

USING THE APPENDICES

An Implementation Toolkit

The appendices accompanying this Strategic Roadmap and Implementation Plan are intended to serve as practical implementation resources for River Rouge Public Schools, educational partners, employers, workforce organizations, government agencies, and community stakeholders involved in planning and developing the River Rouge Career & Workforce Innovation Center.

While the main body of the report presents the strategic vision, recommendations, and implementation framework, the appendices provide detailed reference materials to support decision-making throughout implementation. Collectively, they include supplemental labor market analyses, occupational profiles, Career and Technical Education resources, instructional technology guidance, curriculum resources, laboratory planning considerations, funding opportunities, and industry-recognized credential information.

Several appendices are designed to support planning activities that will continue well beyond completion of this report. Because workforce needs, educational technologies, industry credentials, state requirements, funding opportunities, and labor market conditions evolve over time, these implementation resources should be reviewed and updated periodically in collaboration with employers, educational institutions, workforce partners, and relevant state agencies.

Although presented as supporting materials, the appendices are intended to function as an integrated implementation toolkit that complements the recommendations contained throughout this report. Together, they provide practical resources to assist River Rouge and its partners as they develop, implement, evaluate, and continuously improve the Career & Workforce Innovation Center.

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Implementation Note. Because labor market conditions, technologies, credentials, funding programs, and regulatory requirements change over time, users should confirm current information with the appropriate employers, education partners, credential issuers, licensing or accrediting bodies, and state or federal agencies before making program or investment decisions.

APPENDIX A

River Rouge Community and Labor Market Analysis

Community Demographics, Socioeconomic Conditions, and Employer Demand

A.1 Community Demographics and Socioeconomic Overview

Understanding River Rouge's demographic characteristics provides important context for workforce planning and the development of the proposed Career and Technology Center. Community demographics provide important context for understanding the characteristics of the local workforce and identifying opportunities for future workforce development.

River Rouge has a total population of 7,008 residents. The city's population is evenly divided by gender, with 3,529 females (50.4%) and 3,479 males (49.6%). This balanced distribution suggests that workforce development initiatives and career pathway programs have the opportunity to serve a broad and diverse population. As the city continues to position itself for growth in clean energy, electrification, and mobility industries, ensuring equitable access to education, training, and employment opportunities for all residents will be an important consideration.

Figure 1: Population by Gender, River Rouge

Male	3,479	49.60%
Female	3,529	50.40%
Total	7,008	100%

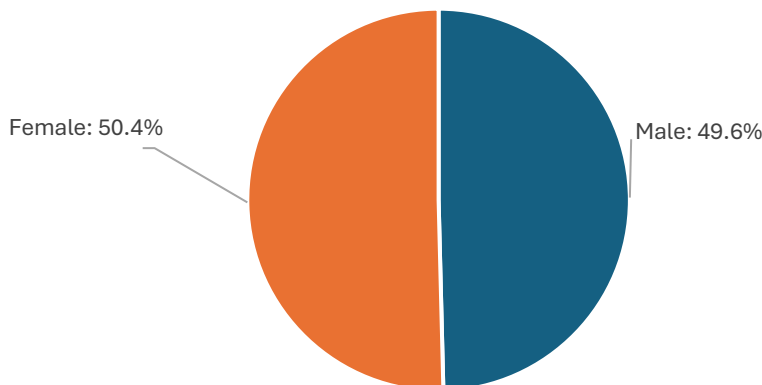
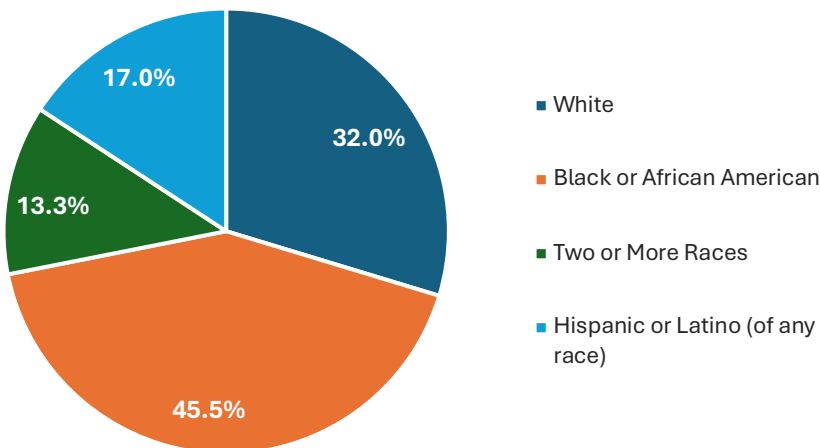


Figure 2 shows that Black or African American residents comprise the largest share of the population, representing 45.5% of River Rouge residents. White residents account for 32.0%, while Hispanic or Latino residents (of any race) represent 17.0% of the population. Individuals identifying as Two or More Races account for 13.3%. This diverse population highlights the importance of developing inclusive workforce strategies that expand access to education, technical training, and employment opportunities across all demographic groups.

Figure 2: Population by Race and Ethnicity, River Rouge



The population demographic presented in this section serves as a foundation for understanding River Rouge's workforce characteristics. The following sections examine additional socioeconomic indicators including employment, income, and educational attainment—before analyzing employer demand and high-demand occupations associated with the Michigan Vehicle Technology Transition Project (MiVTP). Together, these data provide a comprehensive picture of the community's workforce assets, challenges, and opportunities and help guide the development of career pathways aligned with regional labor market demand.

Figure 3 shows the employment status of River Rouge's working-age population. Of the 5,398 individuals included in the labor force analysis, 2,667 residents (49.4%) are employed, while 343 residents (6.4%) are unemployed and actively seeking work. In addition, 2,388 individuals (44.2%) are not participating in the labor force.

Figure 3: Employment Status, River Rouge

Employed	2,667	49.40%
Unemployed	343	6.40%
Not in labor force	2,388	44.20%
Total	5,398	100.00%

As illustrated in Figure 4, the employment profile indicates that approximately one-half of the working-age population is currently employed, while a substantial share remains outside the labor force. This suggests there is potential to expand workforce participation through targeted education, workforce training, and supportive services. As River Rouge advances the development of a Career and Technology Center, engaging individuals who are unemployed or not currently participating in the labor market may help strengthen the local talent pipeline and increase access

to employment opportunities in the region's growing clean energy, electrification, and mobility sectors.

Figure 4: Employment Status, River Rouge

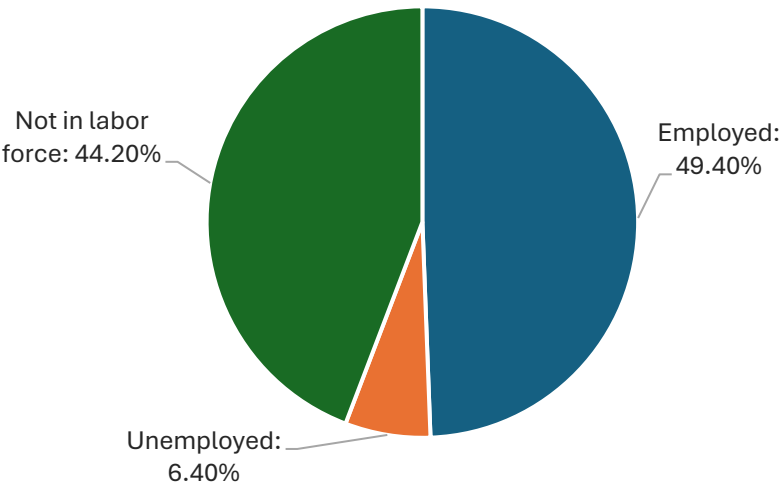
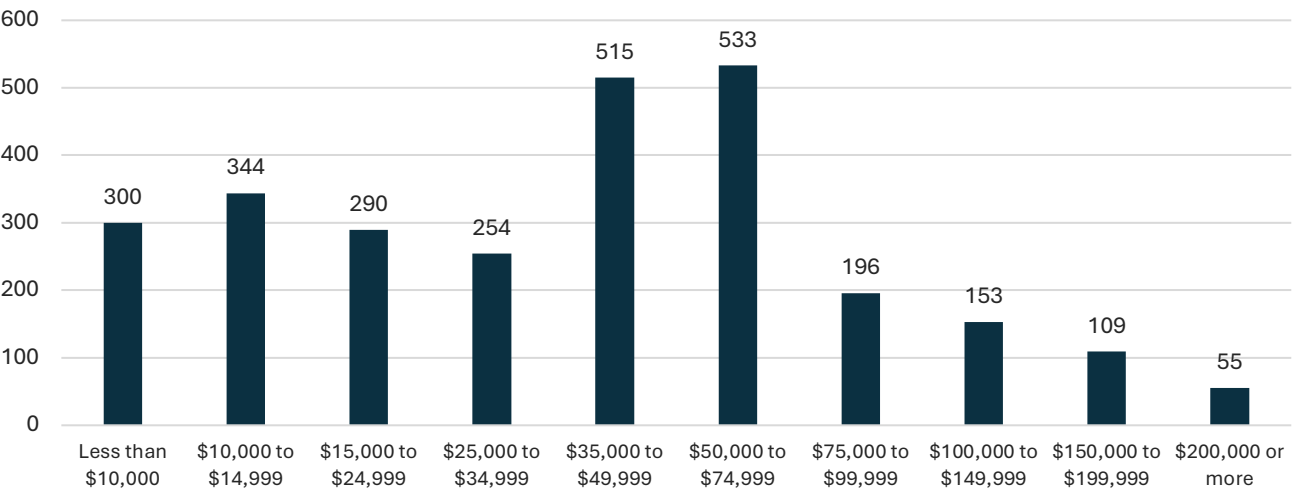


Figure 5 illustrates the distribution of household income in the city of River Rouge. Household incomes are concentrated in the middle-income ranges, with the largest number of households earning \$50,000 to \$74,999 (533 households), followed closely by those earning \$35,000 to \$49,999 (515 households). Together, these two income groups represent a significant portion of the city's households.

Figure 5: Household Income Distribution, River Rouge



Lower-income households also comprise a notable share of the population. Approximately 300 households report annual incomes of less than \$10,000, while 344 households earn between \$10,000 and \$14,999. An additional 290 households have incomes between \$15,000 and \$24,999,

and 254 households earn \$25,000 to \$34,999, indicating that many River Rouge residents may face economic challenges that could affect access to education, transportation, childcare, and workforce training opportunities.

The number of households declines steadily as income levels increase. Only 196 households report incomes between \$75,000 and \$99,999, 153 households earn \$100,000 to \$149,999, 109 households earn \$150,000 to \$199,999, and 55 households report annual incomes of \$200,000 or more.

The household income distribution indicates that River Rouge includes a substantial number of low- and moderate-income households alongside a smaller proportion of higher-income households. These findings highlight the importance of ensuring that workforce development programs, career and technical education, and supportive services remain affordable and accessible. As River Rouge advances workforce initiatives related to clean energy, electrification, and mobility, reducing financial barriers to training and credential attainment will be important for expanding participation and improving residents' access to high-quality employment opportunities.

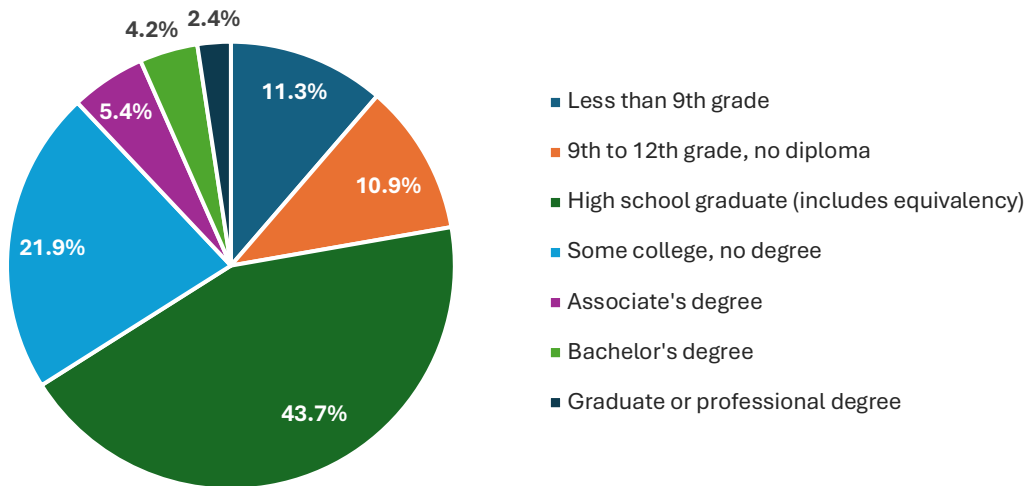
Figure 6 illustrates the educational attainment of adults age 25 and older in River Rouge. The largest share of residents, 43.7%, have earned a high school diploma or equivalent, making it the most common level of educational attainment. Another 21.9% have attended some college but did not earn a degree, indicating that a substantial portion of the adult population has pursued postsecondary education without completing a credential.

Approximately 11.3% of adults have less than a ninth-grade education, while 10.9% attended grades 9 through 12 without earning a diploma. Together, these groups account for more than one-fifth of the adult population, highlighting opportunities to expand access to adult education, high school completion programs, and workforce training initiatives.

Higher levels of educational attainment are less common. Approximately 5.4% of adults hold an associate's degree, 4.2% have earned a bachelor's degree, and 2.4% possess a graduate or professional degree. These figures suggest that relatively few residents have completed four-year or advanced degree programs.

Collectively, the educational profile indicates that River Rouge has a strong foundation of residents with high school credentials and some postsecondary experience, but comparatively fewer adults with college degrees. These findings support the development of workforce programs that emphasize industry-recognized credentials, apprenticeships, certificates, and short-term technical training aligned with high-demand occupations in the clean energy, electrification, and mobility sectors. Expanding access to these pathways can help residents build marketable skills while meeting the workforce needs of regional employers.

Figure 6: Educational Attainment of Adults (Age 25 and Older), River Rouge



A.2 MiVTTP River Rouge High-Demand Occupations

The 2025 Lightcast job posting analysis highlights current employer demand across occupations aligned with the three focus sectors of the Michigan Vehicle Technology Transition Project (MiVTTP): Mobility, Electrification, and Clean Energy. While the total number of postings is modest due to the River Rouge geography, the data provide valuable insights into the types of occupations that employers are actively seeking and help identify potential career pathways for the proposed Career and Technology Center.

Figure 7: High-Demand Occupations Supporting Michigan’s Clean Energy, Electrification, and Mobility Sectors (2025)

Occupation (SOC)	Total Postings (2025)	Sectors
Heavy and Tractor-Trailer Truck Drivers	30	Mobility
Maintenance and Repair Workers, General	11	Electrification
Electricians	10	Electrification
Farmworkers, Farm, Ranch, and Aquacultural Animals	9	Clean Energy
Software Developers	7	Clean Energy
Driver/Sales Workers	7	Mobility
Electrical and Electronic Engineering Technologists and Technicians	5	Electrification
Millwrights	5	Clean Energy

Occupation (SOC)	Total Postings (2025)	Sectors
Industrial Engineers	4	Clean Energy
First-Line Supervisors of Mechanics, Installers, and Repairers	4	Electrification
Passenger Attendants	4	Mobility
Tank Car, Truck, and Ship Loaders	4	Mobility
Computer Occupations, All Other	3	Clean Energy
Chemical Engineers	3	Clean Energy
Environmental Engineers	3	Clean Energy
Occupational Health and Safety Specialists	3	Clean Energy
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	3	Clean Energy
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	3	Mobility
Transportation, Storage, and Distribution Managers	2	Mobility
Construction Managers	2	Clean Energy
Software Quality Assurance Analysts and Testers	2	Clean Energy
Electrical Engineers	2	Electrification

Note: Because River Rouge is a relatively small labor market, annual job postings are limited. These results should be interpreted as indicators of occupational demand rather than a comprehensive measure of regional employment opportunities. For strategic planning purposes, supplementing this analysis with data from the broader Wayne County or Detroit metropolitan labor market will provide a more robust picture of employer demand and long-term workforce trends.

The Mobility sector accounts for the largest concentration of demand. Heavy and Tractor-Trailer Truck Drivers lead all occupations with 30 job postings, indicating continued strong demand for transportation and logistics workers. Additional mobility-related occupations include Driver/Sales Workers (7 postings), Passenger Attendants (4 postings), Tank, Truck, and Ship Loaders (4 postings), First-Line Supervisors of Transportation and Material Moving Workers (3 postings), and Transportation, Storage, and Distribution Managers (2 postings). These occupations reflect the importance of logistics and freight movement within Southeast Michigan's advanced manufacturing and mobility ecosystem.

Within the Electrification sector, employer demand is concentrated in skilled trades and technical occupations. Maintenance and Repair Workers, General (11 postings) and Electricians (10 postings) represent the highest-demand occupations, underscoring the need for workers capable of installing, maintaining, and repairing electrical and industrial systems. Additional technical occupations include Electrical and Electronic Engineering Technologists and Technicians (5 postings), First-Line Supervisors of Mechanics, Installers, and Repairers (4 postings), and Electrical Engineers (2 postings). These occupations are foundational to the region's transition toward electric vehicles, advanced manufacturing, and modern energy infrastructure.

The Clean Energy sector exhibits demand across a diverse mix of engineering, technology, and industrial occupations. Notable occupations include Farmworkers, Farm, Ranch, and Aquacultural Animals (9 postings), Software Developers (7 postings), Millwrights (5 postings), Industrial Engineers (4 postings), and several specialized engineering occupations, including Chemical Engineers, Environmental Engineers, and Occupational Health and Safety Specialists (3 postings each). Other emerging occupations include Construction Managers (2 postings) and Software Quality Assurance Analysts and Testers (2 postings), reflecting the multidisciplinary workforce required to support clean energy technologies and sustainable infrastructure.

The analysis demonstrates that while the region's labor demand spans multiple industries, the greatest opportunities for workforce development lie in transportation and logistics, skilled trades, industrial maintenance, electrical occupations, engineering, and advanced technology careers. These findings support the development of career pathways that combine technical education, industry-recognized credentials, and employer engagement to prepare River Rouge residents for high-demand, middle- and high-skill occupations associated with Michigan's clean energy, electrification, and mobility economy.

Figure 8: Unique Job Postings by MiVTTP Strategic Sector, River Rouge, Michigan (2025)

Sectors	Sum of Unique Postings (Jan 2025 - Dec 2025)
Clean Energy	44
Electrification	32
Mobility	50
Grand Total	126

According to the 2025 Lightcast job posting analysis, employer demand is distributed across the three strategic sectors identified for the Michigan Vehicle Technology Transition Project (MiVTTP): Mobility, Clean Energy, and Electrification. Among these sectors, Mobility generated the highest number of unique job postings (50 postings), followed closely by Clean Energy (44 postings) and Electrification (32 postings). Although Mobility generated the largest number of postings, employer demand was relatively balanced across the three priority sectors. This finding suggests that workforce demand is diversified and supports a broad range of occupations critical to Michigan's economic transition.

The strong demand within the Mobility sector reflects the continued importance of transportation, logistics, and advanced manufacturing activities throughout the region. Similarly, the substantial number of postings in the Clean Energy sector highlights growing opportunities in engineering, environmental technologies, software development, and industrial maintenance as employers continue to invest in sustainable energy solutions. The Electrification sector demonstrates consistent demand for skilled trades and technical occupations, particularly those involving electrical systems, industrial maintenance, and engineering technologies that support vehicle electrification and modern energy infrastructure.

A.3 Top Specialized Skills

Among the most specialized technical skills, Machinery ranks first with 42 job postings (10%), reflecting the continued importance of equipment operation, maintenance, and manufacturing processes. Lifting Ability (37 postings, 9%) and Environmental Compliance (35 postings, 9%) further demonstrate employer demand for workers who can safely perform physical tasks while adhering to environmental and regulatory standards. Other frequently requested skills include Matrix Management (33 postings, 8%), Self-Contained Breathing Apparatus (29 postings, 7%), Personal Protective Equipment (28 postings, 7%), Furnaces (27 postings, 7%), Fall Protection Systems (26 postings, 6%), and Auditing (21 postings, 5%).

Several skills are projected to experience strong future growth. Fall Protection Systems has the highest projected growth rate (29.3%), followed by Auditing (20.8%) and Environmental Compliance (17.0%), all classified as rapidly growing skills. These trends suggest increasing employer emphasis on workplace safety, regulatory compliance, environmental stewardship, and quality assurance as Michigan's clean energy and advanced manufacturing industries continue to evolve.

These findings highlight the growing need for workers who possess a combination of industrial maintenance expertise, equipment operation, environmental compliance knowledge, and workplace safety competencies. These findings support the inclusion of industry-recognized safety training (e.g., OSHA), industrial maintenance, electrical systems, environmental management, and quality assurance within Career and Technology Center programming. Aligning education and training with these in-demand technical skills will better prepare River Rouge residents for employment opportunities in the region's expanding clean energy, electrification, and mobility sectors.

Figure 9: Top Specialized Skills Requested by Employers in MiVTTP Priority Sectors, River Rouge, Michigan (2025 Lightcast Job Postings)

Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth
Machinery	42	10%	0	0%	9.0%	Growing
Lifting Ability	37	9%	0	0%	10.2%	Growing

Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth
Environmental Compliance	35	9%	2	0%	17.0%	Rapidly Growing
Matrix Management	33	8%	0	0%	9.2%	Growing
Self-Contained Breathing Apparatus	29	7%	0	0%	12.5%	Growing
Personal Protective Equipment	28	7%	0	0%	8.5%	Stable
Furnaces	27	7%	0	0%	10.3%	Growing
Fall Protection Systems	26	6%	0	0%	29.3%	Rapidly Growing
Auditing	21	5%	19	2%	20.8%	Rapidly Growing
Programmable Logic Controllers	18	4%	0	0%	13.9%	Growing

A.4 Top Common (Durable) Skills

In addition to technical competencies, employers consistently seek durable workplace skills that can be applied across occupations and industries. These competencies are transferable across occupations and industries, making them essential for long-term career success. The results indicate that employers value workers who possess strong communication, leadership, problem-solving, and organizational abilities in addition to technical expertise.

Communication is the most requested common skill, appearing in 116 job postings (29%), highlighting the importance of effective verbal and written communication in today's workplace. Management (86 postings, 21%), Customer Service (70 postings, 17%), and Operations (70 postings, 17%) also rank among the most frequently requested skills, reflecting employer demand for individuals who can coordinate work activities, collaborate with others, and support efficient business operations.

Problem-solving capabilities are another recurring theme. Troubleshooting appears in 46 postings (11%), while Problem Solving is identified in 36 postings (9%). Both skills are projected to experience continued growth, with troubleshooting expected to increase by 15.7%, emphasizing the growing need for workers who can diagnose issues, adapt to changing technologies, and improve operational performance. Other growing durable skills include Leadership (44 postings), Professionalism (40 postings), and Organizational Skills (24 postings), demonstrating that

employers increasingly seek workers who can lead teams, maintain professional standards, and manage multiple responsibilities effectively.

Figure 10: Top Common (Durable) Skills Requested by Employers in MiVTTP Priority Sectors, River Rouge, Michigan (2025 Lightcast Job Postings)

Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth
Communication	116	29%	43	4%	8.5%	Stable
Management	86	21%	54	5%	5.7%	Stable
Customer Service	70	17%	139	12%	5.0%	Stable
Operations	70	17%	42	4%	8.8%	Stable
Troubleshooting	46	11%	18	2%	15.7%	Growing
Leadership	44	11%	55	5%	9.5%	Growing
Professionalism	40	10%	6	1%	13.1%	Growing
Problem Solving	36	9%	23	2%	11.1%	Growing
Detail Oriented	34	8%	9	1%	8.2%	Stable
Sales	33	8%	83	7%	7.7%	Stable
Organizational Skills	24	6%	6	1%	13.3%	Growing

The analysis suggests that successful workers in Michigan's clean energy, electrification, and mobility industries require a balanced combination of technical expertise and durable workplace competencies. These findings support integrating communication, teamwork, leadership, critical thinking, customer service, and problem-solving into Career and Technology Center programming alongside occupation-specific technical training. Developing these transferable skills will help prepare River Rouge residents for employment across a wide range of industries while enhancing their long-term career adaptability and advancement opportunities.

A.5 Top Credentials and Certifications

A Valid Driver's License is the most frequently requested qualification, appearing in 66 job postings, underscoring the importance of reliable transportation and mobility across a wide range of occupations. Commercial transportation credentials are also highly sought after, with the Commercial Driver's License (CDL) appearing in 14 postings and the CDL Class A License requested in 11 postings. These findings reflect the continued demand for transportation, logistics, and freight-related occupations that support Michigan's advanced manufacturing and mobility industries.

Healthcare-related certifications also appear prominently in the analysis, including Cardiopulmonary Resuscitation (CPR) Certification (11 postings), Registered Nurse (RN) licensure

(8 postings), Licensed Clinical Social Worker (LCSW) (8 postings), and Basic Life Support (BLS) Certification (6 postings). Additional healthcare credentials, such as Certified Nursing Assistant (CNA), Licensed Practical Nurse (LPN), Speech-Language Pathology License, and Licensed Professional Counselor (LPC), are also represented. Although these occupations are not primary targets of the MiVTTP initiative, they reflect the diversity of employer demand within the local labor market.

Other specialized qualifications include Top Secret–Sensitive Compartmented Information (TS/SCI) Clearance, Drug Enforcement Administration (DEA) License, Registered Behavior Technician (RBT), and Board Certified Behavior Analyst (BCBA) certifications. While these credentials are occupation-specific, they demonstrate that many employers seek candidates who possess industry-recognized credentials prior to employment.

From a workforce development perspective, the findings suggest that Career and Technology Center programming should prioritize industry-recognized credentials that align directly with the project's focus sectors, particularly those supporting transportation, skilled trades, industrial maintenance, and electrical occupations. Training programs that incorporate commercial driver's license preparation, workplace safety certifications (e.g., OSHA and First Aid/CPR), and other employer-valued credentials can improve participant employability and better align workforce training with regional hiring needs.

Figure 11: Top Employer-Requested Credentials and Certifications in MiVTTP Priority Sectors, River Rouge, Michigan (2025 Lightcast Job Postings)

Qualification	Postings with Qualification
Valid Driver's License	66
Commercial Driver's License (CDL)	14
CDL Class A License	11
Cardiopulmonary Resuscitation (CPR) Certification	11
Registered Nurse (RN)	8
Licensed Clinical Social Worker (LCSW)	8
Basic Life Support (BLS) Certification	6
Board Certified Behavior Analyst (BCBA)	5
Certificate Of Clinical Competence In Speech-Language Pathology (CCC-SLP)	4
Certified Nursing Assistant (CNA)	4
Licensed Master Social Worker	4
Licensed Practical Nurse (LPN)	4

Qualification	Postings with Qualification
Top Secret-Sensitive Compartmented Information (TS/SCI Clearance)	4
Enrolled Agent (EA)	3
Board Certified/Board Eligible	3
Speech-Language Pathology License	3
Drug Enforcement Agency (DEA) License	3
First Aid Certification	3
Registered Behavior Technician (RBT)	3
Licensed Professional Counselor (LPC)	3

A.6 Conclusion

River Rouge possesses a diverse population and a workforce with strong potential to support the region's economic transition. The community profile indicates opportunities to expand labor force participation, increase educational attainment through short-term credential programs, and improve access to workforce training. Lightcast job posting data show continued employer demand across mobility, electrification, and clean energy occupations, particularly in transportation, skilled trades, industrial maintenance, engineering, and advanced technology. Employers also seek a combination of specialized technical skills, durable workplace competencies, and industry-recognized credentials. Collectively, these findings support the development of a Career and Technology Center that aligns education and training with regional employer demand while expanding career opportunities for River Rouge residents.

APPENDIX B

Priority Occupations Supporting Recommended Career Pathways

This appendix identifies selected occupations that support the recommended career pathways for the River Rouge Career & Workforce Innovation Center. Because the Center is being planned as part of a regional prosperity initiative, the primary labor market framework is Michigan Prosperity Region 10—Detroit Metro, comprising Macomb, Oakland, and Wayne counties. The occupation tables rely principally on the Michigan Center for Data and Analytics (MCDA) Detroit Metro Career Outlook through 2032, which combines regional long-term occupational projections with Michigan-produced regional wage information. U.S. Bureau of Labor Statistics resources are used secondarily for the Standard Occupational Classification framework and national occupational context.

How to Interpret the Data

- Projected annual openings include opportunities generated by employment growth as well as replacement needs resulting from workers leaving an occupation or exiting the labor force.
- Projected growth reflects the expected percentage change in regional occupational employment from 2022 through 2032. A modest or negative growth rate does not mean that an occupation lacks opportunity when annual replacement openings remain substantial.
- Hourly wage ranges represent the 25th through 75th percentile for the Detroit Metro Prosperity Region, providing a more useful planning range than a single median wage.
- The occupations are illustrative rather than exhaustive. Final program decisions should also consider employer validation, existing regional education capacity, accreditation and licensing requirements, facility and equipment costs, and the availability of work-based learning placements.

B.1 Advanced Manufacturing and Industry 4.0

Occupation and SOC Code	Annual Openings	Projected Growth	Hourly Wage Range	Typical Entry Pathway
CNC Tool Programmers (51-9162)	100	9.5%	\$27–\$36	Postsecondary certificate or moderate-term training
Industrial Machinery Mechanics (49-9041)	690	9.6%	\$28–\$38	Associate degree, long-term training, or apprenticeship
Industrial Engineering Technologists and Technicians (17-3026)	230	1.5%	\$27–\$39	Associate degree or long-term technical training
Mechanical Engineering Technologists and Technicians (17-3027)	410	1.5%	\$24–\$38	Associate degree or long-term technical training
Industrial Engineers (17-2112)	970	8.0%	\$40–\$61	Bachelor's degree
Mechanical Engineers (17-2141)	1,180	7.0%	\$41–\$63	Bachelor's degree

B.2 Clean Energy, Electrification, and Infrastructure

Occupation and SOC Code	Annual Openings	Projected Growth	Hourly Wage Range	Typical Entry Pathway
Electrical Engineers (17-2071)	300	4.8%	\$42–\$63	Bachelor's degree
Electrical Engineering Technologists and Technicians (17-3023)	95	0.9%	\$27–\$40	Associate degree or long-term technical training
Electricians (47-2111)	1,160	5.1%	\$28–\$44	Apprenticeship or long-term training
Electrical Power-Line Installers and Repairers (49-9051)	70	0.0%	\$34–\$54	Long-term training or apprenticeship
Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-9021)	330	2.9%	\$23–\$37	Postsecondary certificate or long-term training

B.3 Skilled Trades and Construction Technologies

Occupation and SOC Code	Annual Openings	Projected Growth	Hourly Wage Range	Typical Entry Pathway
Construction Laborers (47-2061)	1,145	2.4%	\$22–\$30	High school diploma and short-term training
Carpenters (47-2031)	610	–1.4%	\$25–\$36	Apprenticeship or long-term training
Plumbers, Pipefitters, and Steamfitters (47-2152)	490	1.0%	\$28–\$47	Apprenticeship or long-term training
Millwrights (49-9044)	160	4.4%	\$39–\$43	Apprenticeship or long-term training
Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-9021)	330	2.9%	\$23–\$37	Postsecondary certificate or long-term training

B.4 Healthcare and Allied Health

Occupation and SOC Code	Annual Openings	Projected Growth	Hourly Wage Range	Typical Entry Pathway
Registered Nurses (29-1141)	2,235	1.6%	\$39–\$49	Bachelor's degree or associate degree pathway
Diagnostic Medical Sonographers (29-2032)	75	9.4%	\$34–\$41	Associate degree
Magnetic Resonance Imaging Technologists (29-2035)	50	6.2%	\$38–\$41	Associate degree
Respiratory Therapists (29-1126)	100	8.3%	\$33–\$40	Associate degree
Surgical Technologists (29-2055)	95	0.6%	\$26–\$32	Postsecondary certificate or associate degree
Physical Therapist Assistants (31-2021)	240	20.3%	\$24–\$31	Associate degree
Occupational Therapy Assistants (31-2011)	105	26.2%	\$27–\$35	Associate degree

Occupation and SOC Code	Annual Openings	Projected Growth	Hourly Wage Range	Typical Entry Pathway
Licensed Practical and Licensed Vocational Nurses (29-2061)	280	-2.2%	\$30–\$35	Postsecondary certificate

B.5 Transportation, Logistics, and Supply Chain

Occupation and SOC Code	Annual Openings	Projected Growth	Hourly Wage Range	Typical Entry Pathway
Heavy and Tractor-Trailer Truck Drivers (53-3032)	2,310	0.8%	\$23–\$30	Postsecondary certificate or moderate-term training
Laborers and Freight, Stock, and Material Movers (53-7062)	3,920	1.0%	\$18–\$22	High school diploma and short-term training
Light Truck Drivers (53-3033)	1,615	7.7%	\$16–\$23	High school diploma and short-term training
Driver/Sales Workers (53-3031)	720	4.7%	\$17–\$26	High school diploma and short-term training
Cargo and Freight Agents (43-5011)	130	6.8%	\$22–\$28	High school diploma and short-term training
Logisticians (13-1081)	480	12.3%	\$31–\$52	Bachelor's degree; stackable supply-chain pathways may support advancement

B.6 Engineering, Information Technology, and Digital Fluency

Occupation and SOC Code	Annual Openings	Projected Growth	Hourly Wage Range	Typical Entry Pathway
Software Developers (15-1252)	1,510	10.5%	\$47–\$65	Bachelor's degree
Information Security Analysts (15-1212)	160	29.5%	\$40–\$64	Bachelor's degree; certificates may support entry and advancement
Computer Systems Analysts (15-1211)	655	8.3%	\$40–\$61	Bachelor's degree
Computer User Support Specialists (15-1232)	670	1.6%	\$22–\$36	Postsecondary certificate or associate degree
Computer Network Support Specialists (15-1231)	70	4.0%	\$24–\$39	Associate degree or industry certification
Data Scientists (15-2051)	220	32.9%	\$38–\$63	Bachelor's degree or higher

Strategic Interpretation

The data reinforce a phased, academy-based strategy rather than the immediate development of isolated programs. Occupations with strong annual openings and accessible education pathways—such as electricians, industrial machinery mechanics, construction laborers, truck drivers, computer support specialists, and selected allied health occupations—can support early

pathway development. Higher-skill engineering, cybersecurity, data, and healthcare occupations should remain connected to the Center through dual enrollment, articulation, transfer, incumbent-worker advancement, and employer-supported work-based learning. This structure allows the Center to respond to regional prosperity priorities while preserving multiple entry and advancement points for youth and adult learners.

Sources

Michigan Center for Data and Analytics. (2025). Detroit Metro career outlook through 2032. Michigan Department of Technology, Management & Budget.

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Michigan Center for Data and Analytics. (2025). Occupational Employment and Wage Statistics: Michigan data by prosperity region. Michigan Department of Technology, Management & Budget.

U.S. Bureau of Labor Statistics. (2018). 2018 Standard Occupational Classification system. U.S. Department of Labor.

U.S. Bureau of Labor Statistics. (2025). Occupational Employment and Wage Statistics. U.S. Department of Labor.

Data note. MCDA’s career outlook identifies occupations with a favorable combination of projected annual openings, projected growth, and wages. It is designed for career and workforce planning and does not necessarily represent current job-posting volume. Real-time job-posting analytics and ongoing employer engagement should be used to validate priorities during implementation.

APPENDIX C

Michigan State-Approved Career and Technical Education Programs and Programs of Study

Planning guidance for alignment with the River Rouge Career & Workforce Innovation Center

This appendix summarizes Michigan requirements and planning considerations for developing state-approved secondary Career and Technical Education (CTE) programs and high-quality Programs of Study. It is intended to help River Rouge and its partners understand how the six recommended Career Academies may connect to Michigan's existing CTE structure, approved Classification of Instructional Program (CIP) codes, postsecondary pathways, credentials, work-based learning, and Perkins eligibility. The appendix is a planning resource rather than an approval document. Final program selection, approval, staffing, credential alignment, and funding decisions must be completed in consultation with the Michigan Department of Education–Office of Career and Technical Education (MDE-OCTE), the appropriate Career Education Planning District (CEPD), responsible school and postsecondary partners, employers, accrediting organizations, and licensing bodies. Program names, standards, credentials, and funding rules should be reconfirmed before implementation.

How to Use This Appendix

- Use the academy-to-CIP crosswalk to identify Michigan-approved program areas that may support each Career Academy.
- Treat the listed programs as illustrative options, not a recommendation to launch every program at the Innovation Center.
- Confirm local need, regional capacity, employer demand, instructor availability, equipment requirements, work-based learning opportunities, and long-term sustainability before pursuing approval.
- Use the Program of Study design criteria and implementation checklist to organize secondary, dual-enrollment, Early Middle College, credential, apprenticeship, and postsecondary pathways.
- Contact MDE-OCTE and the regional CEPD early in the planning process, particularly before curriculum, staffing, facility, or equipment commitments are made.

C.1 Michigan State-Approved CTE Programs

Michigan defines a department-approved formal CTE program as a coherent sequence of courses through which students gain academic, technical, and work-behavior skills. Approved programs include classroom, laboratory, work-based learning, and leadership opportunities; are supervised by appropriately credentialed CTE personnel; use state-approved standards; and receive MDE-OCTE approval through the state application process.

Michigan organizes secondary CTE through 17 career clusters and 53 state-approved instructional programs identified by CIP codes. Each approved program is supported by state resources that may include a CIP Overview, competency statements, segment-to-competency crosswalks, instructional design guidance, academic alignment, credentials of value, work-based learning resources, and postsecondary credit agreements.

Core Characteristics of a State-Approved Program

- A coherent sequence of instruction aligned with state-approved technical standards and career-ready practices.
- Integration of classroom instruction, laboratory or applied learning, work-based learning, and student leadership.

- Instruction delivered or coordinated by appropriately certified, authorized, and—when required—licensed personnel.
- Documented employer participation through an active, occupation-specific Program Advisory Committee.
- Alignment with relevant industry-recognized credentials, postsecondary credit, apprenticeship, and continuing education.
- Annual CIP Self-Review and participation in the state Technical Review, Assistance, and Compliance process.
- Compliance with access, equity, safety, civil-rights, data, and fiscal requirements associated with state approval and Perkins funding.

C.2 High-Quality Programs of Study

Under Perkins V, a Program of Study is more than an individual CTE course or credential. It is a coordinated secondary-to-postsecondary pathway that integrates academic and technical learning, aligns with regional industry needs, progresses from broad career-cluster knowledge to occupation-specific preparation, incorporates multiple entry and exit points, and culminates in a recognized postsecondary credential.

Michigan/Perkins High-Quality Program of Study Elements

Element	Quality Standard
1	Standards-Aligned and Integrated Curriculum
2	Sequencing and Articulation
3	Student Assessment
4	Prepared and Effective Program Staff
5	Engaging Instruction
6	Access and Equity
7	Facilities, Equipment, Technology, and Materials
8	Business and Community Partnerships
9	Student Career Development
10	Career and Technical Student Organizations
11	Work-Based Learning
12	Data and Program Improvement

C.3 Illustrative Alignment with the Six Career Academies

The following crosswalk identifies Michigan-approved CTE program areas that may support the six recommended Career Academies. The crosswalk is intentionally selective and should be refined with MDE-OCTE, the CEPD, employers, and education partners. Some academy pathways may be best delivered through a combination of secondary CTE, dual enrollment, Early Middle College, Registered Apprenticeship, and partner-based postsecondary programming rather than through a single CIP program.

Career Academy	Relevant Michigan Career Clusters	Illustrative State-Approved CTE Programs (CIP)	Planning Considerations
Advanced Manufacturing Career Academy	Manufacturing; STEM	47.0101 Electrical/Electronics Equipment Installation and Repair, General; 48.0501 Machine Tool Technology/Machinist; 48.0508 Welding, Brazing and Soldering; 14.4201 Mechatronics; 15.0000 Engineering Technology	Strong fit for machining, industrial maintenance, robotics, automation, welding, quality, and mechatronics. Validate equipment and credential choices with regional manufacturers and postsecondary partners.
Health Careers Academy	Health Science	51.0000 Health Sciences/Allied Health/Health Sciences, General; 26.0102 Biomedical Sciences, General; 51.0707 Health Information/Medical Records Technology/Technician; 51.1000 Clinical/Medical Laboratory Science/Research and Allied Professions	Secondary CTE can provide health science foundations and selected credentials. Licensed clinical occupations generally require approved postsecondary programs, accreditation, clinical placements, and state or national licensure/certification.
Clean Energy and Electrification Career Academy	Energy; Architecture & Construction; Manufacturing; STEM; Transportation	46.0301 Electrical and Power Transmission Installation; 47.0201 Heating, Air Conditioning, Ventilation and Refrigeration; 47.0101 Electrical/Electronics Equipment Installation and Repair; 14.4201 Mechatronics; selected transportation programs	Electrification should be treated as a cross-cluster pathway connecting electrical systems, HVAC, energy, manufacturing, vehicle technology, and infrastructure. Final program design should align with electrical licensing, apprenticeship, and employer requirements.
Skilled Trades and Construction Career Academy	Architecture & Construction; Manufacturing	46.0000 Construction Trades; 46.0301 Electrical and Power Transmission Installation; 46.0503 Plumbing; 47.0201 Heating, Air Conditioning, Ventilation and Refrigeration; 48.0508 Welding; 48.0701 Woodworking, General	Programs should connect to recognized pre-apprenticeship and Registered Apprenticeship pathways, OSHA and trade credentials, union and employer training centers, and applicable state licensing requirements.
Transportation, Logistics, and Mobility Career Academy	Transportation, Distribution & Logistics; Manufacturing	47.0399 Heavy Industrial Equipment Maintenance and Repair; 47.0603 Collision Repair Technician; 47.0604 Automobile Technician; 47.0606 Small	Automotive and truck programs should align with current ASE Education Foundation standards where

Career Academy	Relevant Michigan Career Clusters	Illustrative State-Approved CTE Programs (CIP)	Planning Considerations
		Engines and Related Equipment Repair; 47.0613 Medium/Heavy Truck Technician; selected aviation programs	applicable. Logistics pathways may also require locally designed coursework, credentials, dual enrollment, or employer-based delivery beyond the listed vehicle-service CIPs.
Engineering and Applied Technologies Career Academy	STEM; Information Technology; Architecture & Construction	14.4201 Mechatronics; 15.0000 Engineering Technology; 15.1301 Drafting and Design Technology/Architectural; 15.1306 Mechanical Drafting; 11.0201 Computer Programming; 11.0901 Computer Systems Networking and Telecommunications; 11.1001 System Administration; 11.1003 Computer and Information Systems Security/Information Assurance	Supports CAD, engineering technology, automation, cybersecurity, networking, programming, and applied AI foundations. Postsecondary articulation and industry certifications can create multiple entry and advancement points.

Planning Note. This table does not represent an exhaustive list of Michigan’s state-approved CTE programs. River Rouge should use the current MDE-OCTE career-cluster resources and the MDE-CTE Portal to confirm available CIP codes, standards, credentials, postsecondary credit agreements, and approval requirements at the time of implementation.

C.4 Program Development and Approval Pathway

- 1. Validate Need:** Use the Comprehensive Local Needs Assessment, regional labor market data, employer input, learner demand, existing-program capacity, and equity/access analysis to document need.
- 2. Engage MDE-OCTE and the CEPD:** Consult the regional CEPD administrator and MDE-OCTE program consultant before finalizing curriculum, staffing, facilities, equipment, or funding assumptions.
- 3. Select the Appropriate CIP:** Identify the state-approved CIP code and career cluster that best match the intended occupational competencies and program outcomes.
- 4. Design the Program of Study:** Map secondary coursework, technical competencies, academic integration, credentials, postsecondary credit, dual enrollment or Early Middle College, work-based learning, and advancement options.
- 5. Establish the Program Advisory Committee:** Recruit occupation-level subject-matter experts who work directly with faculty to validate curriculum, credentials, equipment, assessments, work-based learning, and employer expectations.
- 6. Confirm Staffing and Licensure:** Ensure instructors hold the required Michigan CTE certification, authorization, work experience, and any applicable occupational license.
- 7. Plan Facilities, Equipment, and Safety:** Demonstrate access to appropriate instructional facilities, technology, safety systems, tools, and equipment while considering shared regional assets before new capital investment.

8. Complete State Approval and Local Agreements: Submit required state materials and document articulation, postsecondary credit, Early Middle College, work-based learning, facility-sharing, and partner responsibilities.

9. Implement, Document, and Improve: Maintain required records, conduct annual CIP Self-Review, participate in TRAC monitoring, review outcomes with employers, and update programming as standards and industry needs change.

C.5 Program-Level Requirements and Evidence

Program Component	Representative Evidence and Planning Considerations
Program Standards and Curriculum	State-approved competencies, instructional design, academic integration, segment coverage, and assessments.
Program Advisory Committee	Current roster, meeting agenda and minutes, employer recommendations, and evidence of faculty follow-through.
Work-Based Learning	Documented opportunities aligned with the program, employer agreements, student supervision, and evidence of competency development.
Student Leadership	Participation in an appropriate state-recognized Career and Technical Student Organization or another approved leadership structure.
Credentials of Value	Approved credentials aligned with the CIP, employer value, learner eligibility, testing capacity, and postsecondary or employment progression.
Postsecondary Alignment	Articulation, statewide or local postsecondary credit agreements, dual enrollment, Early Middle College, transfer, apprenticeship, and recognized postsecondary credential pathways.
Qualified Staff	Appropriate CTE teacher certification or authorization, recent and relevant occupational experience, professional development, and applicable licenses.
Facilities, Equipment, and Safety	Appropriate learning environments, current equipment and technology, safety instruction, accessibility, maintenance, and replacement planning.
Access and Equity	Recruitment, enrollment, support, and outcomes for all learners, including special populations and students facing transportation, scheduling, disability, digital-access, or economic barriers.
Data and Continuous Improvement	Enrollment, completion, credential attainment, work-based learning, postsecondary transition, employment, employer feedback, CIP Self-Review, and program improvement actions.

C.6 Recommended Approach for River Rouge

River Rouge should use the Career Academy structure as the broad organizing framework while pursuing state approval at the individual program level. Each Career Academy may contain several programs, but each state-approved CTE program should have its own responsible education provider, CIP alignment, qualified instructor, Program Advisory Committee, curriculum and competency framework, credential strategy, work-based learning plan, and continuous-improvement documentation.

Initial program development should be selective and phased. Priority should be given to programs that demonstrate strong regional demand, committed employer partners, feasible staffing, accessible postsecondary pathways, sustainable delivery, and the ability to leverage shared laboratories or employer facilities. Programs requiring expensive laboratories, specialized accreditation, clinical placements, or state licensure should generally be developed with experienced postsecondary, employer, apprenticeship, or accredited-program partners.

The River Rouge School District and its partners should also explore CTE Early Middle College and dual-enrollment models where they allow students to complete a coherent five-year program of study, earn postsecondary credit, obtain an industry credential, or progress toward an associate degree while completing high school. These models can strengthen Perkins alignment and create meaningful progression beyond entry-level preparation.

Implementation Checklist

- ☐ Confirm the regional CEPD, fiscal agency, MDE-OCTE program consultant, and approval pathway.
- ☐ Complete or update the Comprehensive Local Needs Assessment and document unmet regional need.
- ☐ Select the appropriate career cluster and CIP code using current MDE-OCTE resources.
- ☐ Identify the responsible secondary and postsecondary education providers.
- ☐ Form an occupation-specific Program Advisory Committee and establish a meeting/work plan.
- ☐ Map all state competencies, academic standards, assessments, credentials, and work-based learning.
- ☐ Confirm instructor certification/authorization, occupational experience, and licensing.
- ☐ Identify postsecondary credit, Early Middle College, dual-enrollment, apprenticeship, and transfer options.
- ☐ Evaluate facilities, applied learning technology, equipment, safety, accessibility, maintenance, and replacement costs.
- ☐ Complete state approval requirements before representing the program as state-approved or Perkins-eligible.
- ☐ Establish annual CIP Self-Review, documentation, data reporting, employer review, and continuous-improvement processes.

Selected Michigan Resources

- [Michigan Department of Education, Office of Career and Technical Education — Career and Technical Education](#)
- [CTE Instructional Resources by Career Cluster](#)
- [CTE Administrator Manual \(2025–26\)](#)
- [Classification of Instructional Program \(CIP\) Self-Review](#)
- [High-Quality CTE Programs of Study](#)
- [Funding and Monitoring / Perkins V](#)
- [Credentials of Value and Available Credential Reports](#)
- [CTE Teacher Certification, Authorization, and Licensure Requirements](#)

Source and currency note. This appendix was prepared using Michigan Department of Education and Michigan Department of Labor and Economic Opportunity resources available in August 2026. State-approved programs, CIP resources, credentials, funding rules, approval procedures, and postsecondary credit agreements may change. River Rouge and its partners should verify current requirements directly with MDE-OCTE and the appropriate CEPD before implementation.

APPENDIX D

WIN Industry Career Profiles

A dynamic career-exploration and workforce-planning resource supporting the six recommended Career Academies

This appendix directs River Rouge and its partners to the Workforce Intelligence Network (WIN) Industry Career Profiles, a continuously maintained collection of occupation- and industry-focused career information. The profiles complement the labor market analysis, Career Academy recommendations, and educational pathway strategies presented throughout this Strategic Roadmap and Implementation Plan.

Rather than reproducing static copies in the report, Appendix D provides access to the current online profiles so students, families, educators, employers, counselors, and workforce partners can use the most recent versions available from WIN. Because wages, employment demand, credentials, and education requirements change over time, the online collection should be treated as a living implementation resource.

D.1 Purpose and Recommended Uses

- Support career awareness and exploration beginning in elementary and middle school.
- Inform Career Academy, Career and Technical Education, dual-enrollment, and Early College planning.
- Help learners and adult influencers compare occupations, education requirements, credentials, wages, and advancement opportunities.
- Provide educators and counselors with regional career information for advising, classroom activities, and individualized pathway planning.
- Support employer engagement, work-based learning, Registered Apprenticeship development, and curriculum validation.
- Connect occupation-level information to the regional labor market findings and priority pathways identified in this report.

D.2 Information Available Through the Profiles

Depending on the occupation or industry, WIN Career Profiles may include the following information:

Information Area	Illustrative Content
Career information	Occupation descriptions, representative job duties, work environments, and related careers.
Education and preparation	Typical education, training, degree, apprenticeship, and credential requirements.
Labor market information	Regional employment, projected demand, annual openings, and wage information where available.
Credentials and pathways	Relevant industry credentials, licenses, certificates, and advancement opportunities.
Career navigation	Connections among entry-level, technical, professional, supervisory, and postsecondary pathways.
Employer relevance	Information that can support curriculum alignment, career advising, recruitment, and work-based learning.

D.3 Alignment With the Six Career Academies

The profiles should be selected and organized to support career exploration and pathway planning within all six recommended Career Academies:

- Advanced Manufacturing Career Academy
- Health Careers Academy
- Clean Energy and Electrification Career Academy
- Skilled Trades and Construction Career Academy
- Transportation, Logistics, and Mobility Career Academy
- Engineering and Applied Technologies Career Academy

The profiles may also be used across academies to demonstrate how occupations, competencies, and technologies overlap. For example, engineering, data, automation, safety, digital fluency, and durable skills are relevant across multiple industry sectors and should not be treated as isolated career interests.

D.4 Accessing the Current WIN Career Profiles

Current WIN Industry Career Profiles are available through the Workforce Intelligence Network website:

Workforce Intelligence Network (WIN) — Career Profiles
https://winintelligence.org/data_and_research/career_profiles.php

Implementation Note. Before using a profile for program approval, credential selection, student advising, or investment decisions, confirm current requirements with employers, education partners, credential issuers, licensing or accrediting bodies, and applicable state agencies. The online profiles are career-planning resources and do not replace formal program approval or regulatory review.

D.5 Integration Into River Rouge Implementation

- Use selected profiles during the WIN E3 K–12 Career Immersion Program and other career-exploration activities.
- Incorporate profiles into Career Academy recruitment, student orientation, parent engagement, and pathway-selection activities.
- Pair profiles with employer presentations, worksite tours, job shadows, mentoring, and project-based learning.
- Use occupation information to connect entry-level credentials with dual enrollment, Early College, postsecondary education, Registered Apprenticeship, and employment.
- Review the profile collection periodically with Program Advisory Committees to ensure continued alignment with regional employer needs.

Strategic Interpretation. The WIN Industry Career Profiles should function as an ongoing career-navigation resource rather than a one-time report attachment. By linking current occupation information with Career Academy experiences, employer engagement, credentials, and postsecondary pathways, the profiles can help learners make increasingly informed decisions as they progress from career awareness to preparation, education, employment, and advancement.

APPENDIX E

WIN E3 K-12 Career Immersion Framework

Explore. Engage. Excel.

A replicable extracurricular model for progressive career exploration, applied learning, family engagement, and pathway decision-making in grades 4-10

Purpose of This Appendix. This appendix translates WIN's E3 healthcare immersion concept into a practical K-12 framework that River Rouge and its partners can adapt across any of the six Career Academies. The healthcare model is presented as the sample because it is the most fully developed, but the structure is intentionally industry-neutral.

Framework Overview

The WIN E3 K-12 Career Immersion Framework is designed as a sustained extracurricular experience beginning in fourth grade and continuing through tenth grade. Students participate in grade-level cohorts that return each year for progressively more advanced career exploration, applied learning, mentoring, and pathway planning.

The model is built around a formal partnership among a K-12 school district or career center, a community college, an industry or professional education partner, employers, and WIN or another coordinating intermediary. In the healthcare sample, a medical school provides student instructors and faculty support; the community college provides age-appropriate laboratory settings; healthcare employers provide career exposure and work-based learning; and the school district recruits students and supports continuity from year to year.

The program is intended to complement, not replace, Career and Technical Education, dual enrollment, Early College, and employer-based learning. Its purpose is to help learners make informed choices before entering those pathways. By tenth grade, participants should understand a broad range of occupations, education requirements, credentials, work environments, and advancement opportunities within the selected Career Academy.

Core Program Design

Design Element	Recommended Structure
Learner population	Grade-level cohorts beginning in grade 4 and continuing through grade 10. Cohorts advance together while new fourth-grade cohorts enter annually.
Schedule	One full-day Saturday session during selected months of the school year, generally October through April, supplemented by a summer immersion experience.
Primary setting	A local community college or other postsecondary partner with access to authentic instructional laboratories and faculty expertise.
Instructional team	College or university students in the relevant profession, supported by faculty members, employer practitioners, and age-appropriate curriculum guides.

Design Element	Recommended Structure
Learning approach	Interactive, hands-on, team-based, and career-connected. Activities use simulation, laboratory equipment, demonstrations, role-play, projects, and employer exposure.
Family engagement	Students are encouraged to attend with a parent, guardian, or other adult influencer so career and education decisions are supported at home.
Annual recognition	An end-of-year celebration recognizes participation and progress. Students sign a letter of intent indicating their commitment to return the following year.
Summer immersion	A day camp or multi-day experience hosted by the university, medical school, employer, or technical partner using advanced facilities and age-appropriate activities.
Pathway transition	By grade 10, students develop an individualized education and career plan connecting to CTE, dual enrollment, Early College, college, apprenticeship, employment, or other next steps.

Annual Program Cycle

Period	Primary Activity	Purpose
Late summer-September	Recruit cohorts, orient families, confirm instructors and sites	Establish expectations, participation supports, transportation, technology access, and annual schedule.
October-April	Monthly or regularly scheduled full-day Saturday immersion sessions	Provide progressively sequenced career exploration, applied learning, mentoring, and pathway awareness.
Throughout year	Employer speakers, workplace projects, job shadows, mentoring, and family engagement	Connect curriculum to authentic occupations, professional standards, and regional employers.
Late April	Grade-level celebration and letter-of-intent ceremony	Recognize achievement, reinforce belonging, and support year-to-year retention.
Summer	Immersion camp at the university, medical school, employer, or technical partner	Deepen exposure through concentrated, highly interactive experiences using advanced facilities and equipment.

Progressive Grade-Level Experience

Curriculum should become progressively more complex as learners advance. The exact occupations and activities will vary by Career Academy, but the developmental sequence should remain consistent.

Grade	Primary Focus	Illustrative Experiences	Expected Progression
4	Awareness and curiosity	Career stories, basic tools, introductory simulations, role-play, laboratory exploration	Identify several occupations and describe how they help people, organizations, or communities.
5	Exploration of career families	Hands-on demonstrations, team challenges, professional vocabulary, safety concepts	Compare occupations within a career family and recognize different education levels.
6	Skills and work environments	Applied projects, technology use, communication practice, employer interaction	Connect personal interests and strengths to career options and workplace expectations.
7	Career pathways and credentials	Credential exploration, job-shadow preparation, problem-based projects, mentoring	Understand pathway steps from high school through credentials, college, apprenticeship, and employment.
8	Applied learning and early planning	Structured simulations, employer projects, introductory job shadows, durable-skills practice	Begin identifying priority occupations and course choices supporting future pathways.
9	Pathway comparison and work-based learning	Deeper job shadows, faculty and employer mentoring, credential sampling, career planning	Compare CTE, dual enrollment, Early College, college, apprenticeship, and direct-employment options.
10	Decision-making and transition planning	Individualized education/employment plan, extended work-based learning, pathway advising	Select an 11th-12th grade and postsecondary direction based on informed career exposure.

Healthcare Sample: How the Model Operates

In the healthcare example, a local high school or career center partners with a community college, a medical school, healthcare employers, and WIN. Separate cohorts are established for fourth grade, fifth grade, sixth grade, and each subsequent grade through tenth grade. Students attend full-day Saturday sessions at the community college during the school year.

A medical student teaches the grade-appropriate curriculum with support from community college faculty and, when appropriate, an employer practitioner. For example, a fourth-grade nursing session may take place in the community college nursing laboratory. The medical student and nursing faculty member guide students through interactive activities using age-appropriate simulation equipment, demonstrations, team exercises, and discussion of the nursing pathway.

Over seven years, learners are exposed to a wide continuum of health occupations, from entry-level roles such as certified nurse aide through technical and professional careers such as respiratory therapy, MRI technology, dental hygiene, dietetics, nursing, medicine, dentistry, psychiatry, and other health professions. As participants mature, activities can include job shadows, mentoring, credential exploration, clinical-environment awareness, and individualized pathway planning.

By tenth grade, learners should be prepared to choose among several next steps. One student may remain at the career center to complete certified nurse aide training and enter employment, later advancing through an employer-supported apprenticeship or nursing pathway. Another may enter an Early College or middle-college model, complete substantial college credit, and continue toward a university and medical-school pathway. The framework supports both outcomes and the many options between them.

Adapting the Framework Across the Six Career Academies

Career Academy	Potential Higher-Education/Industry Teaching Partner	Illustrative Immersion Settings and Activities
Advanced Manufacturing	Engineering school, community college manufacturing faculty, employer technicians	Robotics cells, CNC demonstrations, digital twins, metrology, quality challenges, maintenance simulations.
Health Careers	Medical school, nursing/allied-health faculty, healthcare practitioners	Nursing and simulation labs, virtual patients, anatomy, diagnostics, clinical-team activities, health-career job shadows.
Clean Energy and Electrification	Engineering or energy program, utilities, electrical and EV employers	Solar and battery trainers, EV systems, energy audits, electrical safety, smart-grid activities.
Skilled Trades and Construction	Apprenticeship training center, community college trades faculty, contractors	Welding and electrical simulations, construction mock-ups, blueprint activities, tool and safety demonstrations.
Transportation, Logistics, and Mobility	Transportation program, logistics employers, fleet or mobility partners	Vehicle diagnostics, warehouse simulations, routing challenges, material-handling activities, fleet tours.
Engineering and Applied Technologies	University engineering/IT programs, technology companies, community college faculty	CAD, cybersecurity ranges, coding, data projects, prototyping, electronics, applied AI, employer design challenges.

Partner Roles

Partner	Primary Responsibilities
K-12 district/career center	Recruit and retain grade-level cohorts; communicate with families; coordinate transportation and student supports; align experiences with academic, CTE, and counseling systems.
Community college	Host Saturday sessions; provide laboratories, faculty, and age-appropriate equipment access; connect students to dual enrollment, Early College, certificates, and associate-degree pathways.
University/medical school or technical school	Develop and deliver curriculum; prepare student instructors and mentors; provide faculty oversight; host summer immersion camps and advanced career exposure.
Employers and industry partners	Validate occupations and competencies; provide speakers, mentors, job shadows, tours, projects, internships, and early employment opportunities.
WIN/coordinating intermediary	Convene partners; support curriculum and partnership design; coordinate implementation, data, evaluation, replication tools, and regional expansion.
Michigan Works! and community partners	Support recruitment, career readiness, individualized plans, transportation, barrier reduction, family engagement, and connections to workforce resources.
Parents and adult influencers	Participate in sessions where appropriate; reinforce attendance and persistence; support informed pathway and education decisions.

Curriculum and Instructional Design Principles

- Use developmentally appropriate curriculum that increases in complexity each year.
- Expose learners to the full career continuum, including entry-level, technical, professional, and advanced occupations.
- Use active learning, simulation, projects, demonstrations, mentoring, and workplace exposure rather than lecture-dominant instruction.
- Integrate durable skills, digital fluency, safety, professionalism, teamwork, communication, and ethical decision-making throughout the experience.
- Include parents and adult influencers as partners in career and education planning.
- Connect every experience to a visible pathway that may include CTE, dual enrollment, Early College, certificates, degrees, apprenticeship, employment, and continued advancement.
- Use employer and faculty review to keep curriculum aligned with current occupations, technologies, credentials, and professional standards.
- Provide equitable access through transportation, meals, devices, disability accommodations, and other participation supports.

Student Progression and Individualized Planning

The E3 framework should maintain a longitudinal record of each learner's participation, interests, career exposures, work-based learning, credentials, and emerging goals. Beginning no later than middle school, students should receive structured guidance connecting their experiences to course selection, graduation requirements, Career Academy choices, dual enrollment, Early College, and postsecondary pathways. By the end of tenth grade, each participant should complete an individualized education and employment action plan. The plan should identify a preferred pathway, an alternative pathway, recommended 11th- and 12th-grade coursework, available credentials, work-based learning opportunities, postsecondary partners, financial-aid or workforce resources, and the next concrete steps required for implementation.

Evaluation and Continuous Improvement

Recommended measures include:

- Annual recruitment, attendance, retention, and return rates by cohort and grade level.
- Growth in career awareness, pathway knowledge, confidence, and understanding of education requirements.
- Student and family satisfaction with curriculum, instructors, sites, and supports.
- Participation in job shadows, mentoring, summer camps, credentials, CTE, dual enrollment, and Early College.
- Completion of individualized education and employment plans by the end of tenth grade.
- Partner participation, instructor preparation, curriculum fidelity, and use of employer feedback.
- Longer-term transition into Career Academies, postsecondary education, apprenticeship, employment, and continued career advancement.

Implementation Considerations for River Rouge

- Start with one Career Academy pilot and a manageable number of grade-level cohorts, then expand as partnerships and funding mature.
- Confirm a postsecondary host with appropriate laboratories, faculty, liability coverage, security, and weekend operating capacity.
- Formalize roles through memoranda of understanding addressing curriculum, supervision, transportation, facilities, data, family consent, and program continuity.
- Develop a sequenced seven-year curriculum map so each cohort receives new content rather than repeated introductory experiences.
- Budget for coordination, meals, transportation, materials, instructor preparation, student incentives, evaluation, and summer programming.
- Create a family communication and engagement strategy that treats parents and adult influencers as essential partners.
- Build the program as a replicable model that can be adapted across all six Career Academies while preserving common quality standards.

Strategic Interpretation. The E3 model creates a sustained bridge between early career exploration and informed pathway choice. Its distinguishing features are continuity, grade-level cohorts, postsecondary laboratory access, professional and college-student mentors, employer-connected learning, family participation, summer immersion, and a defined transition into CTE, dual enrollment, Early College, apprenticeship, college, or employment.

Source Note

This appendix is based on WIN's Explore. Engage. Excel. Healthcare Careers Immersion Program proposal and additional operational details supplied for the River Rouge Career & Workforce Innovation Center planning process. The healthcare program is presented as a sample model and may be adapted for the other Career Academies through industry-specific curriculum, faculty, facilities, employers, and work-based learning experiences.

APPENDIX F

Durable Skills-Advantage Framework and Course Structure

A workforce-focused, four-course curriculum organized by developmental learning level

Purpose. This appendix summarizes the Durable Skills Advantage curriculum developed by Henry Ford College, the Workforce Intelligence Network (WIN), and MindSpring. It explains the ten durable-skill domains, the four developmental courses, the 120-module architecture, and recommended uses across Career Academies, postsecondary education, workforce training, and employer development.

Framework Overview

The Durable Skills Advantage curriculum translates the Durable Skills Advantage Framework into a practical, digitally deliverable workforce curriculum. It is designed to help learners strengthen the professional behaviors, thinking skills, interpersonal capabilities, and self-management practices needed for success across occupations and industries.

The framework includes ten durable-skill domains: Communication, Leadership, Metacognition, Critical Thinking, Collaboration, Character, Creativity, Growth Mindset, Mindfulness, and Fortitude. These domains are developed across four progressive learning levels: Emerging, Developing, Applying, and Exceeding.

The curriculum contains 120 modules. Those modules are not organized as ten separate courses. Instead, they are organized into four courses based on learning level. Each course addresses all ten durable-skill domains, with three modules per domain at that level. Each course therefore contains 30 modules, and the complete four-course sequence contains 120 modules.

Ten Durable-Skill Domains

Domain	Workforce Emphasis
Communication	Expressing information clearly, listening effectively, adapting messages to audience and purpose, and navigating workplace conversations.
Leadership	Taking ownership, aligning work with goals, supporting others, making decisions, and strengthening accountability and performance.
Metacognition	Recognizing and managing one's own thinking, attention, reactions, learning strategies, and performance.
Critical Thinking	Evaluating information, identifying assumptions, using evidence, weighing alternatives, and making sound decisions.
Collaboration	Contributing to shared work, coordinating responsibilities, maintaining alignment, and improving team performance.
Character	Demonstrating responsibility, integrity, reliability, ethical behavior, and accountability across situations.
Creativity	Generating ideas, considering alternatives, improving solutions, and applying innovation to workplace challenges.

Domain	Workforce Emphasis
Growth Mindset	Believing improvement is possible, seeking feedback, learning from setbacks, and supporting continued development.
Mindfulness	Maintaining awareness, focus, emotional regulation, empathy, patience, and intentional responses in workplace settings.
Fortitude	Persisting through difficulty, recovering from setbacks, performing under pressure, and sustaining resilience over time.

Four-Course Curriculum Structure

The curriculum is sequenced by developmental learning level. Every course includes all ten domains so that learners build a balanced set of durable skills at progressively more advanced levels of performance.

Course	Developmental Focus	Learner Performance	Architecture	Module Count
Course 1: Emerging	Foundational awareness and early skill development	Learners begin recognizing effective behaviors, understanding expectations, and practicing basic workplace responses.	10 domains × 3 modules	30
Course 2: Developing	Increasing consistency and broader situational use	Learners strengthen habits, adapt behaviors, use feedback, and apply skills more consistently across familiar situations.	10 domains × 3 modules	30
Course 3: Applying	Functional performance in authentic workplace settings	Learners use durable skills to coordinate work, solve problems, communicate, collaborate, and perform effectively in real situations.	10 domains × 3 modules	30
Course 4: Exceeding	Influence, modeling, and sustained performance	Learners apply skills naturally under challenge, support others, strengthen team practices, and help shape effective workplace environments.	10 domains × 3 modules	30

Total curriculum architecture: 4 courses × 30 modules per course = 120 modules. Each course covers all 10 durable-skill domains.

Instructional Design

Workforce-First Orientation

Modules are framed around recognizable workplace situations and behaviors rather than abstract definitions. Learners practice communication, accountability, judgment, teamwork, adaptability, and other durable skills in contexts that reflect real employment settings.

Scenario-Based and Applied Learning

Each module uses realistic situations, choices, and feedback to help learners interpret workplace conditions and select effective responses. This design supports reflection, practical judgment, and transfer of learning to the workplace.

Competency-Based Progression

Each module identifies a primary skill, an intended behavior change, and a mastery check. Learners progress from awareness to consistent use, applied performance, and eventually influence or sustained excellence.

Microlearning and Flexible Delivery

Modules are short, focused, and suitable for online, self-paced, instructor-supported, or blended delivery. This makes the curriculum adaptable for school schedules, college courses, employer onboarding, and incumbent-worker development.

Digital Production Readiness

The curriculum was structured for digital development by MindSpring. Modules include screen-based instructional content, scenarios, response options, feedback logic, and assessments that can be translated into engaging digital learning experiences.

Recommended Uses for the River Rouge Career & Workforce Innovation Center

The Durable Skills Advantage curriculum should function as a shared professional-competency foundation across all six Career Academies. It may be embedded in technical instruction, project-based learning, work-based learning, dual enrollment, Early College, Registered Apprenticeship, and employer training rather than treated only as a stand-alone employability course.

- **Career Academies:** Integrate level-appropriate modules into technical coursework, academy projects, career exploration, and learner reflection.
- **Dual Enrollment and Early College:** Use the courses as a structured progression that complements academic and technical college coursework.
- **Career and Technical Education:** Connect durable-skill instruction to technical competencies, employer expectations, program advisory committee input, and work-based learning.
- **Work-Based Learning and Registered Apprenticeship:** Reinforce workplace behaviors before and during internships, clinical experiences, cooperative education, pre-apprenticeship, and apprenticeship.
- **Adult and Incumbent-Worker Education:** Deploy full courses or selected modules for onboarding, promotion preparation, role transition, coaching, and targeted skill development.
- **Employer Partnerships:** Use employer feedback, supervisor observations, and workplace scenarios to contextualize learning and assess transfer into job performance.

Illustrative Implementation Sequence

- **Emerging:** Upper elementary, middle school, introductory Career Academy experiences, entry-level adult preparation, or learners new to structured workforce education.
- **Developing:** Middle and early high school, introductory CTE, career exploration, or early stages of occupational preparation.
- **Applying:** Advanced high school, dual enrollment, Early College, postsecondary technical programs, internships, or apprenticeship preparation.
- **Exceeding:** Advanced Career Academy experiences, college completion, workplace leadership preparation, incumbent-worker advancement, or supervisory development.

Implementation Considerations

- Use placement and prior-learning information to determine the most appropriate entry level rather than assigning courses solely by age or grade.
- Allow learners to complete modules flexibly while maintaining faculty, instructor, or supervisor oversight.
- Connect module activities to the learner’s Career Academy, occupation, work-based learning placement, or employer context whenever possible.
- Use the curriculum to supplement—not replace—authentic technical instruction, employer interaction, and applied workplace experience.
- Plan for reliable learner access to devices, internet connectivity, the learning management system, and technical support.
- Use assessment results, learner reflection, and employer or instructor feedback to support continuous improvement and targeted reinforcement.
- Review course sequencing periodically as the curriculum is implemented across different learner populations and delivery settings.

Strategic Interpretation

The Durable Skills Advantage curriculum provides River Rouge with a structured way to develop the professional competencies employers expect across every Career Academy. Its four-course architecture allows learners to revisit all ten durable-skill domains at increasingly advanced levels, creating a coherent progression from foundational awareness to applied workplace performance and leadership. Because the curriculum is modular, digital, workforce-focused, and suitable for both education and employer use, it can serve as a common professional-development thread across K–12, postsecondary, apprenticeship, and incumbent-worker pathways.

Source and Verification Note

This appendix is based on the Durable Skills Curriculum Architecture and Implementation Model prepared for Henry Ford College by WIN. The curriculum architecture reflects ten domains, four performance levels, three modules per domain at each level, and 120 completed modules. For implementation, the 120 modules are organized into four courses by learning level, with each course covering all ten domains. Course titles, platform features, licensing, delivery requirements, and future curriculum revisions should be confirmed with Henry Ford College, WIN, and MindSpring before adoption.

Selected References

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APPENDIX G

Selecting Educational Technologies Based on Instructional Challenges

A decision framework for reducing learner and program barriers

This appendix provides a planning framework for selecting instructional technologies based on the educational challenges they are intended to address. Rather than beginning with a specific product or vendor, educational leaders should first identify the barrier affecting learner participation, instructional quality, employer engagement, competency development, or program sustainability. The technologies described here are intended primarily to reduce time and place barriers by allowing learners to participate from home, a high school, a community college, an employer worksite, or another approved location. They complement rather than replace authentic employer-based learning and laboratory experiences that require physical equipment or direct observation.

How to Interpret This Appendix

- Educational challenges often overlap, and one technology may address several barriers at the same time.
- Technology selection should begin with the instructional or access problem to be solved, not with the novelty of a product.
- Final decisions should consider accessibility, broadband and device needs, data privacy, faculty training, licensing costs, technical support, interoperability, and long-term sustainability.
- Technology should support competency-based learning, stackable credentials, work-based learning, and multiple entry, exit, and reentry points whenever appropriate.

Educational Challenge	How the Challenge Affects Learners or Programs	Technology-Enabled Approaches to Explore	Potential Benefit
Transportation barriers	Learners cannot reliably travel to a fixed instructional site.	Online instruction; virtual classrooms; remote simulation; remotely managed VR	Reduces required travel and expands regional access.
Childcare and family responsibilities	Fixed schedules prevent participation.	Asynchronous courses; self-paced modules; recorded demonstrations; AI-supported tutoring	Allows learning at times compatible with family responsibilities.
Adult work schedules and shift work	Learners cannot attend at the same time each week.	Hybrid delivery; mobile learning; asynchronous simulation; employer-site learning	Supports participation around variable schedules.
Geographic distance	Learners live far from the Center or partner campus.	Virtual classrooms; cloud labs; remote collaboration; distributed headset deployment	Allows instruction from home, school, work, or another partner site.
Limited instructor availability	A qualified instructor cannot be present for every learner or location.	Recorded instruction; AI coaching; virtual expert support; shared online instruction	Extends instructor capacity while preserving faculty oversight.
Need for individualized pacing	Learners enter with different prior knowledge and progress at different rates.	Adaptive learning; competency dashboards; AI tutoring; modular curriculum	Supports differentiated instruction and mastery-based progression.
Limited access to specialized equipment	Learners need practice before limited laboratory time is available.	Virtual simulation; digital twins; remote labs; interactive 3D models	Provides repeated practice before costly hands-on instruction.
Limited access to employers or worksites	Not every learner can immediately obtain a placement.	Virtual employer tours; immersive workplace scenarios; remote mentoring; virtual projects	Expands career exposure and prepares learners for authentic placements.

Educational Challenge	How the Challenge Affects Learners or Programs	Technology-Enabled Approaches to Explore	Potential Benefit
Need to practice hazardous or rare scenarios	Some situations are unsafe, costly, or difficult to reproduce.	VR scenarios; virtual patients; cybersecurity ranges; digital twins	Provides safe, repeatable practice without disrupting operations.
Need for competency documentation	Programs need evidence beyond course attendance.	Simulation analytics; digital assessment platforms; e-portfolios; supervisor verification tools	Documents performance, errors, completion, and progression.
Need for durable-skills practice	Learners need repeated practice with communication and workplace behaviors.	AI avatars; virtual role-play; video coaching; scenario-based learning	Provides immediate feedback and repeated practice.
Need to reduce dependence on costly facilities	Programs cannot afford to replicate every laboratory or piece of equipment.	Distributed simulation; cloud labs; remote expert systems; employer-site instruction	Reserves physical facilities for experiences that truly require them.

Strategic Interpretation. Technology investments should be selected because they solve a clearly defined educational or operational problem. Priority should be given to approaches that improve access, strengthen competency development, support employer engagement, and reduce avoidable transportation, scheduling, childcare, and facility barriers.

APPENDIX H

Technology-Enabled Learning Platforms

Remote and distributed instructional technologies that reduce time and place barriers

This appendix identifies representative technology-enabled learning platforms that support synchronous, asynchronous, and hybrid workforce education. The defining feature of these platforms is that learners can generally participate without traveling to a specialized laboratory at the River Rouge Career & Workforce Innovation Center.

Learners may access these platforms from home, a high school Career Academy, a community college course, an employer worksite, or another approved setting. Some platforms require a laptop, mobile device, or remotely distributed headset, but they do not require the Center to install and maintain a full physical laboratory for every learner.

How to Interpret This Appendix

- Vendors are illustrative and should be evaluated through demonstrations, references, accessibility review, pricing analysis, curriculum alignment, and technical due diligence.
- Availability, licensing models, device requirements, and product capabilities change over time.
- Platforms should be assessed for their ability to integrate with the learning management system, document competency, protect learner data, and support faculty oversight.
- Simulation should prepare learners for, and supplement, authentic hands-on and employer-based learning rather than automatically replace it.

Technology Category	Representative Platforms and Vendors	Primary Instructional Use	Most Relevant Career Academies
Learning management systems	Canvas; Blackboard Learn; D2L Brightspace; Moodle	Online courses, modules, assessments, communication, progress tracking	All Career Academies
Virtual classrooms and collaboration	Microsoft Teams; Zoom; Google Meet	Live remote instruction, mentoring, employer participation, group projects	All Career Academies
Remote VR device management	ArborXR; ManageXR	Deploys content, manages headsets, tracks participation, and supports distributed VR use	All academies using VR
Virtual campuses and immersive classrooms	ENGAGE XR; VictoryXR	Remote classrooms, cohorts, virtual labs, and collaborative learning spaces	All Career Academies
AI avatar and communication practice	Bodyswaps; Mursion; Talespin	Interviews, customer interactions, leadership, conflict resolution, safety conversations	All Career Academies
Remote expert and guided performance	TeamViewer Frontline; Microsoft Dynamics 365 Guides; RealWear; Scope AR	Remote coaching, guided work instructions, documentation, employer-site learning	Manufacturing; Skilled Trades; Clean Energy; Transportation
Immersive content creation	Uptale; Warp VR; Talespin Studio	Allows educators and employers to create custom immersive scenarios	All Career Academies
General workforce VR simulation	Transfr; Strivr; PIXO VR; Moth+Flame; Immerse	Career exploration, safety, procedural practice, frontline and supervisory training	Manufacturing; Skilled Trades; Transportation; cross-industry
Skilled-trades online simulation	Interplay Learning; SkillMill; PathfindersXR; VR Skills Hub	HVAC, electrical, plumbing, facilities, construction, and introductory trade practice	Skilled Trades; Clean Energy
Virtual clinical simulation	SimX; Oxford Medical Simulation; Lumeto InvolveXR; Virti	Clinical judgment, teamwork, communication, and scenario rehearsal	Health Careers

Technology Category	Representative Platforms and Vendors	Primary Instructional Use	Most Relevant Career Academies
Screen-based virtual patients	Body Interact; Shadow Health; i-Human Patients; VRpatients	Patient assessment, clinical reasoning, documentation, and decision-making	Health Careers
Virtual anatomy and health-science learning	Complete Anatomy; Visible Body	Interactive anatomy, physiology, and foundational health-science instruction	Health Careers
Cloud cybersecurity labs and ranges	Immersive Labs; Hack The Box; TryHackMe; SimSpace; Cyberbit; Circadence	Hands-on cyber scenarios, role-based practice, skills benchmarking, team readiness	Engineering and Applied Technologies
Cloud and networking labs	AWS Skill Builder; Microsoft Applied Skills; Google Cloud Skills Boost; Cisco Packet Tracer; Cisco Skills for All; Boson NetSim	Cloud deployment, networking, security configuration, and troubleshooting	Engineering and Applied Technologies
Coding and technical assessment	HackerRank; Codility; CodeSignal; Skillable; TestOut	Coding, debugging, hands-on lab performance, automated scoring	Engineering and Applied Technologies
Digital twins and industrial simulation	Siemens SIMIT; Siemens digital twin tools; Dassault Systemes DELMIA; AVEVA	Industrial processes, virtual commissioning, production planning, operator simulation	Advanced Manufacturing; Engineering; Clean Energy
Robotics simulation software	FANUC ROBOGUIDE; ABB RobotStudio; Universal Robots Academy; Yaskawa training tools	Robot programming, cell design, safety, and troubleshooting without a physical robot cell	Advanced Manufacturing; Engineering
PLC and automation simulation	Factory I/O; Siemens PLCSIM/SIMIT; Automation Studio	PLC programming, automation logic, virtual equipment operation, troubleshooting	Advanced Manufacturing; Clean Energy; Skilled Trades
CAD, design, and virtual prototyping	Autodesk; SolidWorks; Onshape	CAD, engineering design, virtual prototyping, technical documentation	Engineering; Manufacturing; Skilled Trades
Digital work instructions and connected-worker platforms	PTC Vuforia; Taqtile; Augmentir; Dozuki; Parsable	Guided workflows, remote assistance, evidence of task completion, worksite performance support	Manufacturing; Skilled Trades; Clean Energy; Transportation

Strategic Interpretation. These platforms should be prioritized when they can produce comparable or stronger learning outcomes while reducing time, place, transportation, childcare, and scheduling barriers. Procurement decisions should consider curriculum quality, competency evidence, accessibility, device requirements, integration, instructor workload, and total cost of ownership.

APPENDIX I

Specialized Laboratory Equipment Supporting Career Academy Instruction

Capital equipment requiring dedicated space, maintenance, staffing, and on-site learner access

This appendix identifies representative laboratory equipment and instructional systems that may support hands-on Career Academy programming. Unlike the distributed technologies described in the preceding appendix, these systems must generally be installed at the River Rouge Career & Workforce Innovation Center or another designated laboratory. Learners must travel to the location to use them.

Specialized laboratories can provide essential authentic practice and formal competency assessment; however, they also require significant capital investment, dedicated space, utilities, safety controls, consumable materials, maintenance, software licensing, faculty preparation, technical support, and periodic replacement. The equipment and vendors listed below are illustrative and should not be interpreted as endorsements or procurement recommendations.

How to Interpret This Appendix

- Purchase laboratory equipment only when the competency cannot be adequately developed or assessed through distributed technology or employer-based learning.
- Consider shared regional laboratories, employer facilities, mobile laboratories, leasing, consortial purchasing, and scheduled access to partner campuses before duplicating expensive equipment.
- Estimate the full life-cycle cost, including construction, utilities, ventilation, safety systems, consumables, maintenance agreements, software, instructor certification, technical support, insurance, and replacement.
- Validate equipment choices with employers, postsecondary partners, accreditation or licensing bodies, and instructors before procurement.

Career Academy	Laboratory Equipment or Instructional System	Representative Manufacturers / Vendors	Primary Instructional Use
Advanced Manufacturing	Industrial robot cells and training robots	FANUC; ABB; Universal Robots; Yaskawa Motoman; KUKA	Robotics programming, integration, safety, troubleshooting, automation
Advanced Manufacturing	CNC machining centers, mills, lathes, and educational CNC systems	Haas Automation; Mazak; DMG MORI; Okuma; Denford	Machining, setup, tooling, G-code, inspection, production processes
Advanced Manufacturing	Mechatronics, PLC, pneumatics, hydraulics, and industrial-maintenance trainers	Amatrol; Festo Didactic; LabVolt/Festo; Siemens; Rockwell Automation	Electrical troubleshooting, PLC diagnostics, maintenance, fluid power, automation
Advanced Manufacturing	Metrology and quality equipment	Hexagon Manufacturing Intelligence; ZEISS Industrial Quality Solutions; Mitutoyo	Measurement, coordinate measurement, inspection, quality systems
Advanced Manufacturing	Additive-manufacturing equipment	Stratasys; 3D Systems; Markforged; Formlabs	Rapid prototyping, additive processes, design for manufacturing
Skilled Trades and Construction	Welding booths, welders, fume extraction, and physical welding systems	Lincoln Electric; Miller Electric; ESAB; Fronius	Authentic welding practice, qualification preparation, fabrication
Skilled Trades and Construction	Welding simulation hardware	Lincoln Electric VRTEX; Seabery SOLDAMATIC; Fronius Virtual Welding; Skillver AURA; Realityworks guideWELD	Pre-lab practice, technique feedback, repeatable skill scoring; still requires on-site hardware
Skilled Trades and Construction	Electrical wiring, motors, controls, and code-training systems	Amatrol; Festo Didactic; Hampden Engineering; Lucas-Nuelle	Wiring, motor controls, troubleshooting, safety, code application

Career Academy	Laboratory Equipment or Instructional System	Representative Manufacturers / Vendors	Primary Instructional Use
Skilled Trades and Construction	HVAC and refrigeration trainers	Interplay hardware partners where applicable; Amatrol; Hampden Engineering; iConnect Training	Refrigeration cycles, diagnostics, controls, startup, maintenance
Skilled Trades and Construction	Plumbing, pipefitting, and construction mock-ups	Realityworks; Hampden Engineering; locally fabricated training systems	Installation, layout, code application, troubleshooting, applied construction skills
Health Careers	High-fidelity patient simulators and manikins	Laerdal Medical; Gaumard Scientific; Elevate Healthcare/CAE Healthcare	Patient assessment, emergency response, teamwork, clinical procedures
Health Careers	Simulation management and audiovisual systems	Laerdal SimCapture; Elevate Healthcare LearningSpace; EMS SIMULATIONiQ; SIMStation	Scenario management, video review, OSCE scoring, competency dashboards
Health Careers	Respiratory, airway, and critical-care task trainers	Laerdal Medical; Gaumard; IngMar Medical; TruCorp	Airway management, ventilation, respiratory care, emergency skills
Health Careers	Ultrasound and procedural simulation	CAE Vimedix; Blue Phantom; 3D Systems/Simbionix; Kyoto Kagaku	Ultrasound technique, needle placement, imaging, procedural competency
Health Careers	Surgical simulation and haptics	FundamentalVR; Osso VR; PrecisionOS; 3D Systems/Simbionix	Surgical rehearsal and specialty procedural training
Health Careers	Anatomy visualization tables	Anatontage; Sectra	On-site interactive anatomy and imaging instruction
Clean Energy and Electrification	Electric-vehicle and high-voltage trainers	Lucas-Nuelle; Festo Didactic; ConsuLab; Megatech	EV systems, battery safety, diagnostics, high-voltage procedures
Clean Energy and Electrification	Solar, wind, battery-storage, and microgrid trainers	Amatrol; Festo Didactic; Hampden Engineering; Lucas-Nuelle	Renewable energy, storage, grid systems, installation, troubleshooting
Clean Energy and Electrification	EV charging equipment and training stations	ChargePoint; Siemens; ABB E-mobility; Wallbox	Charging infrastructure, installation, operation, diagnostics
Transportation, Logistics, and Mobility	Commercial-driving simulators	L3Harris; Virage Simulation; Doron Precision Systems; FAAC	CDL preparation, hazard recognition, vehicle control, scenario practice
Transportation, Logistics, and Mobility	Forklift and material-handling simulators or trainers	Raymond; Toyota Material Handling; CM Labs; Forklift Simulator	Material handling, safety, warehouse operations
Transportation, Logistics, and Mobility	Vehicle lifts, diagnostic tools, and engine trainers	Snap-on; Hunter Engineering; ConsuLab; Megatech	Automotive diagnostics, service, repair, alignment, maintenance
Transportation, Logistics, and Mobility	Warehouse automation and logistics training systems	Dematic; Honeywell Intelligrated; Hytrol; Festo Didactic	Conveyors, automated warehousing, inventory flow, logistics systems
Engineering and Applied Technologies	Electronics benches, instrumentation, and test equipment	Keysight Technologies; Tektronix; National Instruments; Digilent	Circuits, electronics, measurement, embedded systems, testing
Engineering and Applied Technologies	Engineering, mechatronics, and controls training systems	Festo Didactic; Amatrol; Siemens; National Instruments	Systems integration, controls, data acquisition, applied engineering
Engineering and Applied Technologies	Rapid-prototyping and fabrication equipment	Stratasys; Markforged; Formlabs; Universal Laser Systems; Trotec	Prototype development, fabrication, product design
Engineering and Applied Technologies	Cybersecurity training laboratory infrastructure	Cisco; Dell Technologies; HPE; Fortinet; Palo Alto Networks	On-site network labs, security appliances, server environments, cyber exercises

Strategic Interpretation

Specialized laboratory equipment should be reserved for authentic hands-on practice, regulated competency assessment, or use of industry-standard systems that cannot be effectively replicated through remote technology or employer-based learning. Before purchasing equipment, the Center should determine whether the same objective can be achieved through a partner college, employer facility, apprenticeship training center, mobile laboratory, shared regional asset, leased system, or distributed simulation platform. This approach will protect learner access while reducing unnecessary capital and operating burdens.

APPENDIX J

Ready-Made Curriculum and Integrated Training Vendors by Career Academy

Representative curriculum, digital courseware, certification preparation, and curriculum-plus-equipment solutions

This appendix identifies representative vendors and industry organizations that offer ready-made or ready-to-deliver curriculum for secondary, early college, community college, adult workforce, and incumbent-worker education. The purpose is to help the River Rouge Career & Workforce Innovation Center identify resources that can be purchased, licensed, adopted, or accessed through an institutional partnership rather than developing every course and instructional sequence from the ground up.

The appendix also distinguishes curriculum-only and digital-courseware providers from vendors that integrate curriculum with physical trainers, simulation systems, or laboratory equipment. A vendor may appear here even when its products also appear in the separate laboratory-equipment appendix because the planning question is different: this appendix asks whether the provider supplies a teachable curriculum package, while the laboratory appendix focuses on capital equipment, space, maintenance, and long-term operating requirements.

How to Interpret This Appendix

- The vendors and products are illustrative rather than exhaustive. Offerings, licensing models, prices, equipment bundles, credential alignment, and institutional eligibility may change.
- Ready-made curriculum may include instructor guides, student materials, online modules, assessments, simulations, lab activities, learning-management-system integration, and professional development.
- “Curriculum plus trainers/equipment” indicates that the provider can pair instructional content with hands-on systems. These options may accelerate implementation but can also create capital, space, maintenance, and instructor-training obligations.
- Credential alignment does not automatically authorize an institution to award a credential. Accreditation, approved testing-site status, instructor certification, or other provider requirements may apply.
- Final selection should be based on employer validation, program standards, accessibility, total cost of ownership, faculty capacity, articulation opportunities, and fit with the Center’s strategy of using remote learning whenever effective and laboratory resources only when necessary.

Career Academy / Provider	Ready-Made Curriculum or Courseware	Curriculum + Trainers / Equipment	Typical Delivery	Credential or Pathway Alignment	Planning Notes
Advanced Manufacturing Amatrol	Advanced manufacturing, industrial maintenance, mechatronics, automation, electrical, fluid power, machining, process control, and related eLearning and instructor materials.	Yes. Offers portable and full-size hands-on learning systems integrated with curriculum.	Blended: online/eLearning plus instructor-led and hands-on lab activities.	Supports multiple industry training pathways; specific third-party credential alignment varies by program.	Strong option when the Center wants one provider for both curriculum and trainers. Evaluate capital cost, space, utilities, maintenance, and faculty training before purchase.
Advanced Manufacturing Tooling U-SME	Large catalog of industry-reviewed online manufacturing courses, learning pathways, instructor-led options, assessments, and smart-manufacturing content.	Primarily curriculum and online training; may be paired with separate equipment providers.	Online, instructor-supported, and blended.	Supports SME credentials and certification preparation, including entry-level manufacturing pathways.	Useful for rapid curriculum deployment and distance learning without requiring a dedicated laboratory for every course.
Advanced Manufacturing Festo Didactic / LabVolt	Curriculum and learning systems for automation, mechatronics, robotics, electrical technology,	Yes. Curriculum is commonly paired with modular trainers and industrial learning systems.	Blended and laboratory-based, with digital learning resources.	May support Festo certification and industry-aligned technical pathways.	Strong for integrated mechatronics and automation programs;

Career Academy / Provider	Ready-Made Curriculum or Courseware	Curriculum + Trainers / Equipment	Typical Delivery	Credential or Pathway Alignment	Planning Notes
	pneumatics, hydraulics, process control, and Industry 4.0.				requires careful total-cost and laboratory planning.
Advanced Manufacturing FANUC America CERT	Instructor resources and education pathways for robotics and CNC, commonly used by schools and colleges preparing learners for FANUC-related skills and certifications.	Yes. Typically paired with FANUC robots, CNC simulation, or education cells.	Instructor-led, simulation-supported, and hands-on laboratory.	FANUC education and certification pathways.	Best used where employers validate FANUC equipment relevance. Capital and safety requirements should be assessed.
Advanced Manufacturing Lincoln Electric U/LINC	Ready-to-use welding curriculum with lesson plans, eLearning, videos, quizzes, and instructional resources.	Can be paired with welding equipment and VRTEX simulation systems.	Online, classroom, blended, and laboratory-based.	Supports welding education and preparation for industry-recognized welding pathways.	Separates well into remotely deliverable theory and on-site practice. Equipment decisions belong in the laboratory investment plan.
Health Careers Elsevier	Digital nursing and allied-health courseware, skills content, virtual learning resources, case-based learning, assessment, and faculty resources.	Generally curriculum/courseware; may integrate with simulation and skills-lab products from other vendors.	Online, classroom, blended, and simulation-supported.	Supports nursing and allied-health program outcomes; credential/licensure alignment depends on the adopted program.	Useful for established, faculty-supported health curricula; confirm program-level accreditation and licensing requirements.
Health Careers Laerdal Medical	Simulation scenarios, educational services, faculty development, debriefing resources, competency-based education resources, and product training.	Yes. Integrates curriculum and scenarios with manikins, task trainers, simulation software, and assessment systems.	Virtual, in-situ, classroom, and laboratory simulation.	Supports clinical competency development and program-specific assessment; formal credential approval remains program dependent.	A strong curriculum-plus-equipment example. High-fidelity systems require dedicated space, maintenance, faculty development, and operating support.
Health Careers ATI Nursing Education	Ready-made nursing education resources, assessments, remediation, skills modules, virtual simulations, and NCLEX preparation.	Primarily curriculum, assessment, and digital simulation rather than major physical equipment.	Online, faculty-guided, and blended.	Nursing education and licensure-exam preparation.	Best suited to nursing pathways delivered with an accredited postsecondary partner.
Health Careers AES / HealthCenter21	Digital health-science curriculum for middle school, high school, CTE, medical assisting, health information, anatomy, and foundational healthcare skills.	Curriculum-focused; hands-on lab activities may require separately purchased supplies or equipment.	Online, classroom, and blended.	Supports introductory health-science and CTE pathways; credential alignment varies by course and state requirements.	Particularly useful for K-12 and early career exploration/preparation without constructing a full clinical laboratory.
Clean Energy and Electrification Amatrol	Curriculum in electrical systems, renewable energy, solar, wind, smart grid, electric power, and related industrial technologies.	Yes. Offers renewable-energy and electrical trainers integrated with curriculum.	Blended online and hands-on.	Supports technical pathways and may be paired with employer- or industry-recognized certifications.	Good for integrated curriculum and trainers; use remote theory first and purchase physical trainers only where hands-on outcomes require them.
Clean Energy and Electrification Interplay Learning	Online and immersive 3D/VR curriculum for electrical, HVAC, solar, facilities maintenance, safety, and related skilled-trades topics.	Primarily digital/VR courseware; does not require a full physical lab for much of the learning.	Asynchronous online, instructor-supported, and VR-enabled.	Includes certification-preparation pathways in selected trades and energy-related topics.	Strong fit for reducing time and place barriers and preparing learners before limited in-person lab experiences.
Clean Energy and Electrification NCCER	Standardized competency-based curricula for electrical, construction, industrial maintenance, HVAC, and other crafts, including instructor and trainee resources.	Curriculum-focused; schools supply or separately purchase required tools, materials, and labs.	Classroom, digital, blended, and hands-on performance verification.	NCCER industry-recognized credentials require delivery/assessment through an accredited organization.	Useful where the Center or partner can meet NCCER accreditation and instructor requirements.
Clean Energy and Electrification Solar Energy International	Structured solar and renewable-energy training courses for photovoltaic design, installation,	Primarily curriculum and online/field training; laboratory equipment varies by course.	Online, instructor-led, and hands-on workshops.	Supports solar workforce preparation and pathways toward industry certifications.	Potential partner for specialized solar curriculum without independently authoring content.

Career Academy / Provider	Ready-Made Curriculum or Courseware	Curriculum + Trainers / Equipment	Typical Delivery	Credential or Pathway Alignment	Planning Notes
	operations, and related topics.				
Skilled Trades and Construction NCCER	Ready-made, competency-based curricula for core construction skills and specific crafts such as carpentry, electrical, HVAC, plumbing, welding, masonry, and heavy equipment.	Curriculum-focused; physical tools, materials, and labs are separately required.	Digital, classroom, blended, and performance-based lab delivery.	NCCER credentials through accredited centers and approved instructors/assessors.	One of the strongest comprehensive curriculum options for high school and workforce construction programs.
Skilled Trades and Construction Interplay Learning	Interactive online, 3D, and VR course libraries for HVAC, plumbing, electrical, solar, facilities maintenance, appliances, safety, and related trades.	Mostly digital simulation and courseware; minimal physical equipment for many modules.	Asynchronous online, remote instructor-supported, and VR.	Selected courses support certification preparation, including HVAC and safety credentials.	Especially aligned with the Center's goal of reducing travel and using lab time only for competencies that require hands-on demonstration.
Skilled Trades and Construction Amatrol	Curriculum and trainers for electrical, HVAC, refrigeration, construction technology, fluid power, maintenance, and technical fundamentals.	Yes. Integrated curriculum and hands-on trainers.	Blended and laboratory-based.	Industry-aligned skill development; credential connection varies by program.	Useful where an integrated lab package is justified, but higher capital and sustainment costs should be explicit.
Skilled Trades and Construction Lincoln Electric U/LINC	Complete welding curriculum with lesson plans, eLearning, videos, assessments, and instructional resources.	Can be paired with welding equipment and simulation systems.	Online theory, classroom, blended, and hands-on.	Supports welding education and preparation for recognized welding credentials.	Allows theory to be delivered remotely while concentrating on-site time on practice and competency validation.
Transportation, Logistics, and Mobility CDX Learning Systems	Ready-made automotive, diesel, medium/heavy truck, collision, and transportation-related digital courseware, assessments, and instructor resources.	Curriculum-focused; can be paired with separately purchased vehicles, components, trainers, and shop equipment.	Online, classroom, blended, and shop-supported.	Commonly aligned with automotive and diesel education standards and certification preparation.	Potential core curriculum provider for automotive and mobility pathways; verify current standards alignment and licensing.
Transportation, Logistics, and Mobility Electude	Interactive eLearning and simulation-based automotive curriculum covering vehicle systems, diagnostics, electric vehicles, and foundational technology.	Primarily digital simulations and courseware; can supplement rather than replace shop equipment.	Online, asynchronous, classroom, and blended.	Supports automotive education and certification preparation depending on program configuration.	Strong option for reducing shop demand and preparing learners before hands-on diagnostics.
Transportation, Logistics, and Mobility MSSC	Ready-made training and assessment resources supporting Certified Logistics Associate and Certified Logistics Technician pathways.	Curriculum and assessment focused; hands-on logistics equipment is generally separate.	Online, classroom, and blended.	MSSC CLA and CLT credentials.	Useful for entry-level logistics and supply-chain pathways that can be delivered with modest facility requirements.
Transportation, Logistics, and Mobility S/P2	Online safety, pollution prevention, workplace readiness, and industry-specific training for automotive, collision, heavy-duty, and related programs.	Curriculum-focused; no major laboratory package required.	Online and asynchronous.	Supports safety and workplace-readiness documentation; not a substitute for occupation-specific licensure.	Useful as a low-barrier foundational curriculum layer across transportation programs.
Engineering and Applied Technologies Cisco Networking Academy	Comprehensive ready-made curriculum in networking, cybersecurity, programming, operating systems, digital literacy, and career skills.	Includes digital labs and tools; physical networking equipment may be added but is not required for every course.	Online, instructor-led, self-paced, and blended.	Supports preparation for Cisco and other entry-level IT credentials.	Highly scalable for high school, early college, and postsecondary delivery. Institutional participation and instructor requirements apply.
Engineering and Applied Technologies AWS Academy	Ready-to-teach cloud-computing curriculum for approved higher-education institutions, including	Digital cloud labs rather than major physical equipment.	Online, instructor-led, and blended.	Prepares learners for AWS certifications and cloud careers.	Higher-education eligibility applies; could be delivered through a community-college or university partner.

Career Academy / Provider	Ready-Made Curriculum or Courseware	Curriculum + Trainers / Equipment	Typical Delivery	Credential or Pathway Alignment	Planning Notes
	educator enablement and hands-on cloud learning.				
Engineering and Applied Technologies CompTIA	Official curriculum, labs, instructor resources, exam preparation, and learning products supporting foundational IT, networking, cybersecurity, cloud, and support pathways.	Primarily digital curriculum and virtual labs; optional hardware labs may be added.	Online, classroom, and blended.	CompTIA Tech+, A+, Network+, Security+, Cloud+, and related certifications.	Strong certification-aligned option for entry-level IT and cybersecurity pathways.
Engineering and Applied Technologies Autodesk Education	Instructional resources, software access, learning content, and certification pathways for CAD, design, engineering, architecture, and digital fabrication.	Primarily software and digital curriculum; can be paired with computers, 3D printers, and fabrication equipment.	Online, classroom, and project-based.	Autodesk certification pathways.	Useful for CAD and design pathways; hardware requirements are lower than many industrial labs but adequate computing capacity is necessary.
Engineering and Applied Technologies SolidProfessor	Ready-made online training for SOLIDWORKS, Autodesk, engineering design, CAM, and related software, with assessments and learning paths.	Curriculum/software training; physical prototyping equipment is separate.	Online, asynchronous, and instructor-supported.	Supports preparation for selected CAD and engineering-software certifications.	Can rapidly add engineering-design curriculum without building custom courseware.

Strategic Interpretation

Ready-made curriculum can shorten program-development timelines, reduce the burden on local faculty, and provide structured learning materials that are already aligned with industry practice. The Center should generally begin by identifying an appropriate curriculum and credential pathway, then determine the minimum physical equipment needed to achieve the required competencies. Vendors that bundle curriculum with trainers may offer implementation advantages, but the convenience of an integrated package should not obscure the long-term costs associated with space, utilities, maintenance, software, consumables, technical support, instructor training, and equipment replacement.

Consistent with Chapter 6, remote and distributed curriculum should be used whenever it can achieve the intended learning outcomes. Physical trainers and laboratory equipment should be added only when learners must demonstrate authentic hands-on skills, meet accreditation or licensing requirements, or practice on industry-standard systems that cannot be replicated effectively through online instruction, virtual simulation, employer-based learning, or shared regional facilities.

Source and Verification Note

Representative offerings were identified from vendor and industry-provider materials available in August 2026. Product lines, institutional eligibility, pricing, credential requirements, and delivery models change over time. Before procurement, River Rouge and its education partners should request current catalogs, demonstrations, references from comparable institutions, total-cost-of-ownership estimates, accessibility documentation, data-security information, and confirmation of credential or accreditation alignment.

APPENDIX K

Entry-Level Industry Credentials by Career Academy

Potential Credentials for Secondary, Career Center, Dual Enrollment, and Early College Programming

This appendix provides a comprehensive planning inventory of industry-recognized certifications, state or federal credentials, portable training credentials, course-completion cards, licenses, and other entry-level achievements that may be considered within the six recommended Career Academies. The list is intended to help River Rouge and its education, employer, and workforce partners identify credentials that could be embedded in high school career and technical education, the Career & Workforce Innovation Center, dual enrollment, early college, pre-apprenticeship, or short-term adult workforce programs.

The inventory is deliberately broad, but it is not a recommendation that every credential be offered. Credential selection should be based on documented employer value, alignment with a coherent program of study, student eligibility, instructional capacity, equipment and clinical requirements, cost, accreditation or licensing rules, and the ability of learners to continue into postsecondary education, Registered Apprenticeship, or employment.

How to Interpret This Appendix

- “Certification” is used only when the issuing organization describes the achievement as a certification. OSHA 10- and 30-hour cards, NCCER training credentials, and many vendor certificates are identified by their correct credential type rather than being presented as professional certifications.
- Entry-level does not always mean immediately available to every high school student. Some credentials have minimum-age, work-experience, clinical, background-check, approved-program, or state-licensing requirements.
- Credential names, exam codes, eligibility requirements, prices, and delivery rules can change. All requirements should be confirmed with the issuer before program approval or procurement.
- Credentials should be embedded within a broader educational pathway rather than offered as disconnected test-preparation activities.
- Employer validation is essential. A credential has greatest value when regional employers recognize it, use it in hiring or advancement, or confirm that it represents relevant workplace competencies.

Credential Types Included

Credential Type	Meaning in This Appendix
Industry certification	A formal assessment-based credential issued by an industry or professional certification body.
Portable training credential	A verified record of completed standardized curriculum and assessments, often designed to stack into apprenticeship or further training.
Course-completion card/certificate	Evidence that a learner completed specified training; it should not automatically be described as professional certification.
License or permit	Government authorization to perform regulated work; age, education, testing, medical, or experience requirements may apply.
Vendor or platform credential	A credential tied to a specific technology, software platform, or equipment ecosystem.

1. Advanced Manufacturing Career Academy

Credentials in this academy should support manufacturing safety, production, machining, industrial maintenance, mechatronics, robotics, automation, welding, and quality pathways.

Credential	Issuing Organization	Credential Type	Best Fit	Implementation Considerations
Manufacturing Technician Level 1 (MT1)	Manufacturing Skills Institute	Industry certification	High school CTE, early college, entry production/technician pathway	Requires an approved academic-partner delivery and assessment process.
Manufacturing Specialist (MS)	Manufacturing Skills Institute	Stackable industry certification	Introductory manufacturing, math, measurement, spatial reasoning	Can serve as an earlier milestone toward MT1.
Certified Production Technician (CPT)	Manufacturing Skill Standards Council	Industry certification	Safety, quality, manufacturing processes, maintenance awareness	May be earned as a full credential or through modular certificates, depending on program design.
Certified Logistics Associate (CLA)	Manufacturing Skill Standards Council	Industry certification	Foundational material handling and logistics	Appropriate where manufacturing and logistics pathways overlap.
Certified Logistics Technician (CLT)	Manufacturing Skill Standards Council	Industry certification	Frontline logistics and supply-chain operations	Typically follows or incorporates CLA-level preparation.
Measurement, Materials, and Safety	National Institute for Metalworking Skills (NIMS)	Performance-based credential	Introductory machining and manufacturing safety	Strong entry credential for machining pathways; includes theory and performance requirements.
CNC Mill Operations	NIMS	Performance-based credential	Introductory CNC milling	Requires access to appropriate machining equipment and a qualified evaluator.
CNC Lathe Operations	NIMS	Performance-based credential	Introductory CNC turning	Requires access to appropriate machining equipment and a qualified evaluator.
Job Planning, Benchwork, and Layout	NIMS	Performance-based credential	Manual machining and foundational shop skills	Useful for pre-apprenticeship and machining programs.
Industrial Technology Maintenance - Basic Mechanical Systems	NIMS	Performance-based credential	Industrial maintenance and mechatronics	Verify current NIMS credential titles and assessment availability during implementation.
FANUC Certified Robot Operator	FANUC America / NOCTI	National industry certification	Robotics operator and introductory automation pathway	Requires a FANUC Certified Education program or approved testing site.
FANUC Certified Robot Technician	FANUC America / NOCTI	National industry certification	Advanced high school or early-college robotics	Typically requires hands-on FANUC training equipment and an approved program.
Siemens Mechatronic Systems Certification Program - Level 1	Siemens	Industry certification	Entry mechatronics technician pathway	Requires an authorized partner institution and qualified instructors.
PMMI Mechatronics Certification - Industrial Electricity 1	PMMI	Industry certification	Industrial electricity and mechatronics fundamentals	Can be stacked with other PMMI mechatronics certificates.
PMMI Mechatronics Certification - Mechanical Components 1	PMMI	Industry certification	Mechanical systems and maintenance fundamentals	Well suited to advanced manufacturing and maintenance pathways.
PMMI Mechatronics Certification - Fluid Power 1	PMMI	Industry certification	Pneumatics and hydraulics fundamentals	Requires aligned instruction and hands-on practice.
PMMI Mechatronics Certification - Programmable Logic Controllers 1	PMMI	Industry certification	PLC fundamentals	Appropriate for early-college or advanced high school automation programs.

Credential	Issuing Organization	Credential Type	Best Fit	Implementation Considerations
AWS SENSE Level I - Entry Welder	American Welding Society	Training certificate / entry welder credential	Secondary or postsecondary welding	Delivered through an AWS SENSE-approved training organization.
AWS Certified Welder	American Welding Society	Performance certification	Job-ready welding skill validation	Requires testing at an AWS Accredited Testing Facility; qualification is process/procedure specific.
OSHA 10-Hour General Industry	OSHA-authorized trainer	Course completion card	Manufacturing safety foundation	Not a professional certification; should be labeled as an OSHA course-completion card.

2. Health Careers Academy

Health credentials must be selected carefully because many require approved education, clinical experience, state testing, licensure, or employer-specific acceptance.

Credential	Issuing Organization	Credential Type	Best Fit	Implementation Considerations
Heartsaver First Aid CPR AED	American Heart Association	Course completion credential	Health careers exploration, workplace readiness, general safety	Appropriate for high school learners; credential validity and delivery format depend on course option.
Adult and Pediatric First Aid/CPR/AED	American Red Cross	Certification	Health careers, childcare, community and workplace safety	Blended and classroom formats include required skills demonstration.
Basic Life Support (BLS) Provider	American Heart Association or American Red Cross	Course completion credential	Students entering clinical healthcare pathways	Frequently required before clinical placement; verify employer and college preference.
Stop the Bleed	American College of Surgeons STOP THE BLEED program	Course completion certificate	Healthcare exploration and emergency preparedness	Useful as a short, broadly accessible entry credential.
Mental Health First Aid	National Council for Mental Wellbeing	Course completion certification	Behavioral health awareness and human services pathways	Verify age requirements and instructor availability.
Certified Nursing Assistant / Nurse Aide	Michigan-approved nurse aide training and testing system	State-regulated credential	Direct-care entry pathway	Requires completion of a state-approved program and required testing; confirm current Michigan requirements.
Emergency Medical Responder (EMR)	National Registry of Emergency Medical Technicians / Michigan licensure pathway	National certification and state licensure pathway	Introductory emergency medical services	Requires an approved education program and state-specific authorization.
Emergency Medical Technician (EMT)	National Registry of Emergency Medical Technicians / Michigan licensure pathway	National certification and state licensure pathway	Entry EMS employment	Requires approved education, national certification process, and Michigan licensure.
Nationally Registered Certified Medical Assistant (NRCMA)	National Association for Health Professionals	National certification	Medical assisting	Eligibility requirements include approved education or qualifying experience; verify program alignment.
Certified Clinical Medical Assistant (CCMA)	National Healthcareer Association	National certification	Medical assisting	Program must meet NHA eligibility requirements and include required competencies.
Nationally Registered Certified Phlebotomy Technician (NRCPT)	National Association for Health Professionals	National certification	Phlebotomy	Requires eligible training and documented venipuncture/clinical experience.
Certified Phlebotomy Technician (CPT)	National Healthcareer Association	National certification	Phlebotomy	Requires completion of an eligible program and documented procedures.

Credential	Issuing Organization	Credential Type	Best Fit	Implementation Considerations
Nationally Registered Certified EKG Technician (NRCEKG)	National Association for Health Professionals	National certification	EKG/telemetry pathway	Requires eligible training and examination.
Certified EKG Technician (CET)	National Healthcareer Association	National certification	EKG/telemetry pathway	Appropriate for high school or early-college programs that meet eligibility requirements.
Nationally Registered Certified Patient Care Technician (NRCPT)	National Association for Health Professionals	National certification	Patient care technician pathway	May require a combination of nursing-assistant, phlebotomy, and EKG competencies.
Certified Patient Care Technician/Assistant (CPCT/A)	National Healthcareer Association	National certification	Patient care technician pathway	Verify age, education, and clinical skill requirements.
Certified Pharmacy Technician (CPhT)	Pharmacy Technician Certification Board	National certification	Pharmacy technician pathway	Eligibility and Michigan registration requirements must be verified.
Nationally Registered Certified Pharmacy Technician (NRCPhT)	National Association for Health Professionals	National certification	Pharmacy technician pathway	Verify current eligibility and state requirements.
Certified Electronic Health Records Specialist (CEHRS)	National Healthcareer Association	National certification	Health information and medical-office pathway	Can be integrated into health information, medical assisting, or administrative programs.
Certified Medical Administrative Assistant (CMAA)	National Healthcareer Association	National certification	Medical office and administrative pathway	Appropriate for high school or early-college administrative healthcare programs.
ServSafe Food Handler or Manager	National Restaurant Association	Industry certificate/certification	Dietary aide, nutrition services, healthcare support	Manager certification generally requires a proctored exam; choose level based on role.

3. Clean Energy and Electrification Career Academy

Potential credentials span electrical safety, HVAC and refrigeration, energy efficiency, solar, building performance, EV charging infrastructure, and sustainable design.

Credential	Issuing Organization	Credential Type	Best Fit	Implementation Considerations
OSHA 10-Hour Construction	OSHA-authorized trainer	Course completion card	Electrical, construction, solar, and infrastructure pathways	Not a professional certification; label accurately as an OSHA course-completion card.
OSHA 10-Hour General Industry	OSHA-authorized trainer	Course completion card	Energy, utilities, manufacturing, and facilities pathways	Select construction or general-industry version based on pathway.
NABCEP Associate	North American Board of Certified Energy Practitioners	Entry-level credential	Solar photovoltaic pathway	Designed for students and early-career learners; requires approved education or other eligibility route.
NABCEP Photovoltaic System Inspector (PVSI)	North American Board of Certified Energy Practitioners	Board certification	Advanced early-college solar inspection pathway	May exceed entry-level scope; verify experience and eligibility before inclusion.
Energy Industry Fundamentals Certificate	Center for Energy Workforce Development	Foundational certificate	Energy and utility career awareness	Availability is typically through approved education partners.
EVITP Electric Vehicle Infrastructure Training Program Certificate	Electric Vehicle Infrastructure Training Program	Industry training certificate	EV charging infrastructure	Generally intended for qualified electricians; better suited to advanced early-college or apprenticeship pathways.
EPA Section 608 Type I	EPA-approved certifying organization	Federal technician certification	Small-appliance refrigeration and HVAC	Requires an EPA-approved test; Type I can be appropriate as an initial credential.
EPA Section 608 Type II	EPA-approved certifying organization	Federal technician certification	High-pressure HVAC/refrigeration systems	Requires aligned HVAC instruction and proctored testing.
EPA Section 608 Universal	EPA-approved certifying organization	Federal technician certification	Broad HVAC/refrigeration pathway	Requires passing Core plus Types I, II, and III under approved testing conditions.
ESCO Institute Employment Ready - Electrical	ESCO Institute	Entry-level certificate	Electrical/HVAC fundamentals	Designed to validate foundational workforce readiness.
ESCO Institute Employment Ready - Air Conditioning	ESCO Institute	Entry-level certificate	HVAC fundamentals	Can support secondary and early-college HVAC programs.
ESCO Institute Employment Ready - Heat Pumps	ESCO Institute	Entry-level certificate	Heat pump and electrification pathway	Relevant to building electrification and HVAC.
HVAC Excellence Employment Ready - Electrical	HVAC Excellence	Entry-level certificate	HVAC electrical fundamentals	Verify current examination availability and program requirements.
HVAC Excellence Employment Ready - Air Conditioning	HVAC Excellence	Entry-level certificate	Air-conditioning fundamentals	Suitable for students completing aligned coursework.
Building Performance Institute - Building Science Principles Certificate	Building Performance Institute	Knowledge certificate	Energy efficiency, building performance, weatherization	Accessible entry point before field certifications requiring work experience.
LEED Green Associate	Green Business Certification Inc.	Professional credential	Sustainable design, construction, and facilities	Often feasible for advanced high school or early-college students with aligned preparation.

Credential	Issuing Organization	Credential Type	Best Fit	Implementation Considerations
Electrical Training ALLIANCE Interim Credentials	Electrical Training ALLIANCE	Training milestone credentials	Electrical pre-apprenticeship/apprenticeship	Availability depends on partnership with local electrical apprenticeship programs.
First Aid/CPR/AED	American Heart Association or American Red Cross	Certification/course completion credential	Field safety across energy pathways	Often paired with OSHA training.

4. Skilled Trades and Construction Career Academy

Credentials should support pre-apprenticeship, construction safety, foundational craft skills, welding, HVAC, electrical, plumbing, and equipment operation.

Credential	Issuing Organization	Credential Type	Best Fit	Implementation Considerations
NCCER Core: Introduction to Basic Construction Skills	NCCER	Portable training credential	Pre-apprenticeship and all construction trades	Strong foundational credential for high school CTE and career-center programming.
NCCER Carpentry Level 1	NCCER	Portable training credential	Entry carpentry	Requires an accredited training sponsor and credentialed instructor.
NCCER Electrical Level 1	NCCER	Portable training credential	Entry electrical	Does not replace state licensure or apprenticeship requirements.
NCCER HVAC Level 1	NCCER	Portable training credential	Entry HVAC	Can be paired with EPA Section 608 preparation.
NCCER Plumbing Level 1	NCCER	Portable training credential	Entry plumbing	Does not replace licensing or apprenticeship requirements.
NCCER Welding Level 1	NCCER	Portable training credential	Entry welding	May be paired with AWS SENSE or performance testing.
NCCER Heavy Equipment Operations Level 1	NCCER	Portable training credential	Construction equipment pathway	Requires substantial hands-on training and safety controls.
NCCER Construction Technology	NCCER	Portable training credential	Broad construction pathway	Useful for introductory construction programs.
OSHA 10-Hour Construction	OSHA-authorized trainer	Course completion card	Construction safety	Not a professional certification.
OSHA 30-Hour Construction	OSHA-authorized trainer	Course completion card	Advanced secondary/early college or supervisory preparation	Longer course; may be more appropriate for advanced students.
EPA Section 608 Type I, II, or Universal	EPA-approved certifying organization	Federal technician certification	HVAC and refrigeration	Select level based on equipment and course scope.
AWS SENSE Level I - Entry Welder	American Welding Society	Training certificate / entry welder credential	Secondary welding	Requires an AWS SENSE-approved training organization.
AWS Certified Welder	American Welding Society	Performance certification	Job-ready welding	Requires testing at an Accredited Testing Facility.
HVAC Excellence Employment Ready Certificates	HVAC Excellence	Entry-level certificates	HVAC fundamentals	Available in multiple specialty areas; verify current catalog.
ESCO Institute Employment Ready Certificates	ESCO Institute	Entry-level certificates	HVAC and electrical fundamentals	Can provide modular entry milestones.
National Center for Construction Education and Research Rigger Level I	NCCER	Assessment certification	Rigging and material handling	May require documented experience; distinguish assessment certification from training credentials.
Forklift Operator Training Certificate	Employer or qualified training provider under OSHA requirements	Employer-issued training certification	Warehousing, construction, manufacturing	OSHA does not issue a forklift license; employer evaluation is required.
Scissor Lift / Mobile Elevating Work Platform Operator	Employer or qualified provider aligned with ANSI/OSHA requirements	Operator training credential	Construction and facilities	Requires hands-on evaluation and employer acceptance.

Credential	Issuing Organization	Credential Type	Best Fit	Implementation Considerations
First Aid/CPR/AED	American Heart Association or American Red Cross	Certification/course completion credential	Jobsite safety	Common supporting credential across trades.
ServSafe Manager	National Restaurant Association	Industry certification	Facilities, hospitality construction support, or school facilities pathways	Optional and only relevant to selected programs.

5. Transportation, Logistics, and Mobility Career Academy

Potential credentials include student automotive assessments, logistics credentials, operator training, commercial-driving permits or licenses, and transportation safety credentials.

Credential	Issuing Organization	Credential Type	Best Fit	Implementation Considerations
ASE Entry-Level Automobile Tests	ASE Education Foundation	Entry-level student credential	Automotive service pathways	Available to students in secondary and postsecondary training programs; no work-experience requirement for entry-level tests.
ASE Entry-Level Maintenance and Light Repair	ASE Education Foundation	Entry-level student credential	Automotive maintenance	Strong fit for high school automotive programs.
ASE Entry-Level Automobile Service Technology	ASE Education Foundation	Entry-level student credential	Broad automotive service	Program may select relevant test areas.
ASE Entry-Level Collision Repair and Refinishing	ASE Education Foundation	Entry-level student credential	Collision repair	Requires aligned program instruction and testing.
ASE Entry-Level Medium/Heavy Truck	ASE Education Foundation	Entry-level student credential	Diesel and truck technology	Appropriate for advanced high school or early-college programs.
Commercial Learner's Permit (CLP)	Michigan Secretary of State / FMCSA requirements	Government permit	Commercial driving pathway	Federal and state age restrictions apply; interstate operation generally requires age 21.
Commercial Driver's License - Class A or B	Michigan Secretary of State / FMCSA requirements	Government license	Commercial driving pathway	Requires approved training, testing, medical qualification, and age eligibility.
CDL Endorsements - Passenger, School Bus, Tank, Doubles/Triples, Hazmat	Michigan Secretary of State / FMCSA requirements	License endorsement	Specialized transportation pathways	Age, background-check, and training requirements vary; not all are appropriate for K-12 learners.
MSSC Certified Logistics Associate (CLA)	Manufacturing Skill Standards Council	Industry certification	Warehousing and logistics foundation	Well suited to high school and early-college logistics programs.
MSSC Certified Logistics Technician (CLT)	Manufacturing Skill Standards Council	Industry certification	Frontline logistics operations	Typically builds on CLA content.
OSHA 10-Hour General Industry	OSHA-authorized trainer	Course completion card	Warehousing, fleet, and logistics safety	Not a professional certification.
Forklift Operator Training Certificate	Employer or qualified training provider under OSHA requirements	Employer-issued training certification	Warehouse and material handling	Requires hands-on evaluation; the employer must authorize operation.
Certified Logistics Associate	SOLE - The International Society of Logistics or another recognized provider	Foundational industry credential	Logistics awareness	Verify market recognition and current eligibility before selection.
Certified Supply Chain Principles	Association for Supply Chain Management	Certificate program	Supply-chain fundamentals	Institutional delivery and student access vary; verify current ASCM education offerings.
I-CAR ProLevel 1 Knowledge Areas	Inter-Industry Conference on Auto Collision Repair	Training achievement	Collision repair	Program participation and role-based requirements apply.
Snap-on NC3 Torque Certification	NC3 / Snap-on	Industry-recognized certification	Automotive and transportation maintenance	Requires an NC3 partner school and approved curriculum/equipment.
Snap-on NC3 Multimeter Certification	NC3 / Snap-on	Industry-recognized certification	Electrical diagnostics	Useful across automotive, EV, and maintenance pathways.
S/P2 Automotive Safety and Pollution Prevention Certificates	S/P2	Online training certificates	Automotive safety and environmental compliance	Frequently used in secondary automotive programs.
First Aid/CPR/AED	American Heart Association or American Red Cross	Certification/course completion credential	Transportation workplace safety	Useful supporting credential across pathways.
Transportation Worker Identification Credential (TWIC)	Transportation Security Administration	Federal security credential	Port, maritime, and secure-facility access	Requires age/identity eligibility, background check, and fees; best suited to eligible adult learners.

6. Engineering and Applied Technologies Career Academy

This academy includes design, CAD, engineering technology, information technology, cybersecurity, cloud computing, programming, data, and digital communication credentials.

Credential	Issuing Organization	Credential Type	Best Fit	Implementation Considerations
Autodesk Certified User - AutoCAD	Autodesk / Certiport	Entry-level industry certification	CAD and engineering design	Designed for students and early-career users; requires aligned software access.
Autodesk Certified User - Fusion	Autodesk / Certiport	Entry-level industry certification	3D design, CAD/CAM, product development	Strong fit for high school and early-college engineering programs.
Autodesk Certified User - Revit	Autodesk / Certiport	Entry-level industry certification	Architecture, BIM, construction technology	Useful where engineering overlaps with construction.
Certified SOLIDWORKS Associate (CSWA)	Dassault Systèmes SOLIDWORKS	Entry-level professional certification	Mechanical design and engineering technology	Widely used in secondary and postsecondary engineering programs.
Certified SOLIDWORKS Associate - Additive Manufacturing	Dassault Systèmes SOLIDWORKS	Specialty certification	3D printing and design for additive manufacturing	Verify current exam availability and software requirements.
Microsoft Office Specialist - Excel Associate	Microsoft / Certiport	Industry certification	Data analysis and workplace productivity	Cross-cutting credential useful in every academy.
Microsoft Office Specialist - Word Associate	Microsoft / Certiport	Industry certification	Technical documentation and workplace productivity	Cross-cutting credential.
Microsoft Office Specialist - PowerPoint Associate	Microsoft / Certiport	Industry certification	Technical communication and presentations	Cross-cutting credential.
Cisco Certified Support Technician - Networking	Cisco	Entry-level industry certification	Networking and IT support	Designed as an entry point before CCNA.
Cisco Certified Support Technician - Cybersecurity	Cisco	Entry-level industry certification	Cybersecurity	Appropriate for high school and early-college programs.
CompTIA Tech+	CompTIA	Foundational industry certification	Technology fundamentals and career exploration	Successor to ITF+; verify current exam code and launch details.
CompTIA A+	CompTIA	Entry-level industry certification	IT support and hardware	Requires passing two exams; often achievable in advanced high school or early college.
CompTIA Network+	CompTIA	Entry-level industry certification	Networking	May be better suited to early college or advanced secondary programs.
CompTIA Security+	CompTIA	Early-career industry certification	Cybersecurity	Often requires substantial preparation; better suited to early college or advanced students.
AWS Certified Cloud Practitioner	Amazon Web Services	Foundational cloud certification	Cloud computing and digital systems	No formal prerequisite; appropriate with aligned coursework.
Microsoft Certified: Azure Fundamentals	Microsoft	Foundational certification	Cloud computing	Entry-level certification for students and career changers.
Microsoft Certified: Security, Compliance, and Identity Fundamentals	Microsoft	Foundational certification	Cybersecurity and compliance	Appropriate for introductory cyber pathways.
Google Cloud Digital Leader	Google Cloud	Foundational cloud certification	Cloud and digital transformation	Suitable for advanced high school or early college with preparation.

Credential	Issuing Organization	Credential Type	Best Fit	Implementation Considerations
Certiport Information Technology Specialist - Python	Certiport	Entry-level industry certification	Programming	Designed for learners beginning technical careers.
Certiport Information Technology Specialist - JavaScript	Certiport	Entry-level industry certification	Web and software development	Requires aligned coding curriculum.
Certiport Information Technology Specialist - Databases	Certiport	Entry-level industry certification	Database fundamentals	Useful for data and application pathways.
Certiport Information Technology Specialist - Artificial Intelligence	Certiport	Entry-level industry certification	AI fundamentals	Verify current exam availability and objectives.
Adobe Certified Professional - Visual Design Using Adobe Photoshop	Adobe / Certiport	Entry-level professional certification	Digital design and communications	Relevant where applied technology includes digital media.
Adobe Certified Professional - Digital Video Using Adobe Premiere Pro	Adobe / Certiport	Entry-level professional certification	Digital media and technical communication	Optional based on academy scope.
TestOut IT Fundamentals Pro or PC Pro	TestOut	Industry-endorsed certification	IT fundamentals and support	Verify employer recognition and alignment with the selected IT pathway.

Strategic Interpretation

The strongest initial credential portfolio will be selective rather than simply large. River Rouge should prioritize credentials that can be completed within a coherent program of study, have documented value to regional employers, are recognized by postsecondary and apprenticeship partners, and provide learners with a tangible next step. Cross-cutting safety and readiness credentials may be offered across multiple academies, while occupation-specific credentials should be introduced only when the Center has qualified instructors, suitable facilities or clinical placements, approved curriculum, and a sustainable testing model.

Whenever multiple credentialing options exist for the same occupation, program partners should compare employer recognition, accreditation status, student eligibility, total cost, testing requirements, renewal requirements, and articulation opportunities before selecting a provider. The final credential portfolio should be reviewed periodically as industry standards, technology, licensing requirements, and employer preferences change.

Recommended Selection Criteria

- Validated by regional employers and employer-led collaboratives.
- Appropriate for the age and educational level of the intended learners.
- Embedded within a coherent Career Academy pathway and connected to postsecondary credit, apprenticeship, or employment.
- Based on demonstrated knowledge and, where appropriate, performance-based assessment.
- Portable, verifiable, and recognized beyond a single school or vendor whenever possible.
- Affordable to deliver and sustainable after start-up funding ends.
- Supported by qualified instructors, required facilities, clinical or work-based learning sites, and reliable testing capacity.
- Reviewed regularly to ensure continued relevance.

Selected Authoritative Sources

American Heart Association. (2026). CPR and first aid course and credential information.

American Red Cross. (2026). First aid, CPR, AED, and basic life support training and certification information.

American Welding Society. (2026). SENSE and Certified Welder program information.

ASE Education Foundation. (2026). ASE Entry-Level certification and student testing information.

Cisco. (2026). Cisco Certified Support Technician certification information.

CompTIA. (2026). Tech+, A+, Network+, and Security+ certification information.

FANUC America. (2026). Certified Education Training and NOCTI robotics certification information.

Manufacturing Skills Institute. (2026). Manufacturing Specialist and Manufacturing Technician Level 1 credential information.

National Association for Health Professionals. (2026). Allied-health certification information.

National Center for Construction Education and Research. (2026). Core and craft training credential information.

National Institute for Automotive Service Excellence. (2026). ASE certification and student pathway information.

National Institute for Metalworking Skills. (2026). Credentialing and machining credential information.

National Registry of Emergency Medical Technicians. (2026). EMR and EMT certification requirements.

U.S. Environmental Protection Agency. (2026). Section 608 technician certification requirements.

U.S. Occupational Safety and Health Administration. (2026). Outreach Training Program and powered industrial truck training requirements.

Data and implementation note. Credential offerings and requirements are subject to change. The lists in this appendix are planning resources, not final program approvals. River Rouge and its partners should confirm current requirements directly with credential issuers, the Michigan Department of Education, relevant licensing agencies, accrediting bodies, postsecondary partners, apprenticeship sponsors, and regional employers before implementation.

APPENDIX L

Funding Resources and Grant Opportunities

Illustrative public, educational, employer, and philanthropic resources supporting planning, capital investment, program delivery, learner access, and long-term modernization

Planning Note. Funding programs, appropriations, eligibility rules, deadlines, and allowable costs change frequently. This appendix is a planning resource, not a guarantee of eligibility or award. River Rouge and its partners should verify current requirements with the administering agency or funder before developing an application or committing project costs.

Purpose and Use

This appendix identifies representative funding resources and investment partners that may support the River Rouge Career & Workforce Innovation Center. It is organized around the Center’s major financing needs: local commitment, planning and program development, capital construction and renovation, technology infrastructure, applied learning technologies, instructional equipment, faculty development, learner supports, work-based learning, operations, and long-term replacement and modernization.

The strongest financing strategy will combine multiple sources rather than rely on a single grant. One-time capital resources should be matched to construction, renovation, technology, and equipment needs, while recurring operating costs should be supported by stable local and institutional revenue. Competitive grants and philanthropy should be used strategically to accelerate implementation, test innovations, expand access, and leverage—not replace—long-term local commitment.

How to Interpret This Appendix

- Funding sources are grouped by the type of investment they are best positioned to support.
- “Potential use” means a plausible alignment based on published program purposes; it does not mean every listed cost is allowable.
- Applicants may need to be a school district, community college, city, nonprofit organization, employer, workforce agency, or consortium. The appropriate lead applicant should be selected for each opportunity.
- Perkins and other CTE funds should be used only for allowable programmatic and instructional purposes. General building infrastructure, routine construction, and broad technology infrastructure should be financed through millage, bonds, capital appropriations, local funds, or other eligible capital sources.
- Foundation priorities and application processes vary. Some foundations accept open applications, while others primarily invite proposals or fund through special initiatives.
- All proposals should demonstrate employer validation, learner benefit, regional collaboration, sustainability, measurable outcomes, and alignment with the Center’s phased implementation strategy.

L.1 Local and Community Investment

Local funding should form the stable base of the financing strategy. External funders are more likely to invest when River Rouge demonstrates sustained community commitment, a realistic operating model, and a plan for long-term maintenance and modernization.

Local Resource	Potential Uses	Planning Considerations
Voter-approved vocational or operating millage	Facility acquisition or renovation; building technology infrastructure; instructional equipment; operations; maintenance; replacement and modernization reserves.	River Rouge School District and other legally eligible local education entities should determine the appropriate millage structure, ballot authority, taxable area, duration, and allowable uses with legal and financial counsel.
Local bond financing	Major construction, renovation, site work, fixed building systems, and other eligible long-lived capital assets.	Debt service capacity, voter approval requirements, useful-life alignment, and long-term operating affordability should be evaluated before issuance.
City and school district capital funds	Planning, site preparation, matching funds, furniture, technology, and targeted facility improvements.	Best used to demonstrate local commitment and provide match or gap financing for larger external awards.
Capital campaign, sponsorships, and naming opportunities	Career Academy sponsorships, laboratories, applied learning technologies, scholarships, learner supports, and visible public-facing spaces.	Use written gift and naming policies. Avoid creating recurring obligations without a continuation plan.
In-kind contributions	Employer equipment, software licenses, faculty time, facilities, clinical sites, mentors, transportation, and professional services.	Document fair value, ownership, maintenance, liability, replacement, and reporting requirements in written agreements.

L.2 Michigan Career and Technical Education Resources

Michigan CTE funding may support coordination, implementation, and improvement of state-approved programs. Funding must be aligned with the responsible educational entity, approved program requirements, regional needs, and current use-of-funds guidance.

Resource	Potential Uses	Likely Applicant/Partner	Important Limits
Carl D. Perkins V	Program improvement, equipment and instructional resources, professional development, special-population access, work-based learning, and other allowable activities tied to high-quality state-approved CTE Programs of Study.	Responsible secondary or postsecondary Perkins recipient; coordinated through the applicable Perkins region.	Not a general construction or building-infrastructure source. Use must follow current Michigan Perkins guidance and the Comprehensive Local Needs Assessment.
Michigan State School Aid—Section 61 and related CTE categorical funds	Support for approved secondary CTE programs, including eligible program operation, expansion, equipment, and related state-authorized activities.	Eligible school districts, intermediate school districts, and consortia under current state guidance.	Annual appropriations and allowable uses change; confirm the current State School Aid Act and MDE-OCTE guidance.
Michigan CTE Expansion Grants or successor programs	Expansion of access, new or expanded CTE programs, equipment, and program capacity when appropriated.	Eligible educational agencies specified in the applicable grant announcement.	Availability depends on legislative appropriation and current MDE competition.
Early Middle College and CTE dual-enrollment resources	Student tuition, coordination, advising, pathway development, and eligible costs under current state policy.	School districts and postsecondary partners.	Requires a formal Early Middle College or dual-enrollment structure and compliance with current MDE rules.
Local vocational millage funds	Approved CTE program operation, capital, equipment, access, and regional delivery as authorized locally.	Eligible local or intermediate educational entities.	Particularly important for stable local support and costs that cannot be sustained through time-limited grants.

L.3 Michigan Workforce and Economic Development Resources

Resource	Potential Uses	Likely Applicant/Partner	Important Limits
Going PRO Talent Fund	Short-term, employer-driven training for new and incumbent workers that addresses a documented skill need and leads to an industry-recognized, transferable credential.	Employers apply through their local Michigan Works! agency; employer-led collaborative opportunities may be available.	Best aligned with employer training and credential attainment—not general Center operations or construction.
Michigan Works! workforce funding	Eligible occupational training, supportive services, career navigation, work-based learning, incumbent-worker strategies, and participant supports under applicable programs.	SEMCA Michigan Works! and other regional Michigan Works! agencies.	Eligibility is participant- and program-specific; braid resources around defined learner populations.
Michigan Department of Labor and Economic Opportunity competitive grants	Workforce innovation, apprenticeships, sector strategies, barrier reduction, youth and adult workforce programs, and special initiatives.	Workforce agencies, educational institutions, nonprofits, employers, and partnerships as specified.	Programs are opportunity-specific and may require match, target populations, or specific performance outcomes.
Michigan Economic Development Corporation / Michigan Strategic Fund	Economic development, site readiness, business attraction and retention, talent initiatives, community development, and legislatively authorized programs.	City, economic development organizations, educational partners, employers, or eligible development entities.	Fit depends on active programs and the project's connection to economic development outcomes.
State legislative appropriation or enhancement grant	One-time capital, equipment, technology, planning, or special project support authorized in the state budget.	Typically a public entity or eligible nonprofit/educational organization.	Requires legislative strategy, a clearly defined public purpose, implementation readiness, and an operating sustainability plan.

L.4 Federal Funding Opportunities

Federal Resource	Potential Uses	Likely Applicant/Partner	Important Limits
U.S. Economic Development Administration—Public Works and Economic Adjustment Assistance	Construction, renovation, infrastructure, equipment, planning, and economic-adjustment strategies that support job creation, resilience, and regional economic development.	City, eligible public entity, nonprofit, higher education institution, or eligible consortium.	Requires a strong economic-development case, eligible applicant, readiness, match strategy, and alignment with EDA priorities.
National Science Foundation—Advanced Technological Education	Credit-bearing technician education, curriculum, faculty development, career pathways, applied research, and partnerships in advanced technology fields.	Two-year college should generally lead or play the central role, with K–12, industry, and economic-development partners.	Not primarily a facility-construction program. Strong fit for advanced manufacturing, engineering technology, cybersecurity, clean energy, and related technician pathways.
U.S. Department of Labor apprenticeship and workforce grants	Registered Apprenticeship, pre-apprenticeship, sector partnerships, work-based learning, credential attainment, and workforce-system capacity.	Workforce agencies, sponsors, educational institutions, employers, labor organizations, and eligible intermediaries.	Opportunities vary by NOFO; apprenticeship programs must meet applicable registration and performance requirements.
U.S. Department of Education competitive grants	Career-connected learning, postsecondary access, innovation, student support, adult education, and special education or equity initiatives.	School districts, postsecondary institutions, state agencies, nonprofits, or partnerships as specified.	Use only when the specific competition aligns with the intended learner population and project design.
U.S. Department of Energy workforce and education opportunities	Clean-energy, electrification, buildings, grid, battery, manufacturing, and community workforce initiatives.	Educational institutions, state/local entities, nonprofits, employers, and consortia as specified.	Highly opportunity-specific; often favors partnerships connected to active clean-energy investments.
U.S. Environmental Protection Agency Brownfields resources	Assessment, cleanup, planning, job training, and redevelopment of eligible brownfield properties.	Eligible local governments, nonprofits, workforce entities, and coalitions.	Relevant only if the site or project meets brownfield eligibility and

Federal Resource	Potential Uses	Likely Applicant/Partner	Important Limits
			the requested activity fits the applicable program.
Congressionally Directed Spending / Community Project Funding	One-time capital, infrastructure, equipment, community development, and eligible workforce or educational investments routed through federal agency accounts.	Public or eligible nonprofit entities working with congressional offices.	Annual process; no guarantee of selection. Projects need a defined scope, public benefit, budget, readiness, and eligible federal account.

L.5 Postsecondary and Employer Investment Partners

Educational and employer partners can reduce capital and operating costs through direct investment, shared delivery, and in-kind contributions. These commitments should be incorporated into formal agreements and valued as part of the Center’s overall financing plan.

Partner Category	Potential Contributions	Illustrative Partners
Community colleges and universities	Shared faculty, laboratories, simulation centers, curriculum, dual enrollment, Early College, credit-bearing programs, grant leadership, and institutional match.	Henry Ford College; Wayne County Community College District; Schoolcraft College; Oakland Community College; Macomb Community College; Washtenaw Community College; Wayne State University; University of Michigan-Dearborn; Eastern Michigan University; Lawrence Technological University.
Healthcare systems and providers	Clinical placements, simulation access, equipment, mentors, faculty expertise, internships, apprenticeships, scholarships, and program sponsorships.	Henry Ford Health; Corewell Health; Trinity Health Michigan; Detroit Medical Center; McLaren Health Care; ProMedica; long-term care, rehabilitation, behavioral health, and community health providers.
Manufacturing, mobility, energy, and technology employers	Equipment, software, laboratories, mentors, paid work-based learning, apprenticeships, instructor externships, incumbent-worker training, and Career Academy sponsorships.	Ford Motor Company; General Motors; Stellantis; DTE Energy; Magna; American Axle & Manufacturing; Lear; Bosch; FANUC America; Siemens; Rockwell Automation; ABB; Lincoln Electric; Automation Alley and Michigan Manufacturers Association members.
Labor and apprenticeship organizations	Training centers, instructors, recognized pre-apprenticeship, Registered Apprenticeship, equipment, and job placement connections.	Building-trades councils, joint apprenticeship and training committees, employer sponsors, union training centers, and other registered sponsors.
Vendors and corporate partners	Discounted or donated equipment, curriculum, software, certifications, faculty training, warranties, and technical support.	Vendors identified in Appendices H, I, and J, selected through competitive procurement and employer validation.

L.6 Philanthropic and Corporate-Giving Prospects

The organizations below are potential relationship-building prospects, not guaranteed open grant opportunities. River Rouge should approach them with a clearly defined investment case and determine current strategic fit before preparing a full proposal.

Potential Partner	Relevant Focus	River Rouge Positioning
Ralph C. Wilson, Jr. Foundation	Young adults, working families, career pathways, CTE, early college and dual enrollment, work-based learning, and employer-led workforce strategies.	Strong conceptual fit for pathway development, learner access, regional partnerships, and career-connected education.
Community Foundation for Southeast Michigan	Youth and education, economic opportunity, scholarships, special funds, and regional initiatives.	Potential partner for youth programming, scholarships, learner supports, convening, and donor-advised or special-purpose funds.

Potential Partner	Relevant Focus	River Rouge Positioning
The Skillman Foundation	Detroit youth, education systems, youth voice, and community-driven education transformation.	Best fit for Detroit-serving youth strategies and systems change; its published guidance excludes building campaigns, construction, renovation, and equipment.
The Kresge Foundation	Detroit, education, health, human services, environment, American cities, and social investment.	Most applications are invited or solicited. Potential fit depends on current strategy, cross-sector impact, and relationship development.
DMC Foundation	Health education and community benefit in metropolitan Detroit.	Potential fit for Health Careers Academy education, health-career exposure, community benefit, and leverage of public/private resources.
William Davidson Foundation	Education, economic mobility, Jewish community, and Southeast Michigan civic priorities.	Potential fit for education-to-career pathways, institutional capacity, and regional economic opportunity; confirm current approach.
Hudson-Webber Foundation	Detroit-focused community and economic development priorities.	Potential fit may be strongest when the Center demonstrates benefit to Detroit residents and regional economic mobility.
McGregor Fund	Human services, education, economic mobility, and Detroit-area community needs.	Potential fit for learner supports and pathways serving economically vulnerable residents; confirm current grant strategy.
Corporate foundations and giving programs	Education, STEM, workforce, community vitality, safety, scholarships, equipment, and employee volunteerism.	DTE Energy Foundation; Ford philanthropic programs; GM corporate giving; Stellantis charitable programs; Bosch Community Fund; Toyota USA Foundation; Consumers Energy Foundation and other regional corporate funders.
Local businesses, civic organizations, and community donors	Scholarships, transportation, meals, tools, uniforms, events, emergency assistance, and small equipment.	Develop an annual sponsorship menu and community-giving campaign tied to specific learner and Career Academy needs.

L.7 Funding Alignment by Investment Category

Investment Category	Most Plausible Resource Mix
Planning, feasibility, and program design	Local funds; state planning grants; EDA planning/economic-adjustment resources; philanthropy; postsecondary contributions.
Facility construction and renovation	Millage; bonds; local capital funds; state capital appropriation; eligible EDA Public Works; congressional funding; capital philanthropy where allowed.
Building technology infrastructure	Millage; bonds; local capital improvement funds; state or federal capital grants; corporate sponsorships. Do not assume Perkins eligibility.
Applied learning technologies	Perkins when allowable and tied to an approved program; state CTE grants; employer investment; philanthropy; NSF ATE through a college partner; competitive innovation grants.
Instructional and laboratory equipment	Perkins when allowable; state CTE categorical/expansion funds; millage; employer and vendor donations; philanthropy; postsecondary partnerships.
Curriculum and faculty development	Perkins; NSF ATE; state workforce/CTE grants; employers; postsecondary partners; philanthropy.
Dual enrollment and Early Middle College	State-authorized K–12 and postsecondary funding; school district resources; college contributions; targeted philanthropy.
Work-based learning and Registered Apprenticeship	U.S. Department of Labor; LEO; Michigan Works!; employers; apprenticeship sponsors; philanthropy for coordination and learner supports.
Learner supports	Michigan Works! and other eligible workforce resources; philanthropy; scholarships; community organizations; local funds; employer sponsorships.

Investment Category	Most Plausible Resource Mix
Operations and maintenance	Millage; school district/city appropriations; tuition or contractual training revenue where appropriate; partner cost-sharing; stable institutional resources.
Replacement and modernization	Millage or capital reserve; local capital plan; employer and vendor investment; periodic grants; philanthropic or corporate campaigns.

L.8 Grant Readiness and Funding Management

Before pursuing individual opportunities, River Rouge should establish a coordinated funding-development process. At minimum, the implementation team should maintain:

- A current phased capital and operating budget identifying one-time and recurring costs.
- A project-readiness inventory covering site control, design status, environmental review, permits, procurement, and match availability.
- A grant calendar showing anticipated state, federal, philanthropic, and corporate cycles.
- A library of reusable materials, including the community need, labor market evidence, program model, employer commitments, learner outcomes, governance structure, sustainability plan, and evaluation framework.
- Written partner commitments defining cash, in-kind contributions, facilities, staffing, equipment, work-based learning, and reporting responsibilities.
- A process for confirming allowable costs and avoiding duplication of funding across awards.
- A capital replacement and modernization plan for technology, instructional equipment, software, and specialized laboratories.
- A single internal funding coordinator or clearly assigned team responsible for opportunity screening, proposal development, compliance, reporting, and partner communication.

Recommended Funding Sequence

- 1. Establish local commitment:** Define ownership, governance, millage/bond strategy, local capital contribution, and recurring operating responsibility.
- 2. Confirm program and facility priorities:** Select initial Career Academy programs, determine what will be delivered at the Center versus through partners, and establish realistic capital and operating budgets.
- 3. Secure anchor partners:** Obtain commitments from school districts, colleges, employers, workforce agencies, and philanthropic partners.
- 4. Match each cost to the correct funding type:** Use capital sources for long-lived assets; program and workforce sources for instruction and learner outcomes; recurring revenue for ongoing operations.
- 5. Pursue leveraged funding packages:** Combine local commitment with state, federal, employer, postsecondary, and philanthropic resources around clearly defined phases.
- 6. Protect long-term sustainability:** Avoid launching programs, purchasing equipment, or accepting donated systems without plans for staffing, maintenance, licensing, consumables, replacement, and continued learner demand.

Strategic Interpretation

The River Rouge Career & Workforce Innovation Center should be financed as a portfolio of investments rather than as a single construction project. A voter-approved millage or other stable local revenue may be necessary to provide the dependable capital and operating base that competitive grants cannot supply. State and federal resources can then be aligned to approved

CTE programs, workforce training, economic development, apprenticeships, clean energy, and technician education. Employers, colleges, foundations, and corporate partners can add equipment, expertise, learner supports, work-based learning, and innovation funding. This layered approach will allow River Rouge to build strategically, leverage regional assets, and modernize the Center over time without depending on any one grant or partner.

Selected Current Resource Links

- [Michigan Department of Education—CTE Funding and Monitoring](#)
- [Michigan Department of Education—Perkins V](#)
- [Michigan LEO—Going PRO Talent Fund](#)
- [U.S. EDA—Public Works and Economic Adjustment Assistance](#)
- [National Science Foundation—Advanced Technological Education](#)
- [Ralph C. Wilson, Jr. Foundation—Young Adults and Working Families](#)
- [Community Foundation for Southeast Michigan—Youth and Education](#)
- [The Skillman Foundation—Grant Process](#)
- [The Kresge Foundation—How to Apply](#)
- [DMC Foundation—Health Education and Community Benefit Grants](#)

APPENDIX M

Facility Planning Resources and Laboratory Design Considerations

Guidance for flexible instructional spaces, shared regional assets, specialized laboratories, technology infrastructure, and long-term facility sustainability

This appendix provides a practical planning framework for translating the educational model of the River Rouge Career & Workforce Innovation Center into facility, space, infrastructure, and laboratory decisions. Consistent with Chapter 8, the Center should be designed as a flexible, technology-enabled regional learning hub rather than a traditional career center defined primarily by numerous dedicated laboratories. The recommended approach prioritizes adaptable instructional spaces, blended delivery, shared regional assets, employer facilities, and selective investment in specialized laboratories only when required competencies cannot be developed or assessed through other means.

The guidance is intended for use by River Rouge, the school district, architects, engineers, educational partners, employers, program faculty, accrediting or licensing bodies, workforce organizations, and potential funders during programming, design, procurement, and future expansion. It should be used together with Appendix I, which identifies representative specialized laboratory equipment and its operating implications.

How to Use This Appendix

- Begin with the educational objective, competency, learner population, and delivery model before defining a physical space or purchasing equipment.
- Determine whether the learning objective can be met through online instruction, applied learning technology, an employer site, a community college laboratory, an apprenticeship training center, a mobile laboratory, or another shared regional asset.
- Develop a dedicated laboratory only when authentic hands-on practice, regulated competency assessment, safety requirements, or industry-standard equipment makes an on-site facility necessary.
- Evaluate the full life-cycle cost of every facility and equipment decision, including construction, utilities, staffing, maintenance, consumables, software, technical support, insurance, and replacement.
- Validate final designs with employers, instructors, students, accessibility specialists, safety professionals, postsecondary partners, and applicable approval, accreditation, or licensing bodies.

M.1 Facility Planning Principles

Planning Principle	Application to the Innovation Center
Flexible and Multipurpose	Design classrooms and project spaces to serve multiple Career Academies, learner populations, and instructional methods. Use movable furnishings, accessible power and data, modular storage, and reconfigurable teaching zones.
Technology-Enabled	Provide building-wide connectivity, adequate electrical capacity, secure device access, audiovisual capability, hybrid-instruction tools, and technical support so learning can occur in person, online, synchronously, or asynchronously.
Locally Anchored and Regionally Connected	Treat employer facilities, community college laboratories, healthcare simulation centers, apprenticeship sites, universities, and mobile training resources as extensions of the Center.
Employer-Responsive	Design spaces and equipment around validated competencies, current workplace practices, work-based learning, and realistic program utilization rather than assumptions about what a traditional career center should contain.

Planning Principle	Application to the Innovation Center
Accessible and Learner-Centered	Apply universal design, accessible technology, clear circulation, appropriate acoustics, inclusive restrooms, safe supervision, and learner-support spaces for youth and adults.
Future-Ready and Sustainable	Plan infrastructure and space so programs can be added, revised, relocated, or discontinued without major reconstruction. Favor systems that can be upgraded, shared, leased, or replaced.

M.2 Laboratory Investment Decision Framework

Before authorizing a specialized laboratory or major equipment purchase, the planning team should document the answers to the following questions. A dedicated laboratory is strongest when several conditions point clearly to the need for on-site instruction and sustained utilization.

Decision Area	Key Planning Question	Documented?
Competency necessity	Does the program require authentic hands-on performance that cannot be developed or assessed through simulation, remote learning, or employer-based instruction?	☐ Yes ☐ No
Regulatory requirement	Do state approval, accreditation, licensing, certification, clinical, apprenticeship, or safety standards require a specific facility, equipment type, or supervised practice environment?	☐ Yes ☐ No
Regional availability	Is comparable space or equipment already available through a community college, university, employer, hospital, apprenticeship center, mobile laboratory, or other regional partner?	☐ Yes ☐ No
Utilization	Will the laboratory be used sufficiently across programs, grades, adult cohorts, evenings, summers, employer training, or partner organizations to justify the investment?	☐ Yes ☐ No
Instructional quality	Will owning the laboratory materially improve learner outcomes, access, scheduling, competency attainment, or employer confidence compared with shared access?	☐ Yes ☐ No
Work-based learning fit	Could the competency be developed more authentically and cost-effectively at an employer site, clinical setting, or apprenticeship training location?	☐ Yes ☐ No
Operational capacity	Are qualified instructors, technicians, supervision, scheduling, maintenance, safety procedures, consumables, and technical support available?	☐ Yes ☐ No
Financial sustainability	Is there a dependable plan for utilities, licenses, maintenance, calibration, upgrades, equipment replacement, insurance, and recurring operating costs after startup funding ends?	☐ Yes ☐ No

M.3 Recommended Space Categories

The Center should be programmed around a balanced mix of flexible spaces, learner-support areas, employer and community engagement spaces, and only those specialized laboratories justified through the decision framework above.

Space Category	Primary Uses	Planning Considerations
Flexible classrooms	Academic instruction, technical theory, seminars, employer presentations, dual enrollment, adult education, and hybrid courses.	Movable furniture; writable surfaces; strong acoustics; power/data access; classroom AV; device charging; secure storage.
Collaborative project studios	Team projects, design challenges, capstones, maker activities, employer-sponsored projects, and durable-skills practice.	Reconfigurable worktables; presentation zones; durable surfaces; portable tools; lockable project storage; adjacent cleanup area.

Space Category	Primary Uses	Planning Considerations
Applied learning and simulation rooms	VR/AR, virtual patients, digital twins, remote laboratories, cybersecurity ranges, and screen-based simulation.	High-capacity network; flexible lighting; clear floor area; headset/device storage and charging; instructor monitoring; acoustic separation.
Computer and digital production spaces	CAD, data analytics, cybersecurity, cloud labs, AI-supported learning, technical documentation, and digital media.	High-performance devices where required; secure network segmentation; software licensing; ergonomic furniture; display and collaboration capability.
Career navigation and learner support	Academic advising, career coaching, enrollment, Michigan Works! services, tutoring, counseling, and employer interviews.	Private and semi-private rooms; accessible technology; confidentiality; welcoming reception; proximity to instruction.
Employer and community engagement spaces	Advisory committees, employer meetings, hiring events, parent engagement, professional development, and community programs.	Flexible meeting rooms; hybrid meeting technology; evening access; presentation capability; convenient entry and wayfinding.
Shared-use specialty laboratories	Hands-on competencies requiring installed equipment but potentially serving multiple academies.	Modular utilities; visibility and supervision; lockable storage; safety zoning; flexible equipment layouts; documented utilization plan.
Program-specific regulated laboratories	Healthcare, welding, high-voltage, machining, or other labs required by program standards.	Designed only after program validation; code, accreditation, ventilation, infection control, safety, utilities, instructor sightlines, and equipment-clearance review.

M.4 Specialized Laboratory Design Considerations

Program and Curriculum Validation

- Confirm the program of study, learner population, schedule, credentials, work-based learning model, expected enrollment, and responsible educational institution before design begins.
- Identify the precise competencies that must be developed or assessed in the laboratory and distinguish them from theory, simulation, career exploration, and employer-site learning.
- Obtain input from faculty, employer subject-matter experts, Program Advisory Committees, postsecondary partners, credentialing organizations, accrediting bodies, and licensing agencies.

Codes, Safety, and Regulatory Requirements

- Coordinate early with building, fire, electrical, mechanical, accessibility, environmental, infection-control, occupational-safety, and local permitting authorities.
- Document requirements for ventilation, fume extraction, compressed gases, medical gases, hazardous materials, chemical storage, high voltage, machine guarding, lockout/tagout, eyewash and shower stations, fire suppression, and emergency power where applicable.
- Provide clear supervision, controlled access, emergency communication, incident response procedures, and age-appropriate safety controls for secondary learners.

Utilities and Infrastructure

- Plan adequate electrical capacity, dedicated circuits, three-phase power where necessary, data connectivity, water, drainage, compressed air, ventilation, cooling, structural loading, ceiling height, door clearances, and equipment service access.
- Use modular utility distribution where practical so equipment can be rearranged or replaced without major reconstruction.
- Allow capacity for future equipment and technology without oversizing every system before program demand is validated.

Accessibility and Universal Design

- Provide accessible routes, work surfaces, controls, seating, equipment interfaces, storage, and emergency systems.
- Address sensory, mobility, cognitive, language, and technology-access needs through universal design and reasonable accommodation planning.
- Ensure that simulation, online platforms, learning-management systems, and digital content meet accessibility expectations and can be used with assistive technologies.

Instructional Operations

- Design for instructor sightlines, safe circulation, demonstration, small-group instruction, competency assessment, student staging, tool control, cleanup, and equipment shutdown.
- Provide sufficient secure storage for tools, consumables, personal protective equipment, student projects, devices, and sensitive materials.
- Separate clean and dirty functions, noisy and quiet zones, public and restricted areas, and incompatible processes.

Technology and Data Security

- Provide secure wired and wireless connectivity, device management, audiovisual capture, learning-management-system integration, cybersecurity controls, and protected storage for learner and employer data.
- Segment networks used for cybersecurity instruction, industrial controls, building systems, and administrative operations.
- Plan for software licensing, updates, vendor support, headset/device sanitation, charging, and technology refresh cycles.

Life-Cycle Cost and Sustainability

- Estimate capital cost together with staffing, faculty certification, utilities, consumables, software, calibration, preventive maintenance, service contracts, inspections, cleaning, waste disposal, insurance, and replacement.
- Identify the recurring funding source before accepting donated or grant-funded equipment that creates future operating obligations.
- Consider leasing, shared ownership, consortial purchasing, mobile equipment, portable trainers, and scheduled partner access when they improve sustainability.

M.5 Regional Shared Asset Assessment

Before developing a new specialized laboratory, River Rouge and its partners should complete an inventory of regional assets and compare the instructional, financial, scheduling, and access implications of partnership delivery with direct ownership.

Potential Asset Partner	Resources to Inventory	Follow-Up
Community colleges and universities	Existing technical laboratories, simulation centers, faculty expertise, dual enrollment, Early College, credit-bearing instruction, and credential testing.	☐ Inventory ☐ Contact ☐ MOU
Employers and healthcare organizations	Industry-standard equipment, production environments, clinical settings, job shadows, internships, incumbent-worker training, mentors, and authentic performance assessment.	☐ Inventory ☐ Contact ☐ MOU

Potential Asset Partner	Resources to Inventory	Follow-Up
Apprenticeship and labor training centers	Skilled-trades laboratories, instructors, safety training, related technical instruction, pre-apprenticeship, and Registered Apprenticeship pathways.	☐ Inventory ☐ Contact ☐ MOU
Michigan Works! and workforce partners	Training funds, supportive services, career navigation, employer outreach, adult learner recruitment, and access to approved providers.	☐ Inventory ☐ Contact ☐ MOU
Mobile and portable training providers	Short-term access to laboratories, simulators, equipment, and instructors without constructing permanent facilities.	☐ Inventory ☐ Contact ☐ MOU
Technology and curriculum vendors	Remote simulation, cloud laboratories, digital twins, virtual patients, VR/AR, curriculum packages, and equipment leasing or demonstration options.	☐ Inventory ☐ Contact ☐ MOU

M.6 Facility and Laboratory Planning Process

Planning Step	Required Action
1. Validate need	Use labor market data, employer input, learner demand, program feasibility, credential requirements, and regional capacity to confirm that the program should move forward.
2. Define the delivery model	Identify which components will occur online, in flexible classrooms, through simulation, at employer sites, at partner institutions, or in a dedicated laboratory.
3. Develop the educational specification	Document competencies, enrollment, schedules, supervision, instructional activities, equipment, storage, safety, utilities, accessibility, technology, and staffing requirements.
4. Assess shared assets	Inventory regional facilities and compare access, transportation, scheduling, quality, cost, capacity, liability, and long-term reliability.
5. Establish the life-cycle budget	Include design, construction, furniture, technology, equipment, software, staffing, utilities, maintenance, consumables, insurance, replacement, and contingency.
6. Complete regulatory review	Confirm MDE and LEO-OCCE requirements, Perkins considerations, local code, accreditation, licensing, credentialing, safety, and institutional approval processes.
7. Design and procure	Engage architects, engineers, faculty, employers, accessibility specialists, safety professionals, IT staff, and procurement personnel. Use performance specifications and total-cost-of-ownership analysis.
8. Commission and evaluate	Test systems and equipment, train instructors and staff, establish maintenance and safety procedures, monitor utilization, and compare learner outcomes with the original educational objectives.

M.7 Pre-Design Documentation Checklist

- ☐ Validated program concept and responsible educational provider
- ☐ Employer Advisory Committee and employer subject-matter expert input
- ☐ Projected learner populations, enrollment, schedules, and utilization
- ☐ Program standards, credential requirements, accreditation, and licensing review
- ☐ Competency map identifying classroom, online, simulation, partner-site, and laboratory delivery
- ☐ Regional shared-asset inventory and partnership feasibility assessment
- ☐ Equipment list with dimensions, utilities, clearances, safety, software, and maintenance requirements
- ☐ Accessibility and universal-design review
- ☐ Information technology, audiovisual, cybersecurity, and data requirements
- ☐ Instructor, technician, supervision, and professional-development plan

- ☐ Capital and recurring operating budget, including equipment replacement
- ☐ Facility-use, equipment-sharing, liability, and maintenance agreements where applicable
- ☐ Performance measures for utilization, learner access, credential attainment, and employer satisfaction

Strategic Interpretation

The Innovation Center should invest in physical facilities only after confirming that the space is essential to educational quality, learner access, program approval, or competency assessment. Flexible classrooms, technology-enabled learning, employer-based instruction, community college partnerships, apprenticeship training centers, and other shared regional assets should provide the foundation of the delivery model. Specialized laboratories should be developed selectively, designed for high utilization and adaptability, and supported by dependable operating and replacement resources. This approach protects public investment while allowing River Rouge to expand high-quality career pathways as demand, partnerships, and funding develop over time.

Relationship to Other Appendices

- Appendix C identifies Michigan state-approved Career and Technical Education programs and Programs of Study that may influence program approval and facility requirements.
- Appendix G provides a decision framework for selecting educational technologies based on instructional challenges.
- Appendix H identifies representative technology-enabled learning platforms that can reduce dependence on fixed laboratories.
- Appendix I identifies representative specialized laboratory equipment and the capital and operating implications of on-site delivery.
- Appendix J identifies ready-made curriculum and integrated curriculum-plus-equipment vendors.
- Appendix L identifies representative funding resources that may support facility, technology, equipment, program development, and ongoing operations.