Manufacturing Skills for Connecticut:

Review of RHAM High School's Manufacturing for Industry Program

CONNSTEP
a CBIA affiliate

ReadyCT

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Background

This program review report includes observations and key takeaways from data collected as part of the Manufacturing Skills for Connecticut (MSforCT) project and is specific to RHAM High School's Manufacturing for Industry program. The report summarizes information gathered by WestEd between November 2020 and July 2021 through document reviews, surveys, and virtual site visits.

Manufacturing Skills for Connecticut Project Description [1]

Throughout Connecticut, significant gaps exist in the state's manufacturing workforce development system, most notably the dearth of comprehensive education, recruitment, and well-developed career pathways that, collectively, serve to connect industry to education. To address these issues CONNSTEP, in partnership with ReadyCT, the Connecticut Business & Industry Association (CBIA), and the Connecticut Manufacturers' Collaborative (CMC), designed the MSforCT project. The CMC includes all the major regional and statewide manufacturing member organizations across Connecticut, representing over 1200 manufacturing companies with tens of thousands of employees throughout all of Connecticut.

Funded through a grant from the U.S. Department of Commerce National Institute of Standards and Technology (NIST), the MSforCT project (2020-22) aimed to increase and improve career pathways to advanced manufacturing within the K-12 school system. To better understand which programs and models are most effective, remove the silos in which promising programs are operating, and share best practices, the project proposed to:

- complete a comprehensive inventory and analysis of manufacturing career pathway programs and initiatives across K-12 schools/districts;
- conduct program reviews of a subset of programs; and
- build a web-based repository of effective career pathway programs and key criteria for the creation of new programs. This interactive website will also serve as an online community of practice accessible to school districts, business associations, students and families, postsecondary institutions, and other stakeholders.

CONNSTEP contracted with WestEd, a nonprofit educational research, development, and service organization, to conduct the comprehensive inventory and program review. This report summarizes only a portion of the data collected during the overall project period. Specifically, this report focuses on RHAM High School's Manufacturing for Industry program, one of the 13 programs selected for program review, and includes information collected via a state-wide online survey conducted in January 2021 and a virtual site visit conducted in May 2021.

[1] Project description adapted from ReadyCT's Manufacturing Skills for Connecticut webpage and *Manufacturing Skills for Connecticut Project Abstract*.

RHAM High School's Manufacturing for Industry Program

Regional Information

Located within Tolland County, RHAM High School serves the towns of Hebron, Andover, and Marlborough. The region is a growing residential suburban community in east central Connecticut[2]. Capital Workforce Partners (CWP) is the Workforce Investment Board for Hebron, Andover, and Marlborough, however the Eastern Workforce Investment Board (EWIB) serves as the Workforce Investment Board for much of Tolland County and coordinates the Youth Manufacturing Pipeline Initiative (YMPI)[3]. Tolland County is home to 140 manufacturing sector employers[4], including 3M, Brymill Corporation, Charles Boggini Company LLC, CNC Software, Dymotek Corporation, Environics Inc., Logrite Tools LLC, Staples, The Barnyard Enterprises Inc., and TTM Technologies[5]. According to the most recent U.S. Census Bureau statistics[6], Hebron has an estimated population of 9,504, a median household income of $121,200, with 3.4 % of persons living in poverty[7]; Andover has an estimated population of 3,203, a median household income of $105,328, with 2.3 % of persons living in poverty[8]. Marlborough has an estimated population of 6,335, a median household income of $112,557, with 2.5 % of persons living in poverty[9].

District, School, and Program Overview

Founded in 1956, RHAM High School is a public regional school with students in grades 9-12 located in Regional School District 8 (RSD 8). According to data in Edsight[10], 941 students were enrolled at RHAM High School during the 2019-20 school year. The student body was majority white (91.8%) with a female to male ratio of nearly 1:1 (49.3% and 50.7% respectively). Less than one percent of students identified as English learners, while 12.6% identified as students with disabilities. Additionally, 14.2% of students were eligible for free or reduced-price meals. The four-year graduation rate for RSD 8's Class of 2020 was 96.8%. As reported by the National Student Clearinghouse, an average of 70.3% of students enrolled in four-year institutions and 11.4% of students enrolled in two-year institutions in the fall immediately after high school.

RHAM High School's Manufacturing for Industry program launched in the 2019-2020 school year and offers 12th grade students the opportunity to learn hands-on skills in the manufacturing field while earning college credits and pre-apprenticeship hours. The school's program is part of Eastern Connecticut Workforce Investment Board's (EWIB) Youth Manufacturing Pipeline

[2] RHAM High School - 2019-20 School Profile
[3] Norwich Free Academy - Youth Manufacturing Program
[4] Connecticut Department of Labor - Employer List
[5] Tolland County Chamber of Commerce - Manufacturing, Production, & Wholesale
[6] United States Census Bureau - Hamden town, New Haven County, Connecticut
[7] United States Census Bureau - QuickFacts
[8] United States Census Bureau - Total Population
[9] United States Census Bureau - QuickFacts
[10] Edsight - Home

Initiative (YMPI) program. EWIB's YMPI program provides schools with resources, training frameworks, and industry connections with the goal of addressing the hiring needs of local manufacturers. RHAM High School partners with Three Rivers Community College (TRCC), a public community college located in Norwich, Connecticut. Students who successfully complete the program can receive up to nine college credits from TRCC and are eligible to be placed into the workforce through this partnership between RHAM High School and EWIB.

Program Inventory Review

ReadyCT and WestEd worked together throughout fall 2020 to develop a comprehensive statewide inventory of Connecticut-based K-12 advanced manufacturing programs. To identify existing programs, WestEd used Google Forms and consulted with ReadyCT, the Connecticut State Department of Education (CSDE), and industry partners. At the end of this effort, the team had identified over 140 programs related to advanced manufacturing. A list of all programs identified can be found in Appendix A.

Survey and Site Selection Overview

WestEd researchers developed and disseminated an online survey to capture basic program data and inform the selection of programs to be reviewed.

Survey Development

The project team utilized several sources to develop a rubric to define high-quality, high-impact programs, including the Association for Career & Technical Education (ACTE)[11], the Society of Manufacturing Engineers (SME) and SME Education Foundation[12], the National Association of Manufacturers (NAM)[13], and the U.S. Department of Labor, Employment and Training Administration[14]. Survey questions were then developed to mirror the rubric and focused on five broad categories:

- Curriculum Standards and Competencies
- Business and Community Partnerships
- Career Development Offerings
- Sequencing and Articulation
- Access and Equity

[11] Association for Career & Technical Education (ACTE) - 12 Elements of a High-quality CTE Program of Study.
[12] Society of Manufacturing Engineers (SME) & SME Education Foundation - Four Pillars of Manufacturing Knowledge.
[13] National Association of Manufacturers (NAM) - NAM-endorsed Skills Certification System.
[14] U.S. Department of Labor, Employment and Training Administration - Advanced Manufacturing Competency Model.

Survey Dissemination

WestEd administered an online survey to K-12 manufacturing programs from February 3, 2021 through March 12, 2021. A total of 47 schools responded providing information on 51 programs, representing a 33% response rate. A list of all survey respondents can be found in Appendix B.

Site Selection

The project team used a combination of survey responses, site demographics, and industry recommendations to identify the manufacturing programs that would be invited to participate in a program review of high-quality, high-impact manufacturing programs. Using the rubric created (see Appendix D) during the survey development phase, WestEd researchers scored and ranked each completed survey. A higher survey score indicated that, based on the rubric, the program was more closely aligned with elements of a high-quality, high-impact program. However, it is also important to note the limitations of this approach to identifying high-quality, high-impact programs. The primary limitations are that the programs were chosen among only a sample of manufacturing programs that completed the survey; not all surveys provided complete responses; and surveys were completed by respondents playing diverse roles with differing levels of programmatic knowledge. Thus, the sample from which the team identified high-quality, high-impact programs is limited by self-selection and the self-reported nature of the data source. It is possible that other manufacturing programs not responding to the survey are indeed high-quality and/or the programs chosen among the survey respondents provided incomplete or inaccurate information.

In addition to survey rankings, the research team considered ReadyCT's input as it further analyzed the program list. To ensure that the sample included variation, the project team considered region, urban-rural classification, and socioeconomic and diversity indexes to select a list of finalists that were eligible to participate in the program review. Finally, stakeholder feedback was incorporated into the project team's finalist list. The goal was to identify a group of sites that consisted of both programs of interest to the CMC and programs that were willing and able to participate in the evaluation. The final list of programs selected for review can be found in Appendix C.

Visit Overview

WestEd researchers conducted focus groups and interviews with stakeholders from RHAM High School's Manufacturing for Industry program between May 4, 2021 and May 14, 2021. Due to the ongoing coronavirus pandemic and travel restrictions, the activities were held virtually using an online video conferencing system. The purpose of the focus groups and interviews was to gather information on program characteristics and activities to supplement data captured via the survey. Additionally, the focus groups and interviews gathered information from key stakeholders about program strengths and challenges and solicited recommendations. The focus groups and interviews were tailored to stakeholders' roles as outlined below.

- An interview with the technology education teacher
- An interview with the superintendent
- An interview with the principal
- An interview with a project coordinator at Eastern CT Workforce Investment Board (EWIB)
- An interview with the career and technical education department coordinator
- A focus group with five students

Program Review Results

The sections below synthesize information gathered through the program's documents, survey response, and virtual site visit. The results are organized by the framework that most influenced the site selection rubric—the 12 areas of high-quality Career and Technical Education (CTE) that were developed by the Association for Career & Technical Education (ACTE).

Summary by 12 Areas of High-Quality CTE

Standards-aligned and Integrated Curriculum

RHAM High School's Manufacturing for Industry program, which currently consists of one senior level course, Manufacturing for Industry, was originally developed by members from the local industry, postsecondary education, and advanced training center communities and provided by the local workforce investment board, EWIB. The program content is reviewed monthly during program meetings hosted by EWIB and semi-annually during the school's CTE Advisory Board meetings with input from various stakeholders including program leadership, teachers, and industry partners. Currently, the program utilizes OSHA-10[15], a workplace safety and health training, and Tooling U-SME[16], a learning management system software focused on the manufacturing industry, in its curriculum. Students can earn an OSHA-10 and a Tooling U certification after an assessment administered by the EWIB.

Sequencing and Articulation

Currently, RHAM High School's Manufacturing for Industry program consists of one course taken during 12th grade. Program administrators expressed the importance of strategic course scheduling and offering the course during two back-to-back periods to allow students adequate time to dive into the material. Students who successfully complete the course and score at least 60% on EWIB's end-of-semester assessment, earn a either a Quality Control or Computer Aided Design (CAD) certificate endorsed by the industry board and are eligible to receive up to nine college credits (three classes) at no cost from Three Rivers Community College (TRCC). This benefits students who wish to enter the workforce by allowing them to already have their EWIB certification when looking for jobs and also benefits students who are interested in pursuing

[15] United States Department of Labor - Outreach Training Program
[16] Tooling U-SME - Home

postsecondary opportunities by allowing them to already have college credits upon entering a postsecondary institution.

Student Assessment

The program utilizes a variety of assessment forms including both written and project-based assessments. Students are given a pre-assessment exam in the late fall of their senior year to determine a student's level of knowledge going into the course in January. Score results are provided quickly and if students don't pass the exam, they are provided with remediation support and retested in March, after the course has begun. Students must pass the course by June. RHAM has a 80-90% passing percentage rate. Beyond this assessment, the majority of assessments are project-based allowing students an opportunity to demonstrate their knowledge.

Prepared and Effective Program Staff

There is currently one manufacturing teacher, who was already working within the district prior to the pipeline starting and moving into this position. This teacher collaborates with industry representatives, peer teachers, and workforce development support on course materials design and development. Employer partners encourage the teacher to visit their manufacturing facilities in person to see the equipment and keep current with the machines and equipment, as well as the field in general. RHAM focuses largely on collaboration and provides time in the schedule for the teacher to collaborate with general content teachers and others to address student learning needs.

Engaging Instruction

Students engage in a variety of instructional approaches, including lectures, online modules, and project-based learning. While there is a need for lectures and online modules, the priority instructional approach is project-based learning to allow students hand-on learning opportunities. Students found this type of learning the most valuable method of instruction because it allows them to learn in a physical way. Students are able to see the development of their learning over time as well as the practical applications.

Access and Equity

Students are recruited to the program through the use of printed materials, guidance activities, and family engagement evenings. Program administration begins recruitment as early as eighth grade to begin introducing students to the manufacturing program. There is also a focus on creating diversity within the manufacturing program. Manufacturing is historically a male dominated field. Administration recognizes that this can create barriers to other students seeing manufacturing as accessible. Therefore, there is a direct effort made to recruit female students into the program and target these students in their marketing efforts. For example, the lab was painted and rehabilitated to create a more aesthetically pleasing environment.

Facilities, Equipment, Technology and Materials

Students have access to equipment and technology for hands-on work, including digital readout lathes, CNC lathes, a CNC router, a drill press, a milling machine, and a horizontal bandsaw. The program is primarily funded by a combination of state, district, and federal sources, however administration also makes it a priority to apply for supplemental grants to secure funding for additional equipment and maintenance.

Business and Community Partnerships

The program relies heavily on business and community partnerships, all of which are negotiated by EWIB. In addition to the employer support garnered via the school's EWIB affiliation, program staff actively seek out partnerships through networking. The district also has articulation agreements with other institutions of higher education in CT, such as Manchester Community College, Eastern Connecticut State University, and UCONN, but the primary partner for the manufacturing program is Gateway Community College.

Student Career Development

While in the program students have access to a variety of career development opportunities. Some of these include doing career assessments, creating a personalized multi-year student success plan, and having peer or professional mentoring. Students are also given access to career fairs with industry speakers, job shadowing opportunities, company tours, and resources to help students learn about careers in manufacturing through online job search websites. Additionally, students complete resumes, mock interviews, and communications techniques practice throughout the semester. After graduation the students in the manufacturing program are transitioned to EWIB where they are assigned career counselors to help them with further career development and placement.

Career and Technical Student Organizations (CTSOs)

RHAM High School has two Career and Technical Student Organizations (CTSOs) . The first is Distributive Education Clubs of America (DECA) which is an organization for students interested in marketing, finance, hospitality, and/or management. The second is the Technology Student Association (TSA) which is an organization devoted exclusively to the needs of students interested in science, technology, engineering, and mathematics (STEM). Although neither association is focused on manufacturing, students from RHAM High School's Manufacturing for Industry program are welcome to join either CTSO.

Work-based Learning

The program defines its course as a "simulated work environment" and the instructor aims to structure the course to mirror the conditions of a manufacturing work environment. Additionally, students who successfully complete the program are awarded 130-150 pre-apprenticeship hours from the Connecticut Department of Labor. There is as yet, not an internship opportunity for students as the program launched during the 2019-2020 school year when COVID-19 emerged.

Data and Program Improvement

Program administration, including the CTE Coordinator, teachers, employers, network advisors and EWIB members, systematically collects and uses data to inform continuous program evaluation and improvement. One major data source utilized is the pre-assessment data. These data allow program staff to support students to ensure they have the prerequisite skills to achieve success in the program. Program administrators also routinely meet with stakeholders to discuss data and program needs. The industry partnership pushes the program toward improvement through continuous feedback and input into the program's design.

Additionally, EWIB informally collects outcome data on participant workforce placement or enrollment into a postsecondary program. Program administration indicated they collected this information based "on word of mouth from either the student or the employer."

Final Reflections and Takeaways

RHAM High School's Manufacturing for Industry program is a relatively new program that benefits from experienced, committed staff members and a network of dedicated business partners. The program was off to a strong start but has recently been impacted by the COVID-19 pandemic. Restrictions caused by the pandemic have limited the school's ability to fully implement aspects of the program that require in-person hands-on environments. When students are able to reenter the classroom to full capacity, there will be a strong effort to continue the hands-on work done prior to the pandemic to support students in getting the most out of the program experience.

Appendix A: Inventory of CT K-12 Advanced Manufacturing Programs, by District

Ansonia School District

Ansonia High School, Ansonia, CT

Berlin School District

Berlin High School, Berlin, CT

Bolton School District

Bolton High School, Bolton, CT

Bridgeport School District

Bassick High School, Bridgeport, CT
Bridgeport Regional Vocational Aquaculture School, Bridgeport, CT
Central High School, Bridgeport, CT
Fairchild Wheeler Interdistrict Multi-Magnet High School, Bridgeport, CT
Kolbe Cathedral High School, Bridgeport, CT
Warren Harding High School, Bridgeport, CT

Bristol School District

Bristol Central High School, Bristol, CT
Bristol Eastern High School, Bristol, CT

Brookfield School District

Brookfield High School, Brookfield, CT

Capitol Region Education Council

Academy of Aerospace and Engineering, Windsor, CT

Cheshire School District

Cheshire High School, Cheshire, CT

Clinton School District

The Morgan School, Clinton, CT

Colchester School District

Bacon Academy, Colchester, CT

Connecticut Technical Education and Career System (CTECS)

A. I. Prince Technical High School, Hartford, CT
Bristol Technical Education Center, Bristol, CT
Bullard-Havens Technical High School, Bridgeport, CT
E. C. Goodwin Technical High School, New Britain, CT
Eli Whitney Technical High School, Hamden, CT
Ella T. Grasso/Southeastern Technical High, Groton, CT
Emmett O'Brien Technical High School, Ansonia, CT
H. C. Wilcox Technical High School, Meriden, CT
Harvard H. Ellis Technical High School, Danielson, CT
Henry Abbott Technical High School, Danbury, CT
Howell Cheney Technical High School, Manchester, CT
J.M. Wright Technical High School, Stamford, CT

Norwich Technical High School, Norwich, CT
Oliver Wolcott Technical High School, Torrington, CT
Platt Technical High School, Milford, CT
Vinal Technical High School, Middletown, CT
W. F. Kaynor Technical High School, Waterbury, CT
Windham Technical High School, Windham, CT

Coventry School District

Coventry High School, Coventry, CT

Cromwell School District

Cromwell High School, Cromwell, CT

Danbury School District

Danbury High School, Danbury, CT

Darien School District

Darien High School, Darien, CT

Derby School District

Derby High School, Derby, CT

East Granby School District

East Granby High School, East Granby, CT

East Haddam School District

Nathan Hale-Ray High School, Moodus, CT

East Hartford School District

East Hartford High School, East Hartford, CT
Synergy Alternative High School, East Hartford, CT
Woodland School, East Hartford, CT

East Haven School District

East Haven High School, East Haven, CT

East Lyme School District

East Lyme High School, East Lyme, CT

Eastern Connecticut Regional Educational Service Center (EASTCONN)

Quinebaug Middle College, Danielson, CT

Ellington School District

Ellington High School, Ellington, CT

Enfield School District

Enfield High School, Enfield, CT

Fairfield School District

Fairfield Ludlowe High School, Fairfield, CT
Fairfield Warde High School, Fairfield, CT

Farmington School District

Farmington High School, Farmington, CT

Glastonbury School District

Glastonbury High School, Glastonbury, CT

Granby School District

Granby Memorial High School, Granby, CT

Greenwich School District

Greenwich High School, Greenwich, CT

Griswold School District

Griswold High School, Griswold, CT

Groton School District

Robert E. Fitch High School, Groton, CT

Guilford School District

Guilford High School, Guilford, CT

Hamden School District

Hamden High School, Hamden, CT

Hartford School District

Hartford Public High School, Engineering & Green Technology Pathway, Hartford, CT

Pathways Academy of Technology & Design, East Hartford, CT

Killingly School District

Killingly High School, Killingly, CT

LEARN

Connecticut River Academy, East Hartford, CT

Lebanon School District

Lyman Memorial High School, Lebanon, CT

Ledyard School District

Ledyard High School, Ledyard, CT

Madison School District

Daniel Hand High School, Madison, CT

Manchester School District

Manchester High School, Manchester, CT

Meriden School District

Francis T. Maloney High School, Meriden, CT

Orville H. Platt High School, Meriden, CT

Middletown School District

Middletown High School, Middletown, CT

Milford School District

Joseph A. Foran High School, Milford, CT

The Academy, Milford, CT

Milford School District

Jonathan Law High School, Milford, CT

Monroe School District

Masuk High School, Monroe, CT

Montville School District

Montville High School, Oakdale, CT

New Britain School District

New Britain High School, New Britain, CT

New Canaan School District

New Canaan High School, New Canaan, CT

New Haven School District

Metropolitan Business Academy, New Haven, CT
Riverside Education Academy, New Haven, CT

New Haven School District

Engineering - Science University Magnet School, West Haven, CT
Wilbur Cross High School, New Haven, CT

New London School District

New London High School, New London, CT

Newtown School District

Newtown High School, Sandy Hook, CT

North Stonington School District

Wheeler High School, North Stonington, CT

Norwich Free Academy

Norwich Free Academy, Norwich, CT

Old Saybrook School District

Old Saybrook High School, Old Saybrook, CT

Plainfield School District

Plainfield High School, Plainfield, CT

Plainville School District

Plainville High School, Plainville, CT

Plymouth School District

Terryville High School, Terryville, CT

Portland School District

Portland High School, Portland, CT

Regional School District 1

Housatonic Valley Regional High School, Falls Village, CT

Regional School District 4

Valley Regional High School, Deep River, CT

Regional School District 5

Amity Regional High School, Woodbridge, CT

Regional School District 7

Northwestern Regional High School, Winsted, CT

Regional School District 8

RHAM High School, Hebron, CT

Regional School District 10

Lewis S. Mills High School, Burlington, CT

Regional School District 12

Shepaug Valley School, Washington, CT

Regional School District 15

Pomperaug High School, Southbury, CT

Regional School District 16

Woodland Regional High School, Beacon Falls, CT

Regional School District 17

Haddam-Killingworth High School, Higganum, CT

Regional School District 18

Lyme-Old Lyme High School, Old Lyme, CT

Regional School District 19

E. O. Smith High School, Storrs, CT

Rocky Hill School District

Rocky Hill High School, Rocky Hill, CT

Seymour School District

Seymour High School, Seymour, CT

Shelton School District

Shelton High School, Shelton, CT

Simsbury School District

Simsbury High School, Simsbury, CT

Somers School District

Somers High School, Somers, CT

South Windsor School District

South Windsor High School, South Windsor, CT

Southington School District

Southington High School, Southington, CT

Stafford School District

Stafford High School, Stafford Springs, CT

Stamford School District

The Academy of Information Technology, Stamford, CT

Stonington School District

Stonington High School, Stonington, CT

Stratford School District

Frank Scott Bunnel High School, Stratford, CT

Stratford School District

Stratford High School, Stratford, CT

Suffield School District

Suffield High School, Suffield, CT

Thomaston School District

Thomaston High School, Thomaston, CT

Thompson School District

Tourtellotte Memorial High School, North Grosvenordale, CT

Torrington School District

Torrington High School, Torrington, CT

Trumbull School District

Trumbull High School, Trumbull, CT

Unified School District #1

State of Connecticut Department of Correction, Wethersfield, CT

Vernon School District

Rockville High School, Vernon, CT

Wallingford School District

Lyman Hall High School, Wallingford, CT

Mark T. Sheehan High School, Wallingford, CT

Waterbury School District

Waterbury Career Academy, Waterbury, CT

Waterbury School District

Crosby High School, Waterbury, CT

John F. Kennedy High School, Waterbury, CT

Wilby High School, Waterbury, CT

Waterford School District

Waterford High School, Waterford, CT

Watertown School District

Watertown High School, Watertown, CT

West Hartford Public Schools

Conard High School, West Hartford, CT

William H. Hall High School, West Hartford, CT

West Haven School District

West Haven High School, West Haven, CT

Westbrook School District

Westbrook High School, Westbrook, CT

Wethersfield School District

Wethersfield High School, Wethersfield, CT

Windham School District

Windham High School, Windham, CT

Windsor School District

Windsor High School, Windsor, CT

Windsor Locks School District

Windsor Locks High School, Windsor Locks, CT

Wolcott School District

Wolcott High School, Wolcott, CT

Woodstock Academy

The Woodstock Academy, Woodstock, CT

Appendix B: CT Advanced Manufacturing Program Survey Respondents, by District

Ansonia School District
- Ansonia High School, Ansonia, CT

Bridgeport School District
- Bassick High School, Bridgeport, CT

Bristol School District
- Bristol Central High School, Bristol, CT
- Bristol Eastern High School, Bristol, CT

Cheshire School District
- Cheshire High School, Cheshire, CT

Colchester School District
- Bacon Academy, Colchester, CT

Connecticut Technical Education and Career System (CTECS)
- Bristol Technical Education Center, Bristol, CT
- Bullard-Havens Technical High School, Bridgeport, CT
- Eli Whitney Technical High School, Hamden, CT
- H. C. Wilcox Technical High School, Meriden, CT
- Harvard H. Ellis Technical High School, Danielson, CT
- Platt Technical High School, Milford, CT
- Vinal Technical High School, Middletown, CT
- W. F. Kaynor Technical High School, Waterbury, CT

Coventry School District
- Coventry High School, Coventry, CT

East Granby School District
- East Granby High School, East Granby, CT

East Haddam School District
- Nathan Hale-Ray High School, Moodus, CT

East Hartford School District
- East Hartford High School, East Hartford, CT

East Haven School District
- East Haven High School, East Haven, CT

Eastern Connecticut Regional Educational Service Center (EASTCONN)
- Quinebaug Middle College, Danielson, CT

Glastonbury School District
- Glastonbury High School, Glastonbury, CT

Griswold School District
- Griswold High School, Griswold, CT

Hamden School District
- Hamden High School, Hamden, CT

Hartford School District

HPHS Academy of Engineering & Green Technology, Hartford, CT

LEARN

Connecticut River Academy, East Hartford, CT

Lebanon School District

Lyman Memorial High School, Lebanon, CT

Madison School District

Daniel Hand High School, Madison, CT

Manchester School District

Manchester High School, Manchester, CT

New Britain School District

New Britain High School, New Britain, CT

Plainfield School District

Plainfield High School, Plainfield, CT

Plainville School District

Plainville High School, Plainville, CT

Regional School District 16

Woodland Regional High School, Beacon Falls, CT

Regional School District 8

RHAM High School, Hebron, CT

Rocky Hill School District

Rocky Hill High School, Rocky Hill, CT

South Windsor School District

South Windsor High School, South Windsor, CT

Stonington School District

Stonington High School, Stonington, CT

Suffield School District

Suffield High School, Suffield, CT

Thomaston School District

Thomaston High School, Thomaston, CT

Thompson School District

Tourtellotte Memorial High School, North Grosvenordale, CT

Torrington School District

Torrington High School, Torrington, CT

Unified School District #1

State of Connecticut Department of Correction, Wethersfield, CT

Wallingford School District

Lyman Hall High School, Wallingford, CT

Waterbury School District

Waterbury Career Academy, Waterbury, CT

West Hartford Public Schools

Conard High School, West Hartford, CT

William H. Hall High School, West Hartford, CT

Windham School District

Windham High School, Windham, CT

Windsor School District

Windsor High School, Windsor, CT

Appendix C: Final List of CT Programs Selected for Review

Bacon Academy Manufacturing at Bacon Academy Colchester School District, Colchester, CT
Bristol Manufacturing Production Pathway at Bristol Central & Bristol Eastern High Schools Bristol School District, Bristol, CT
Early College Advanced Manufacturing Program at Connecticut River Academy LEARN Regional Education Service Center, East Hartford, CT
Precision Machining Technology at Eli Whitney Technical High School Connecticut Technical Education and Career System (CTECS), Hamden, CT
Hamden Engineering Careers Academy at Hamden High School Hamden School District, Hamden, CT
Intro to Manufacturing at Lyman Hall High School Wallingford School District, Wallingford, CT
Manchester Public Schools Manufacturing Program at Manchester High School Manchester School District, Manchester, CT
Academy of Manufacturing, Engineering & Technology (MET) at New Britain High School New Britain School District, New Britain, CT
Manufacturing for Industry: YMPI with EWIB at RHAM High School Regional School District 8, Hebron, CT
Manufacturing Pathway at Tourtellotte Memorial High School Thompson School District, North Grosvenordale, CT
Precision Machining Technology at Vinal Technical High School Connecticut Technical Education and Career System (CTECS), Middletown, CT
Manufacturing Academy at Waterbury Career Academy Waterbury School District, Waterbury, CT
Career and Technical Education at Windsor High School[17] Windsor School District, Windsor, CT

[17] Windsor High School declined to participate in the program review.

Appendix D: Scoring Rubric

Category Name	Full Question	Response Required to Receive Point	Related High-quality CTE Program Element	Element-Weighted Score	Non-Weighted Score
Identified Student Populations	Has your program identified student populations in your vicinity that are typically underserved educationally or underemployed due to educational, economic or other barriers?	Yes	Access and Equity	0.3333333333	1
Identified Root Causes	Has your program identified the root causes of identified gaps in participation and performance of these student groups?	Yes	Access and Equity	0.3333333333	1
Orgs to Support Access & Equity	Has your program utilized any organizations and/or resources to support your efforts related to access and equity?	Yes	Access and Equity	0.3333333333	1
Business Partnerships	Is your program involved in any business partnerships?	Yes	Business and Community Partnerships	0.5	1
Community Partnerships	Is your program involved in any community partnerships (i.e., partnerships with nonprofit organizations, public agencies, and/or government offices)?	Yes	Business and Community Partnerships	0.5	1

Category Name	Full Question	Response Required to Receive Point	Related High-quality CTE Program Element	Element-Weighted Score	Non-Weighted Score
CTSOs	Has your school established one or more Career and Technical Student Organizations (CTSOs)?	Yes	Career and Technical Student Organizations (CTSOs)	1	1
Age: > 5 Years	Calculated age using starting year provided	> 5 Years	Data and Program Improvement	0.5	1
Program Data	Please describe the types of data the program collects and how data are used.	Response Provided	Data and Program Improvement	0.5	1
Specialized Facilities	Please describe any specialized facilities, equipment, technology, and/or materials available to program participants. Please provide any relevant website links or documentation.	Response Provided	Facilities, Equipment, Technology and Materials	1	1
Staff PD	Do program staff have opportunities to participate in professional learning activities specific to advanced manufacturing?	Yes	Prepared and Effective Program Staff	1	1
Sequenced Courses	Does the program structure require students to take courses in a SEQUENCE (e.g., Advanced Manufacturing Technology I, Advanced Manufacturing Technology II, Advanced Manufacturing Technology III, etc.)?	Yes	Sequencing and Articulation	0.3333333333	1

Category Name	Full Question	Response Required to Receive Point	Related High-quality CTE Program Element	Element-Weighted Score	Non-Weighted Score
Credentials	Which of the following industry-recognized credentials does your program offer?	At least 1 selected	Sequencing and Articulation	0.3333333333	1
Credit that Articulates	Which of the following opportunities to earn credit that articulates to the next level of education does your program offer?	At least 1 selected	Sequencing and Articulation	0.3333333333	1
Industry-Recognized Standards & Competencies	Does your program's curriculum incorporate industry-recognized technical standards and competencies (e.g., NIMS, AWS, MSSC, etc.)?	Yes	Standards-aligned and Integrated Curriculum	0.25	1
Employability Skill Standards	Does your program's curriculum incorporate employability skill standards, such as problem solving, critical thinking, teamwork, communications, interview skills, and workplace etiquette, that help students succeed in the workplace?	Yes	Standards-aligned and Integrated Curriculum	0.25	1
Publicly Available Standards	Are program standards publicly available and accessible?	Yes	Standards-aligned and Integrated Curriculum	0.25	1
Curriculum Reviewed Regularly	Is the program's curriculum reviewed regularly?	Yes	Standards-aligned and Integrated Curriculum	0.25	1

Category Name	Full Question	Response Required to Receive Point	Related High-quality CTE Program Element	Element-Weighted Score	Non-Weighted Score
Career Development	Which of the following career development opportunities does your program offer?	At least 1 selected	Student Career Development	1	1
Work-based Learning	Which of the following work-based learning opportunities does your program offer?	At least 1 selected	Work-based Learning	1	1
			Total Possible Score:	**10**	**19**