is an overall desire to source many components more regionally among many survey respondents.**








In addition, EY identified potential scenarios for supply chains in the future due to disruption from the pandemic as well as technology. Companies may move from “Just in Time” to “Just in Case”, with more stockpiling of critical components/goods to ensure supplies. ESG (Environmental, Social, and Governance) goals for companies will become a growing factor in global site selection in the drive (or regulation) to de-carbonize. More locally-sourced supply chains may result, and OEMs will increasingly seek to decarbonize their own supply chains. Trends toward a global minimum tax of 15% will reduce the benefits of low tax countries. Another factor may include growing consumer demand for customization and speed to market, requiring more resilient supply chains. These are all important factors to consider in the CEDS update to support short-term recovery and long-term resilience in the economy.

Artificial Intelligence (AI) Automation Risk Assessment

For in-depth discussion of AI & Automation and the risk assessment see Appendix C.

The final activity assessed the risk that AI and automation poses to the region's five industry clusters. As noted in the disruption analysis in the industry cluster assessment, EY identified that AI will have a strong disruptive impact on almost all clusters. Technologies that automate functions currently performed by humans are poised to revolutionize the labor market. Automation will eliminate and/or fundamentally transform jobs that are routine and follow formal operating rules. At the same time, it will fuel the creation of new occupations. While the rise of automation will help maintain US economic competitiveness, it will also create significant disruptions in the labor market.

Charlotte ranks 49th out of the top 100 metros in the US for “automation potential.” Across metros of all sizes, Charlotte ranks at the 25th percentile (with 100 being highest automation potential). While Charlotte may not be at risk as other metros, there is a clear and growing case for AI use in the industry clusters presented in the chart below.

CENTRALINA REGIONAL ECONOMY <i>WHERE IS AI FOUND IN OUR TARGET CLUSTERS?</i>		
 ADVANCED MANUFACTURING	Robots Industry 4.0	Inventory Management Energy Reduction
 FINANCIAL SERVICES	Fintech Risk Assessment	High Volume Loan Approvals Customer Service/Chat Bots
 HEALTH	Drug Discovery Health Monitoring	Diagnostics
 INFORMATION TECHNOLOGY	Big Data Analytics AI Adoption	Data Center Automation Energy Reduction
 LOGISTICS & DISTRIBUTION	Robots Augmented Reality	Autonomous Trucking Inventory Management

The AI/Workforce Automation Risk Assessment identified those occupations that are most at risk for automation in the Centralina region. The assessment also

highlighted the risks to occupations for each of the target industry clusters, showing which occupations are most at-risk as well as least at-risk of automation. **Not surprisingly, lower-skill jobs that are repetitive or prone to machinery displacement are at the greatest risk.** In the Centralina region, the jobs with the greatest risk of automation are those requiring No Formal Education (83%) or those requiring a High School Diploma (64%). These at risk jobs represent nearly 700,000 people in the Charlotte region.

EY created a weighted index using an aggregate of the risk factors by occupation cluster to highlight where automation is most likely to occur. **Back Office, Hospitality, Personal Services, Logistics, and Mfg/Production occupations (not industries) were determined to have the greatest risk of automation.**

Occupation	Employment (2019)	% Risk of Automation	Cluster Connection
Hospitality	144,996	77.6%	
Production	71,062	76.1%	Advanced Manufacturing
Back Office	151,150	71.6%	Financial Services
Financial	52,020	66.6%	
Logistics	122,883	67.8%	Logistics & Distribution

The full data set is available on page 20 of Appendix C.

For most organizations, scarcity of automation talent will be the reality. Recruiting and retaining tech talent is challenging due to the competitive hiring environment and rapidly increasing salaries for professionals with automation expertise (e.g., machine learning, natural language generation, chatbots). **In general, leaders should consider that upskilling technical talent is an incremental option, not a categorical option for new skills.** For example, statisticians may become data scientists, but data entry personnel will typically not be successful in transitioning to these roles. However, with the right underlying talent and skills analysis, an estimate of the expected talent transition through upskilling programs may be possible.

Economic and workforce developers will face significant new challenges in preparing and training workers to use AI-enabled technologies. **Existing workforce will need new training, and displaced workers will need re-training. Future workers will need to be drawn from a large diverse set of skills,** not just software coders and mathematicians. If AI is the next driver for the evolution of economic development, which economic development organizations will be the first to have a “VP of AI”?

INSIGHTS FOR THE CEDS UPDATE

The three EY assessments contribute valuable data and analysis for the CEDS update process which will ultimately point to a strategy for economic recovery and resilience for the Centralina region over the next five years. The growth experienced by the Centralina region between 2014-2019 exemplified that the region's assets have contributed to making it a compelling destination for investment. Nevertheless, persistent challenges remain that have gone unaddressed over the last five years; and the pandemic highlighted vulnerabilities that will require the region to consider new strategies that will guide short term recovery and long-term economic resilience.

The assessments have surfaced key insights and also raised important questions for further regional discussion and analysis in the coming CEDS update process. These include:

- What strategies will support existing industry expansion and growth of niche sectors within the five industry clusters?
- How do we address vulnerabilities in the supply chain that the pandemic highlighted?
- How inclusive has the last five years of growth been across the region? Are the paths to prosperity open to all or a limited few?
- Is there a need for a specific rural economic development strategy to support the unique needs of these counties and align with our regional's growth plan?
- How can we address the twin challenge of an aging workforce and labor shortages in several clusters in the short and long term?
- How can we collaborate as a regional to address the upskilling and reskilling of the workforce that responds to the AI and automation shift?
- What clusters would benefit from increased research and development, innovation and entrepreneurship activity?
- How do we link and leverage new local investments in health/life sciences to a regional strategy?
- How might the region come together to advocate for resources to implement key recommendations from regional freight and mobility plans to enhance the infrastructure needed for our five clusters?

The Centralina looks forward to working with partners and stakeholders to dive into these questions and more as the CEDS process kicks off. Centralina is grateful to the U.S. Department of Commerce, Economic Development Administration for the CARES Act funding that supported this work.

About Centralina

Centralina Regional Council is a State of North Carolina regional organization representing a nine-county area that includes Anson, Cabarrus, Gaston, Lincoln, Iredell, Mecklenburg, Rowan, Stanly, and Union. Centralina Regional Council is the second largest of 16 regional councils in the State of North Carolina and works with local governments, state, and federal agencies to meet the region's needs on a wide range of governance issues, including, local and regional land use, environmental and transportation planning, and administration, aging and workforce services, and economic and program development.



The Centralina Economic Development District was formed in 2005 by the Centralina Regional Council to serve as the local U.S. Commerce Economic Development Administration (EDA) designated Economic Development District (EDD) for the nine-county region. The Centralina EDD manages the CEDS and provides technical assistance and eligibility support to regional jurisdictions for grants from the EDA and other federal and state sources.

About the CEDS

The Centralina EDD seeks to implement development of strategic short and long-term economic recovery and resilience planning tied to our approved “Prosperity for Greater Charlotte CEDS 2017-2022”. The forthcoming CEDS update will bring together stakeholders from across the Centralina region to develop short and long-term strategies to support the retention and expansion of existing businesses, attract new business investment and create jobs, and grow employment across all sectors, supporting a diversified, expanding, and sustainable economy to enhance the Greater Charlotte region's global competitiveness. Access to the current 2017-2022 CEDS document(s) are available at the following link www.prosperityforgreatercharlotte.com. More information about the Centralina EDD is available on the www.CentralinaEDD.org home page.

About EY

EY serves as the project consultant for the Centralina Target Cluster Opportunity Analysis with input from local leadership and companies. EY's Economic Development Advisory Services (EDAS) team helps communities create and deploy economic development strategies and practical tools to achieve higher-performing economies.

