



OHIO'S BROADBAND & 5G SECTOR PARTNERSHIP

REGIONAL NODE INSIGHTS:

STRENGTHENING OHIO'S BROADBAND & 5G WORKFORCE

Nearly one million Ohioans do not have access to high speed internet.¹ Significant state investments in broadband expansion have been made since 2022 to bridge this digital divide. Federal dollars have leveraged these investments to close the broadband gap. This combined funding has infused about \$500 million to improve this critical infrastructure.² Additionally, the National Telecommunications and Information Administration (NTIA) has announced that Ohio will receive \$793 million in funding from its Broadband Equity Access and Deployment (BEAD) program.³ As such, an exponential increase in the demand for skilled labor to physically build broadband infrastructure is expected. Ohio's Broadband & 5G Sector Partnership is an industry, government and education collaboration aiming to grow a diverse, multi-generation broadband & 5G workforce. Regional Node partnerships led by 4-year universities, 2-year colleges, and workforce development boards have been established in each of Ohio's six regions. Early in the implementation phase each leadership team received customized region-specific research reports to inform decision-making. Insights gathered from conversations held in listening sessions highlight the successes and challenges experienced in the initial implementation phase.

¹ Broadband Ohio website, Source: <https://broadband.ohio.gov/explore-broadband/broadband-matters>

² Strategy for Strengthening Ohio's Broadband & 5G Workforce, Source: <https://broadband.ohio.gov/explore-broadband/strengthening-ohios-broadband-5g-workforce/strengthening-ohios-broadband-5g-workforce>

³ Ohio Department of Development, June 26, 2023. "[Ohio to Receive Nearly \\$800M in Federal BEAD Funding for Internet Expansion Efforts](#)" press release.

REGIONAL NODE INSIGHTS

- 1.** Data collection and outcomes analytics emerged as top concern for Node leaders. Collecting data on employment, job quality, and training outcomes with a focus on geography, gender, and race will facilitate evidence-based decision making and continuous improvement efforts. Identified challenges include effective tracking of non-credit program/course participant outcomes.
- 2.** Node leaders emphasized the importance of accurately assigning Classification of Instructional Programs (CIP) codes for new and existing education and training programs to ensure accurate workforce supply estimations. Moreover, employer partners' validation of workforce demand projections is also considered to be a crucial step.
- 3.** The need for regular data analytics and quarterly reports was emphasized. Node leaders consider a robust data infrastructure to be integral for ensuring continuous program assessment, adaptation, and improvement.
- 4.** Sharing effective participant recruitment practices and industry career awareness strategies between Nodes is desired. Nodes want to learn more about successful, innovative strategies being deployed, especially in highly competitive labor markets. Using digital platforms for marketing and promotion and virtual reality headsets that simulate in demand jobs (provided by the Sector Partnership) have had good results.
- 5.** Leadership teams are actively seeking resources to help participants overcome barriers to success, such as transportation and childcare. These wraparound services are critical for diversifying the telecom workforce.
- 6.** Establishing articulation agreements between educational programs to facilitate seamless student transitions along identified career pathways is a high priority for many Node leaders. They are committed to ensuring that credit bearing courses and programs are transferrable between education and training institutions across the state.
- 7.** A universal challenge for all Nodes is identifying and securing sustaining funding. Node leaders are actively seeking grants and other funding sources with a focus on braided funding strategies.

IMPLICATIONS

These insights provide Sector Partnership and Node leaders with a roadmap to guide continuous improvement strategies aimed at strengthening and scaling Ohio's broadband & 5G Sector Partnership. This effort is integral to sustaining Ohio's unique approach to adapting the existing telecom workforce development system to meet the immediate and future workforce needs of sector employers. Expanding the system's capacity to increase the availability of inclusive education and training programs aligned with sector career pathways is the focus as partners prepare Ohio's workforce for the full impact of the BEAD program expansion investments.

CONVERSATIONS WITH REGIONAL NODE LEADERS

Through this engagement initiative, Ohio Education Research Center (OERC) researchers and other members of the Broadband & 5G Sector Partnership Data Analytics & Evaluation Working Group connected with each Broadband & 5G Sector Partnership Regional Node leadership team to share the results of state and region level labor market and workforce related research. In addition to sharing detailed information about the sector specific trends in their geographies, listening sessions were held to better understand the Node team members' unique perspectives and research needs in the context of their regions' assets and challenges.

Regional Node lead institutions representing Ohio 2-year colleges, public and private 4-year universities, workforce development boards and community-based organizations were included in these six sessions. Figure 1 provides detailed information about the member organizations comprising each of Ohio's six regional Node leadership teams. The goal of these sessions was two-fold: (1) to learn more about the data analytics needed to support stakeholders' resource deployment, participant recruitment and retention, workforce development services development and implementation, education/training program development and implementation related decision making, and (2) to gather insights needed to identify and prioritize the Data Analytics & Evaluation Working Group initiatives, Research Action Plan deliverables, as well as overall strategic planning efforts.



This report summarizes the results of these convenings and is intended to provide The Ohio State University's (OSU) 5G-OH Connectivity Center leadership team, Ohio Manufacturer's Association (OMA), the Ohio Department of Job and Family Services (ODJFS), Governor's Office of Workforce Transformation (OWT) and the Wireless Infrastructure Association (WIA) with insights gained from these sessions. This knowledge informs ongoing efforts to develop comprehensive, customized data analytics and labor market research services that support state and regional stakeholders with actionable information and recommendations to inform decision-making related to strengthening the BB & 5G workforce. Moreover, it provides timely feedback from Node leaders regarding successes and challenges they've experienced during the implementation phase of scaling Ohio's statewide Sector Partnership workforce development network.

WHAT'S A REGIONAL NODE?

The Ohio Broadband & 5G Sector Partnership organizes workforce development efforts across Ohio's six JobsOhio regions to meet the rapidly growing demand for talent in the telecom sector. Governed by a collaborative network of regional Nodes, the partnership is designed to leverage local expertise and resources to address the specific workforce needs. Each Node represents a coalition of employers, secondary and post-secondary educational institutions, OhioMeansJobs centers, workforce development boards, and community-based organizations, as shown in figure 1.

Node leadership teams are comprised of representatives from public or private four-year universities, two-year colleges, workforce development boards, and community action agencies. For example, the Central Node leadership team includes The Ohio State University and Columbus State Community College, while the Southeast Node is led by Ohio University and the Mid-Ohio Valley Workforce Development Board, among others. These leaders collaborate to align education and training programs with sector employers' needs, with a focus on developing a skilled workforce capable of supporting Ohio's broadband & 5G infrastructure expansion. To date, Node leaders' collaboration with the Sector Partnership's Data Analytics & Evaluation Working Group has strengthened the connection between education partners' program-level knowledge of sector employers' needs. It also led to improvements in the design for an inter-regional employer demand analysis which improved Sector Partnership stakeholders' understanding of how well Ohio's skilled workforce is keeping pace with rapid advancements in broadband and 5G technologies.

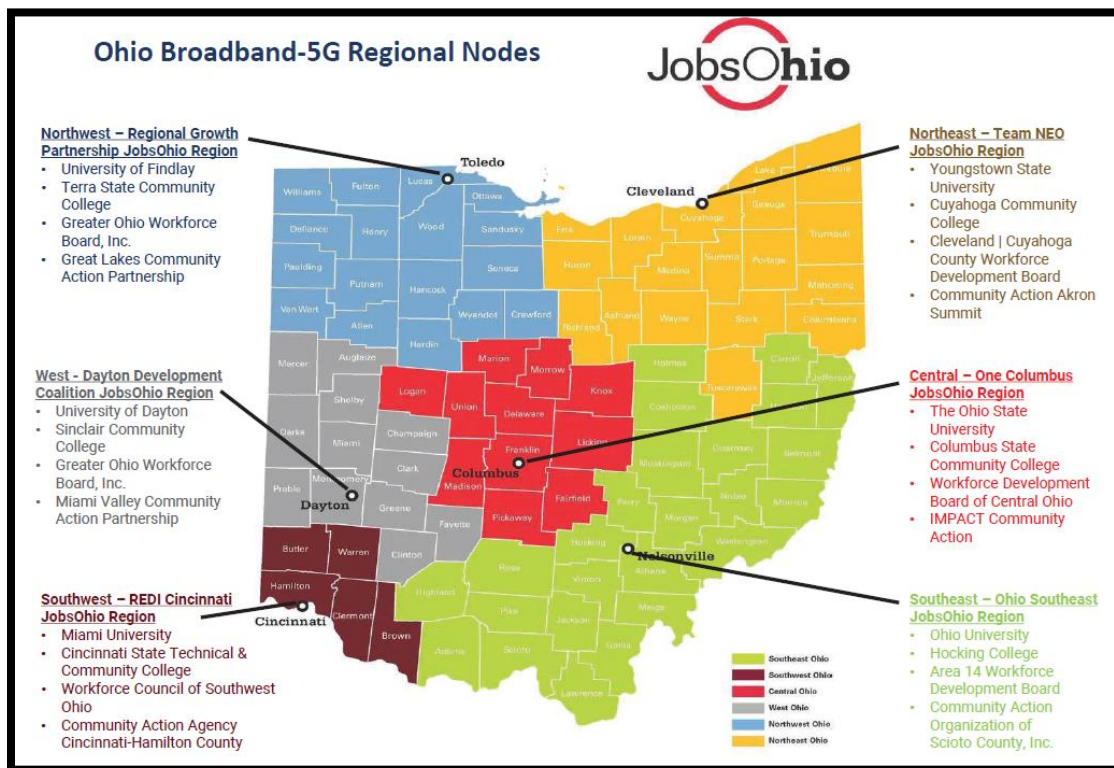


FIGURE 1. OHIO'S QUEST FUNDED REGIONAL NODE LEAD ORGANIZATIONS

APPROACH

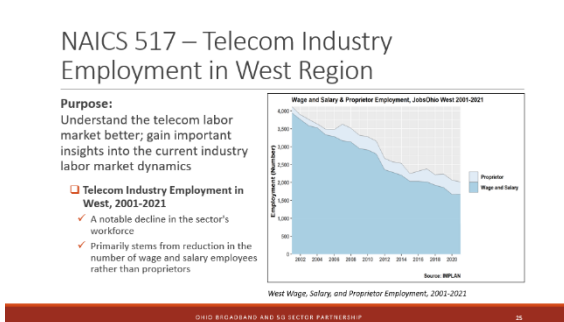
STAKEHOLDER ENGAGEMENT PROTOCOL

REGIONAL RESEARCH REPORTS

Customized research reports were created for each region that which included results from a series of studies completed by Sector Partnership Data Analytics & Evaluation Working Group members. These reports were distributed to Node leadership teams along with agendas and listening session guiding questions (see Appendix A) prior to each session. The aim of the research presentations was to provide region-specific, actionable evidence-based information to inform Node leadership decision-making.

Each Node presentation served to share significant telecom sector labor market trends for their JobsOhio region, particularly focusing on the transferability of skills for workers in declining occupations seeking telecom job opportunities (skilled analysis), and the notable gaps between workforce supply from education and training programs and workforce demands for workers (workforce gap analysis). The full protocol is available in Appendix A. Node research presentations were divided into three segments:

- **CIP/SOC Alignment and Program Interviews:** An overview of how well industry related post-secondary education programs offered by public and private institutions at all levels (4-year universities, 2-year colleges, and career & technical centers) align with telecom related occupations. Programs with strong connections to sector jobs were highlighted, as well as gaps that could be resolved with curriculum updates. Unemployment claims trends for related occupations were also presented to inform targeted unemployed worker recruitment strategies. Interviews held with post-secondary education institution representatives across the state provided additional context for understanding effective instructor recruitment strategies, potential partner organizations for Node recruitment, and other related insights.
- **Skilled and Labor Market Analysis:** This analysis presented a nuanced look at the regional labor markets within each JobsOhio region, emphasizing the characteristics of the workforce and the potential for transitioning existing workers into emerging roles within the broadband and 5G sectors. By utilizing IMPLAN and other data sources, the research identifies which occupations are expected to be in demand



by sector employers, and how current workers could be re-skilled to meet the demands of these emerging fields.

- **Workforce Gap Analysis:** This segment underscored the need for strategic interventions to expand education and training programs and workforce development initiatives to bridge identified workforce supply/demand gaps. Occupations within each geographic area where the demand for skilled labor significantly outstripped the supply of adequately trained graduates were highlighted. This analysis uses gap ratios to understand the need for additional related education and training programs required to meet growing employer demand for graduates.

LISTENING SESSIONS

Prior to each session, Node leads were provided with a package of reference materials designed to facilitate informed and productive discussions. Included with this information were guiding questions intended to encourage participants to reflect on their unique experiences in advance and to share their insights on critical issues. Topics not covered by these questions were also encouraged.

The following list is a sample of the guiding questions:

- What education and training programs are needed to help produce the graduates needed to fill identified workforce gaps?
- What sources of information are available to determine the alignment of existing programs with students' occupations and job placement?
- Are graduates of existing programs working in these occupations for BB&5G employers in this region?
- What Telecom occupations are most in demand (based on the most recent data)? Is this expected to change in the next 5 to 10 years?
- What sectors are competing for prospective Telecom workers?
- Are there enough graduates available from related programs to fill the vacant jobs employers are advertising?
- Which counties in each JobsOhio region have the highest unemployment and most limited broadband access?

The meeting structure was designed to encourage engagement with key elements of the protocol including:

- **Introduction and Q&A:** Participants were invited to ask questions about the project purpose and context.
- **Discussion of Research Questions:** Facilitated discussion based on the guiding questions and Node specific research reports provided in advance.
- **Feedback and Insights:** Participants shared their successes, challenges, and additional insights into evaluating workforce gaps and program alignment.

- **Future Planning:** Discussions on metrics, new programs, and ongoing research questions.

By structuring the sessions in this way, the protocol ensured that the sessions were not only informative but also collaborative, leveraging the perspectives of regional stakeholders to inform future strategic planning and data analytics efforts. Following the presentations, the sessions transitioned into interactive discussions, allowing stakeholders to engage directly with the data, researchers, and one another. For some Node leadership teams, the sessions were their first in-person opportunity to connect with each other. These conversations were vital for validating research findings in the context of real-world experiences and insights from the regional stakeholders.

Overall, participants actively engaged with the presentation material during and after the scheduled sessions. They frequently combined themes from our analysis with their own experiences to formulate additional questions about the job markets graduates will encounter, and the potential for future competition for talent from other similar programs and industry sectors. The recent inclusion of Node leaders in the quarterly Sector Partnership meetings further demonstrates this growing engagement within and across regions.

DETAILED FINDINGS

The listening sessions provided insights into the challenges and successes Node leadership teams have experienced as they work to implement their regional partnerships. Current and future funding sources, qualifying supportive services, resource, and information sharing, as well as understanding what qualifies as a broadband & 5G education/training program, or “good job” are a sample of the conversation themes discussed during these sessions. This section provides detailed summaries of the key findings from these sessions. They are grouped by the following topics of greatest interest to participants: data collection and analytics, recruitment and career awareness, program implementation, and sustainable funding strategies. The insights gained through synthesizing the perspectives shared by Node leadership teams and other key stakeholders provide a greater understanding of the unique needs and opportunities within each region. These results are useful for guiding ongoing efforts to develop targeted, sector-specific workforce development strategies.

1. DATA COLLECTION AND ANALYTICS

The Node leaders expressed the need for data analytics support and identified challenges associated with evaluating workforce dynamics and accessing relevant data sources. The following were key takeaways:

- Tracking non-credit credentials is critical; ensuring funding for degree, non-degree, credit, and non-credit participants is necessary to attract enough students fill available jobs
- Existing job placement and career outcomes data collection is inconsistent; supplemental timely data sources like ARIES are needed
- Accurate Classification of Instructional Programs (CIP) code assignment is a key for projecting sector workforce supply
- There is value in validating the results of industry workforce demand estimates with employers

- Quarterly reports will be critical for measuring progress toward goals, employment, and education outcomes; useful for informing continuous improvement efforts
- An interactive *Asset Map* regional locator is needed to connect stakeholders with available workforce development assets and resources
- Training is needed on the new participant and program data collection hub, participant intake process, grant eligibility assessments and grant reporting requirements
- Support is needed from ODJFS, OMJ Centers and G-TECH for effective tracking of participants' employment outcomes
- Current challenges in accurately tracking participant employment outcomes may grow more difficult given the observed shift toward employing private contractors to complete expansion work

Stakeholders across all nodes emphasized the importance of developing a comprehensive tracking system to monitor employment outcomes and the educational progression of non-credit students.

This need extends to addressing gaps in current state and federal administrative data systems and inconsistent practices for collecting job placement data. The use of

“Ensuring we have robust data tracking on employment outcomes is absolutely critical. We need to ensure that we are providing our decision makers with accurate and timely data to inform policy and program adjustments.”

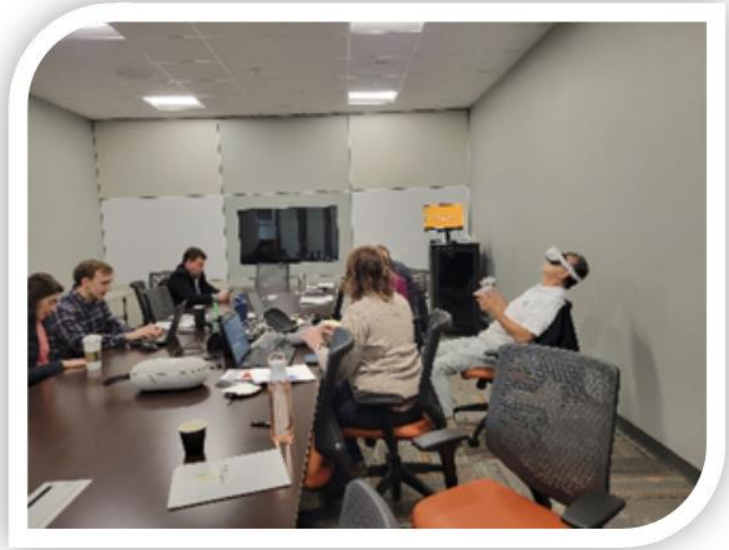
– university program manager

supplemental data sources like ARIES was highlighted as beneficial for enhancing data reliability and to address the "importance of tracking data for non-credit graduates...recognizing the gap in IPEDS data and its significance in painting a comprehensive picture of the workforce landscape." Moreover, the integration of interactive asset maps and periodic reporting was stressed as helpful for connecting stakeholders with resources and as a means of measuring progress towards specific goals. The need for a comprehensive approach to capturing demographic and employment outcomes was discussed to better understand the impact of training and education programs, especially as it relates to data tracking required by funding sources.

2. RECRUITMENT AND CAREER AWARENESS

Strategies for attracting and retaining students and job seekers was a popular topic. Emerging strategies to address challenges associated with the tight labor market and competition for talent from other industries were explored. These insights summarize the perspectives shared by participants:

- Community, employer, and education partners are critical for reaching diverse audiences (parents, job seekers, etc.); traditional recruitment strategies need to be adapted to reach untapped talent
- Leveraging existing resources with in regions is key for increasing awareness of telecom job opportunities
- Strategic promotion and marketing support is critical for success
- Post-pandemic challenges require innovative approaches to course delivery to remain competitive (such as, including online learning options)
- Removing barriers is critical for participant success, including transportation, childcare, justice involved, CDL, language barriers, tuition resources, etc.
- Virtual reality headsets provided by the Sector Partnership have proven to be a valuable tool for recruitment and raising career awareness and exploration



The strategic use of digital platforms and virtual reality (VR) tools to enhance job visibility and attract prospective students and workers was emphasized. Several leadership teams touched on the changing pipeline of students and the need to grow offerings available in both online and in high schools. The competition from other programs offering more online training was also discussed, with one community college instructor reiterating that "Online testing will help... but you have to have transportation to the hand-on testing."

"People just don't realize this industry is out there. Your work on unemployed and underemployed [recruitment] will be very important."
 – community college instructor

3. NODE DEVELOPMENT/PROGRAM IMPLEMENTATION

Listening Session participants identified implementation strategies and challenges facing regions as they move forward to scale programs and services in their areas. The following list highlights the issues most frequently shared:

- Articulation agreements are key for ensuring smooth transitions along career pathways
- Assistance is needed with job placement, retention, and follow-up; education and training providers value G-TECH and OhioMeansJobs Centers support with providing these services
- Students are not meeting grant eligibility requirements for existing funding sources (i.e., QUEST, WIOA, Tech Cred, IMAP, etc.) and often need additional assistance with covering their out-of-pocket costs

- Importance of streamlined intake process including on-site participant profile completion was stressed
- Node peers value opportunities to collaborate and share existing instructional resources (e.g., equipment, intake strategies, instructional resources, etc.)
- Super RAPIDS awards timing lagged – slowed implementation timelines for many institutions
- Difficulties with student retention; once they have basic skills and find a job, they stop/opt out from training/education program

Key issues discussed included the need for articulation between programs to ensure smooth transitions for students across educational pathways. Discussions also revolved around the importance of shared resources and coordinated efforts to address program implementation challenges. One community college team offered the use of their program's

"The biggest thing is, as we move forward..., articulation agreements and how do we truly move that student from one program to the next within the region?"
- university program manager

training van for standing up mobile training in other areas of the region. Additional collaboration on sharing funding source prerequisites, instructor recruitment strategies and training material both within and across the Nodes was common. "We've just kind of finalized the application packet for the QUEST grant...the plan is to go out to the schools and engage with either the students directly or professionals at the school," shared a workforce board participant, illustrating proactive approaches to implementation. Attitudes of teamwork and resources sharing was commonplace across the Node sessions, with some participants expressing relief at getting long-standing questions answered or after being provided additional resource(s) they did not know existed.

4. SUSTAINABLE FUNDING

Bridging gaps in tuition support for prospective students, understanding eligibility criteria for current funding, and identifying sustaining funding strategies were frequently discussed across the Nodes and represented a major part of participant's concern in setting up training programs and courses. The following are the main points regarding sustainable funding:

- Participants welcome the Sector Partnership's efforts to raise awareness of available funding for employers and students
- The burden of risk on educational institutions when funding reimbursement is based on student completion rates can make efforts to gain approval difficult, especially for new programs
- Stakeholders are interested in knowing the next steps required to secure Broadband Equity Access & Deployment (BEAD) funding for sustaining Sector Partnership workforce initiatives
- Braided funding is key to successfully sustaining the Sector Partnership and Node network
- A no cost extension for completing QUEST grant funded goals would be helpful as delays occurred in the timeline required to obtain equipment funding needed for start up

The dialogue often centered on navigating the complexities of grant applications and the strategic use of funds to support long-term program sustainability. "We're in a little bit of a holding pattern with waiting for the approval of data sharing agreements," remarked a participant, highlighting the bureaucratic challenges often encountered. Discussions also included strategies for maximizing the impact of

available funds and exploring new funding opportunities to ensure the continuity and expansion of workforce initiatives. The need for a quarterly report template to be adaptable with an eye toward evolving data needs and the importance of establishing robust data sharing agreements for longitudinal tracking of workforce outcomes was discussed during most visits, underscoring the ongoing need for flexibility and adaptability in funding utilization which often requires outcome tracking.

The insights gained from the listening sessions across Ohio's regional Nodes highlight critical areas for improvement and strategic focus in broadband and 5G workforce development. From enhancing data collection and analytics to developing innovative recruitment strategies and ensuring sustainable funding, the findings underscore the importance of a coordinated and comprehensive approach. By leveraging the expertise and perspectives of regional stakeholders, we can develop targeted strategies that address the unique needs and opportunities within each region, ultimately strengthening Ohio's broadband and 5G workforce and supporting broader economic and technological advancements.

CONCLUSIONS AND IMPLICATIONS

From enhancing data collection and analytics processes to developing innovative recruitment strategies and ensuring sustainable funding, the findings reported here underscore the importance of a coordinated and comprehensive approach to regional Node implementation. By leveraging the expertise and perspectives of regional stakeholders, strategies that address the unique needs and opportunities within each region will be developed to successfully strengthen Ohio's broadband and 5G workforce while supporting broader economic and technological advancements.

Continuous improvement through feedback from stakeholders is critical for ensuring that training programs and workforce strategies remain relevant and effective. These Node engagement sessions yielded valuable input for the Sector Partnership's use in its ongoing efforts to refine and enhance the telecom sector workforce. Node leaders emphasized the need for robust data systems to track participants' education and employment outcomes for both credit and non-credit education and training programs at all levels. This will facilitate evidence-based program and policy decision making, improve program design, and ensure real-time adjustments to meet sector employers' workforce demands. This approach also supports ongoing efforts to seek and secure future funding essential for sustaining state and region level broadband & 5G workforce development initiatives.

There is an ongoing effort to share resources and best practices across Nodes. This collaboration enhances the overall effectiveness of the Sector Partnership by leveraging strengths and addressing common challenges collectively. For instance, Nodes stakeholders have identified innovative recruitment strategies, such as the use of digital platforms and virtual reality (VR) technologies, to increase career awareness and engagement among potential students and workers. This approach is essential in a tight labor market where competition for talent from other industries is fierce.

The need for sustainable funding models that adapt to changing program needs is another area that collaboration across Nodes has been initiated. Participants discussed the importance of navigating complex grant applications and maximizing the impact of available funds to support long-term program sustainability. The emphasis on braided funding and securing additional funding sources, such as the

Broadband Equity Access & Deployment (BEAD) funding, highlights the importance of these ongoing efforts to ensure the continuity and expansion of this new telecom workforce development network.

The importance of collaboration between community, education, government, and employer partners to address the challenges of attracting and retaining diverse and underrepresented participants was underscored by Node stakeholders. Ensuring access to resources needed to overcome barriers to success, such as transportation and childcare, is a high priority for all Nodes. As well, the integration of online and remote learning options is being explored to meet post-pandemic educational needs and preferences. This will increase accessibility to education and training programs for all prospective students and, perhaps, will deter them from enrolling in programs offered remotely in other states.

By engaging in dialogue during these sessions, participants expressed their concerns, propose solutions, and directly influence the ongoing and future direction of workforce development strategies in their regions. This interactive dynamic ensured that the sessions were not only informative, but also responsive to the specific needs and challenges they face. The insights gathered will be used to refine and prioritize the Sector Partnership Data Analytics & Evaluation Working Group's Research Action Plan. This future-oriented approach ensures a research agenda that informed by real-time data and stakeholder feedback. By fostering a culture of continuous improvement, resource sharing, and strategic planning, Ohio is well-positioned to develop a skilled workforce capable of meeting the demands of the rapidly evolving broadband and 5G industries.

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APPENDIX A – ENGAGEMENT PROTOCOL

5G-OH Connectivity Center Regional Asset Mapping Overview

Engagement Protocol

INVITATION TO PARTICIPATE

Purpose

We are seeking to connect with each Broadband & 5G Sector Partnership Regional Node Leadership Team to share the results of state and region level labor market and workforce related research. In addition to sharing detailed information about the sector specific trends in their geographies, listening sessions will be held with researchers from the Data Analytics and Evaluation Working Group. These conversations will help to better understand the unique perspectives and research needs in the context of each region's assets and challenges.

Regional Node lead institutions/organizations representing Ohio public and private 2-year colleges, 4-year universities, workforce development boards and community based organizations will be included in these sessions. Figure 1 provides detailed information about the members of leadership teams in each JobsOhio region. The goals of these sessions will be two-fold: (i) to learn more about the data analytics needed to support stakeholders' resource deployment, participant recruitment/retention, workforce development services development/implementation, and education/training program development/implementation related decision making, and (ii) to gather insights needed to identify and prioritize Data Analytics & Evaluation Working Group Roadmap deliverables, as well as overall strategic planning efforts.

The Ohio Education Research Center (OERC) will provide a report of the results of these convenings to the 5G-OH Connectivity Center leadership team, Ohio Manufacturer's Association, the Ohio Department of Job and Family Services (ODJFS), and the Governor's Office of Workforce Transformation. The goal of this work is to develop comprehensive, customized data analytics services that support state and regional stakeholders with actionable information and recommendations to inform decision making related to strengthening the BB & 5G workforce.

LISTENING SESSION PROTOCOL

Directions to Participants

Study Overview

Prior to each session, we will provide a region level report containing the results of all research completed on behalf of the Broadband & 5G Sector Partnership to date. This summary document will serve as a useful tool for regional Node stakeholders to efficiently access all findings related to their areas. Through this listening session we plan to gather additional data to both validate the evidence-based research results, as well as to gather qualitative data to further contextualize the knowledge gained with insights from local stakeholder perspectives. We look forward to learning more about the unique Node characteristics to better understand the region level industry sector partnership infrastructure development. Before attending these sessions, participants will be asked to review the information provided below regarding the broader goals of the BB/5G sector partnership to better understand the context of this important work. As well, they will be provided with a packet of region-specific materials and other reports containing for use in preparing for the meeting.

About the Broadband and 5G Sector Partnership

The state level **Sector Partnership** connects education, industry, training providers, and government partners working collaboratively to implement “Strengthening Ohio’s Broadband 5G Workforce” strategies.

❖ **Why?**

- *Grow* statewide education and workforce development capacity
- *Lead* effort to design and distribute BB/5G industry specific curriculum and training programs needed to prepare a skilled workforce and bridge the skills-gap with effective workforce solutions

❖ **Who?**

- Led by The Ohio State University and the Wireless Infrastructure Association (WIA) with partners representing industry, education, and governmental organizations across Ohio

Regional Node Leadership Engagement Goals

The broad questions that we are seeking to answer include: How well do the results of region level research completed align with other related studies completed? What questions are answered by the knowledge gained from these studies? For example, what education and training programs are needed to help produce the graduates needed to fill identified workforce gaps? And are the current occupational titles and training programs included on the BB & 5G industry lists used by Sector Partnership researchers accurately capturing the jobs students are being hired into in the Telecommunications industry?

Asset Mapping Studies

Each Node team will be provided with a report containing the results of all data analytics and research completed for their geographies. They will also receive other relevant state level information including the CIP and SOC lists used to complete various studies, the final reports containing the statewide findings from research completed, and reference information related to the new data collection system supported by New Growth Group. During the session, an interactive asset map prototype displaying all workforce system providers by county within each JobsOhio region will also be shared with participants.

Results

OERC staff will analyze engagement results and session transcripts to identify common themes in the conversations held. OERC staff will compile results and report findings to the 5G-OH Connectivity leadership, ODHE and OWT by the February 2024 Sector Partnership meeting. Upon receipt of final approval, the Data Analytics Working Group will use these findings to refine its understanding of how future data analytics can best support the Node stakeholders in various JobsOhio regions. This knowledge will also inform the ongoing work to develop the 5G-OH Connectivity Center and statewide BB & 5G Sector Partnership to address workforce supply related issues in the BB/5G industry throughout Ohio.

Before the Sessions

(Exact language may be less formal in email messages): To best prepare for participating in a listening session, please review the information provided in the link below to better understand relevant terminology and the context of this study. You will be asked to share additional detailed information related to your regional Node data analytics and labor market research activities and how well they meet needs of regional stakeholders (government, educators, and industry). We are also interested in any new program/course development activities that are planned or underway in your region. You're welcome to connect with our team in advance for further clarification.

5G-OH Connectivity Center Regional Asset Mapping Overview

Regional Node Engagement Guide

REGIONAL NODE LISTENING SESSIONS

Questionnaire for Education and Training Providers

Session date:

Recorder:

Session Participants' Names:

Participants' Title(s) and Organization(s):

JobsOhio Region:

[Exact language used may be more conversational]: We're holding listening sessions with each QUEST Regional Node Leadership Team throughout the state on behalf of the statewide Sector Partnership stakeholders which include OSU's 5G-OH Connectivity Center, the Ohio Department of Higher Education, the Ohio Department of Job & Family Services, and the Governor's Office of Workforce Transformation.

This session should take about 45 minutes. We appreciate the time you took to prepare for our conversation and look forward to hearing your valued perspectives. Hopefully, you've had a chance to review the detailed materials we sent and now have a basic understanding of the session's context.

I'll pause here to invite any questions you may have:

[ALLOW TIME FOR Q&A AND FURTHER DISCUSSION OF THE PROJECT PURPOSE AND/OR CONTEXT]

- 1. We would like to start by discussing the questions that the region level research results we've shared might be useful in answering:**
 - 1.1. What do we know about the need for new education and training programs to prepare workers for current and future telecom careers in your region?**
 - 1.2. What sources of information are available to determine the alignment of existing programs with students' occupations and job placement?**
 - 1.3. Are graduates of existing programs working in these occupations for BB&5G employers in this region?**
 - 1.4. What Telecom occupations are most in demand (based on most recent data)? Is this expected to change in the next 5 to 10 years?**

- 1.5. What sectors are competing for prospective Telecom workers?**
- 1.6. Are there enough graduates available from related programs to fill the vacant jobs employers are advertising?**
- 1.7. Which counties in each JobsOhio region have the highest unemployment and most limited broadband access (e.g., greatest need for workforce development support)?**

- 2. What have been your biggest successes in evaluating the workforce gap in this industry in the region?**

- 3. What have been your biggest challenges evaluating the workforce gap in this industry in your region?**

- 4. Please indicate any additional CIP code(s) for BB & 5G program(s) offered in your region considered to be aligned with occupations related to the Broadband and 5G industry.**

- 5. Is your Node planning to offer any new credit or noncredit programs or courses that are designed to prepare students for BB/5G jobs, specifically?**

- 6. What metrics would be most valuable to your team for understanding the impact your Node is having on strengthening the region's BB & 5G workforce?**

- 7. What research questions does your team have that are currently not being investigated?**

That covers everything we want to ask you today. Are you open to having our team reach out with any additional information we may need as we reflect on what we've learned today? Thank you for your time and support with this study.

GLOSSARY OF TERMS

CIP Code: The Classification of Instructional Programs (CIP) provides a taxonomic scheme that supports the accurate tracking and reporting of fields of study and program completions activity.

CIP-SOC Crosswalk: The CIP SOC Crosswalk is a joint effort by the Bureau of Labor Statistics

and the National Center for Education Statistics and matches 6-digit CIP Codes from the 2020 Classification of Instructional Programs (CIP) with 6-digit detailed descriptions from the 2018 Standard Occupational Classification (SOC). The purpose of the crosswalk is to match postsecondary programs of study that provide graduates with specific skills and knowledge to occupations requiring those skills or knowledge to be successful. The matches are based on the content of the CIP Code and SOC Code descriptions combined with expertise from statisticians at both federal agencies. <https://nces.ed.gov/ipeds/cipcode/post3.aspx?y=56>

NCES: National Center for Education Statistics (<https://nces.ed.gov/>) is the primary federal entity for collecting and analyzing data related to education. It resides within the Institute for Education Sciences.

SOC Code: The 2018 Standard Occupational Classification (SOC) system is a federal statistical standard used by federal agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. All workers are classified into one of 867 detailed occupations according to their occupational definition. To facilitate classification, detailed occupations are combined to form 459 broad occupations, 98 minor groups, and 23 major groups. Detailed occupations in the SOC with similar job duties, and in some cases skills, education, and/or training, are grouped together.

STRENGTHENING OHIO'S BROADBAND & 5G WORKFORCE - OVERVIEW

Even prior to the COVID-19 health crisis, Ohio had significant gaps in broadband coverage – an issue the DeWine-Husted Administration began addressing immediately upon taking office.⁴ The issues created by this gap became more evident at the start of the pandemic when millions of Ohioans had to stay home to work and learn remotely. The internet speeds needed for bandwidth-intensive applications, like video conferencing – sometimes on multiple devices – showed how speeds below the broadband threshold left far too many Ohioans behind and unable to effectively participate in the modern economy, education system, and healthcare system.⁵

To address the digital divide, the DeWine-Husted Administration proposed significant investments in broadband expansion – approximately \$500 million between state and federal dollars, which will create 1,250 direct construction jobs that will need to be filled, compounding the current labor shortage.⁶ The deployment of 5G in Ohio is estimated to create 32,000 jobs solely in network infrastructure.⁷ Ohio needed a strategic plan to address these workforce issues so the buildout of broadband and 5G infrastructure can happen quickly.

In response to this workforce shortage, the Governor's Office of Workforce Transformation and BroadbandOhio drafted a strategic plan that outlines a detailed framework and roadmap to address three key issues: lack of industry career awareness, lack of education and training programs, and lack of awareness of existing state and federal funding programs. Ensuring Ohio has universal broadband access and a mature 5G network is a top priority for this administration. The ultimate goal of this strategic plan is to make Ohio a prime destination for new, innovative technology companies to form and utilize the next generation of wired and wireless communications. Reaching that goal requires a skilled workforce.

To help bridge the digital divide, the DeWine-Husted Administration proposed, and the legislature funded, significant state investments in broadband expansion as part of the Governor's 2022-2023 Executive Budget, "Investing in Ohio's Future."⁸ These state investments are in addition to federal dollars allocated to close the broadband gap.⁹ Between state and federal dollars, Ohio expects an infusion of approximately \$500 million for broadband expansion.¹⁰ A significant portion of these dollars will be deployed over fiscal years 2022-2023.¹¹

⁴ The Ohio Broadband Strategy (InnovateOhio, 2019)

⁵ <https://www.fcc.gov/consumers/guides/household-broadband-guide>

³ Governor's Office of Workforce Transformation and Broadband Ohio, Strengthening Ohio's Broadband & 5G Workforce report, Appendix 1, p. 10.

⁷ https://api.ctia.org/wp-content/uploads/2021/01/5G-Promises-Massive-Job-and-GDP-Growth-in-the-US_Feb-2021.pdf

⁸ <https://www.lsc.ohio.gov/pages/budget/current/CurrentGA.aspx?Budget=MainOperating&ID=MainOperating&Version=contentFI>

⁹ <https://innovateohio.gov/wps/portal/gov/innovate/priorities/resources/broadband/#:~:text=For%20more%20than%20300%2C000%20households%20in%20Ohio%20representing%20close%20to,internet%20is%20a%20critical%20barrier>

¹⁰ Funding details: Investing in Ohio's Future – Budget Proposal; HB 2; The American Rescue Plan Act - Coronavirus State and Local Fiscal Recovery Fund; U.S. Department of Treasury - The Coronavirus Capital Projects Fund (CCPF); FCC Seeks Comment on Emergency Connectivity Fund; FCC - The Rural Digital Opportunity Fund; FCC- Emergency Broadband Benefit; The BroadbandOhio Connectivity Grant

¹¹ Id.

This large capital infusion means the demand for skilled labor to physically build broadband infrastructure will increase exponentially. Based on estimated funding, broadband infrastructure build-out in Ohio will create 1,250 direct construction jobs that will need filled to expand access.¹² A \$500 million investment in broadband infrastructure will also increase Ohio's GDP by \$751 million.¹³ Additionally, the United States, including Ohio, has begun deploying 5G – the next generation of wireless communication technology, which pulls from the same general labor pool. In Ohio, 5G will create approximately 107,000 new jobs in the state, while increasing Ohio's GDP by \$36.4 billion.¹⁴ Approximately 32,000 of these new 5G jobs will be directly tied to the deployment of 5G infrastructure.¹⁵

The Governor's Office of Workforce Transformation and BroadbandOhio have commissioned the Strengthening Ohio's Broadband & 5G Workforce analysis to evaluate the broadband and 5G workforce, identify gaps in workforce supply, and propose strategies to mitigate these gaps. Success on this will allow proposed broadband and 5G infrastructure projects to proceed with minimal disruption due to labor shortages and will infuse industry-oriented curriculum in our education system.

To learn more details about the specific strategies for achieving the education and training related goals of this initiative, please see the [full report](https://innovateohio.gov/priorities/resources/broadband/strategy) available online at <https://innovateohio.gov/priorities/resources/broadband/strategy>.

¹² Governor's Office of Workforce Transformation and Broadband Ohio, Strengthening Ohio's Broadband & 5G Workforce report, Appendix 1, p. 10.

¹³ Id.

¹⁴ Governor's Office of Workforce Transformation and Broadband Ohio, Strengthening Ohio's Broadband & 5G Workforce report, Appendix 2, p. 11.

¹⁵ https://api.ctia.org/wp-content/uploads/2021/01/5G-Promises-Massive-Job-and-GDP-Growth-in-the-US_Feb-2021.pdf

APPENDIX B - COLLATERAL MATERIALS

Customized regional research summary reports were developed and distributed, with the agendas and listening session guiding questions, to attendees prior to the site visits:

- [Central Region](#)
- [Southeast Region](#)
- [Northeast Region](#)
- [Northwest Region](#)
- [West Region](#)
- [Southwest Region](#)

These additional materials were also disseminated to all attendees in advance of each session:

- [Connections between Postsecondary Training and BB & 5G Occupations Report](#)
- [Level 1 Asset Mapping Study Report](#)
- [Level 2 Asset Mapping Study Report](#)
- [Skillshed Analysis Study](#)

APPENDIX C – MEETING PARTICIPANTS

Central Node Meeting - 01/04/24

- **Kaylor Sines**, Columbus State Community College, Director, Workforce Initiatives & Operations
- **Tara Wrighter**, Columbus State Community College, Broadband Regional Implementation Manager
- **Cheryl Hay**, Columbus State Community College, Executive Director - Office of Talent Strategy
- **Beth Crawford**, The Ohio State University, Center on Education and Training for Employment, Program Specialist
- **Windy Murphy**, Workforce Development Board of Central Ohio, Senior Director of Business Solutions
- **Keli Bussell**, at The Ohio State University, Center on Education and Training for Employment, Senior Research Associate
- **Amanda Moline**, Columbus State Community College, Title: [Missing], Email: amoline1@csc.edu

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- **Julie Maurer**, Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Lead Research Manager
 - **Michael Kahoe**, Ohio Governor's Office of Workforce Transformation, Workforce Programs Manager
 - **Logan Dickson**, Ohio Governor's Office of Workforce Transformation, Senior Project Manager
 - **Sara Lang**, Wireless Infrastructure Association, Managing Director
 - **Nikki Glazer Stoicoiu**, New Growth Group, Director, Evaluation & Analytics
 - **Elham Erfanian Ghanad Shirinkaam**, Voinovich School of Leadership and Public Service, Assistant Research Professor
 - **Sungjin Lee**, The Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Postdoctoral Researcher
 - **Mark Oleson**, The Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Data Analytics Science Analyst
 - **Jared Pashupathi**, The Ohio State University, Research Development Partnerships Senior Coordinator, Computer Science and Engineering
 - **Audrey Theis**, Wireless Infrastructure Association, Education and Workforce Consultant

Southeast Node Meeting - 01/09/24

- **Aaron Stotts**, Hocking College, Director of 5G/Broadband
- **Emily Boyer**, Tri County Career Center, Director of Adult Education
- **Evan Schaad**, Washington County Career Center, Director, Adult Technical Training
- **Allen Kiger**, Buckeye Hills Career Center, Dean of Career Technical Education Programs
- **Jamie Bartee**, Buckeye Hills Career Center, Dean of Postsecondary Instruction
- **Laurie McKnight**, Ohio University, Voinovich School of Leadership and Public Service, Senior Research Manager-Broadband
- **Julio Arauz**, Ohio University, J. Warren McClure School of Emerging Communication Technologies, Associate Professor and Graduate Chair
- **Olivia Cornwell**, Community Action Organization of Scioto County
- **Janell Comstock**, Workforce Development Board, Mid-Ohio Valley Regional Council, Program Director

- **Jeff Jenkins**, HAPCAP, Athens County Broadband Coordinator
- **Glen Crippen**, HAPCAP, Director, Housing & Community Development
- **Rob Guentter**, Workforce Development Board Area 16, Staff to the Board
- **Rebecca Safko**, Ohio Valley Employment Resource, Executive Director
- **Crystal Keaton**, Workforce Development Board Area 1, Business Manager
- **Connie Altier**, Superintendent, Tri-County Career Center
- **Jarrod Tudor**, Hocking College, Executive Vice President
- **Joe Frazier**, Area 14 Workforce Development Board, Director
- **Jocelyn Howard**, HAPCAP, Broadband Coordinator

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- **Julie Maurer**, Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Lead Research Manager
 - **Michael Kahoe**, Ohio Governor's Office of Workforce Transformation, Workforce Programs Manager
 - **Logan Dickson**, Ohio Governor's Office of Workforce Transformation, Senior Project Manager
 - **Sara Lang**, Wireless Infrastructure Association, Managing Director
 - **Nikki Glazer Stoicoiu**, New Growth Group, Director, Evaluation & Analytics
 - **Elham Erfanian Ghanad Shirinkaam**, Voinovich School of Leadership and Public Service, Assistant Research Professor
 - **Sungjin Lee**, The Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Postdoctoral Researcher
 - **Mark Oleson**, The Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Data Analytics Science Analyst

Northwest Node Meeting - 03/07/24

- **Emily Alspach**, University of Findlay, Special Projects Manager
- **Hillary Hartman**, University of Findlay, Grants Manager
- **Andrew Shella**, Terra State Community College, Dean, of Technology and Skilled Trades Division
- **Rob Gamby**, Terra State Community College, Assistant Professor, Broadband/Utility Construction
- **Jacob Selvey**, Terra State Community College, Coordinator of Construction Technology
- **David Snipes**, Clark State Community College, Grants Director
- **John Trott**, Greater Ohio Workforce Board, Executive Director
- **Reagan Claypool**, Great Lakes Community Action Partnership, Adult & Youth Development Director
- **Helen Schneider**, University of Findlay, Associate Professor and Chair of Computer Science

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- **Julie Maurer**, Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Lead Research Manager
 - **Michael Kahoe**, Ohio Governor's Office of Workforce Transformation, Workforce Programs Manager
 - **Logan Dickson**, Ohio Governor's Office of Workforce Transformation, Senior Project Manager
 - **Sara Lang**, Wireless Infrastructure Association, Managing Director
 - **Nikki Glazer Stoicoiu**, New Growth Group, Director, Evaluation & Analytics
 - **Elham Erfanian Ghanad Shirinkaam**, Voinovich School of Leadership and Public Service, Assistant Research Professor
 - **Sungjin Lee**, The Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Postdoctoral Researcher

- **Mark Oleson**, The Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Data Analytics Science Analyst

West Node Meeting - 03/11/24

- **Rachael Kiplinger** – University of Dayton, Industry Specialist, Engineering Co-op & Internship Office
 - **Colleen Bretland** - University of Dayton, Director of Engineering Co-ops & Internships
 - **Erika DeBorde** - Sinclair Community College, Administrator Workforce Development Division
 - **Lasandrea James** - Miami Valley Community Action Partnership, Director of Micro Enterprise and Computer Training
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- **Julie Maurer**, Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Lead Research Manager
 - **Michael Kahoe**, Ohio Governor's Office of Workforce Transformation, Workforce Programs Manager
 - **Sara Lang**, Wireless Infrastructure Association, Managing Director
 - **Nikki Glazer Stoicoiu**, New Growth Group, Director, Evaluation & Analytics
 - **Elham Erfanian Ghanad Shirinkaam**, Voinovich School of Leadership and Public Service, Assistant Research Professor
 - **Mark Oleson**, The Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Data Analytics Science Analyst

Southwest Node Meeting - 03/25/24

- **Lloyd Wood**, Miami University, 5G/Broadband Program Coordinator
 - **Becky Ehling**, BCW Workforce, Executive Director
 - **Virginia Witte**, Cincinnati State Community College, Grants Administration Manager
 - **Amy Waldbillig**, Cincinnati State Community College, Workforce Development Center, Vice President Workforce Development & Enrollment Services
 - **LaVerne Williams-Lovejoy**, Community Action Agency, Cincinnati – Hamilton County, Employment Coach/Site Coordinator Manufacturing Program
 - **Beth Yoke**, Cincinnati State Community College, Workforce Development Center
 - **Jim Hansel**, Great Oaks Career Campus, Career & Technical Program Specialist
 - **Debbie Poweleit**, Cincinnati State Community College, Director of Admissions and Career Center
 - **Brian O'Keeffe**, Cincinnati State Community College, Director of Operations for Institutional Advancement
 - **Colleen Bush**, Miami University, College of Engineering and Computing, Director Of Industry Relations,
 - **Cheryl Brackman**, Cincinnati State Community College, Workforce Development Center Director
 - **Kevin Smith**, Workforce Council of Southwest Ohio, Program Manager
 - **Jackie Norton**, Cincinnati State Community College, Marketing & Promotions Administrator
-
- **Julie Maurer**, Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Lead Research Manager
 - **Michael Kahoe**, Ohio Governor's Office of Workforce Transformation, Workforce Programs Manager
 - **Logan Dickson**, Ohio Governor's Office of Workforce Transformation, Senior Project Manager
 - **Sara Lang**, Wireless Infrastructure Association, Managing Director
 - **Nikki Glazer Stoicoiu**, New Growth Group, Director, Evaluation & Analytics

- **Elham Erfanian Ghanad Shirinkaam**, Voinovich School of Leadership and Public Service, Assistant Research Professor
- **Sungjin Lee**, The Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Postdoctoral Researcher
- **Mark Oleson**, The Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Data Analytics Science Analyst

Northeast Node Meeting - 01/16/24

- **Lindsey Ekstrand**, Youngstown State University, Director, Workforce Education Programs
 - **Chris T. Riedel**, Youngstown State University, Program Manager Networking and Telecommunications
 - **Ray R. Nejadfard**, Cuyahoga Community College, Dean & Executive Director of Engineering and Manufacturing
 - **Shana Marbury**, Cuyahoga Community College, Executive Vice President Workforce, Community & Economic Development
 - **Jason Abbott**, Cuyahoga Community College, Director, Development at Cuyahoga Community College Foundation
 - **Michelle Rose**, Ohio Means Jobs – Cleveland Cuyahoga, Executive Director
 - **Catherine Tkachyk**, CT Strategies, Founder & CEO
 - **Laura Chalker**, Ohio Means Jobs- Cleveland Cuyahoga, Deputy Director/CFO
-
- **Julie Maurer**, Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Lead Research Manager
 - **Michael Kahoe**, Ohio Governor's Office of Workforce Transformation, Workforce Programs Manager
 - **Logan Dickson**, Ohio Governor's Office of Workforce Transformation, Senior Project Manager
 - **Sara Lang**, Wireless Infrastructure Association, Managing Director
 - **Nikki Glazer Stoicoiu**, New Growth Group, Director, Evaluation & Analytics
 - **Elham Erfanian Ghanad Shirinkaam**, Voinovich School of Leadership and Public Service, Assistant Research Professor
 - **Sungjin Lee**, The Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Postdoctoral Researcher
 - **Mark Oleson**, The Ohio State University, John Glenn College of Public Affairs, Ohio Education Research Center, Data Analytics Science Analyst