

Identifying Powerful Pathways.

**Economic Development &
Innovative Workforce Services**

MONROE COMMUNITY COLLEGE

CAREER



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Economic and Workforce Development
and Career Technical Education



Session Agenda



- ▶ **Overview: the Conceptual Framework Guiding Career Pathways at MCC**
 - ▶ **Influences on MCC's Workforce Practice**
 - ▶ **Developing the Data Model to support the Creation of a Career Pathway System**
 - ▶ **Application of Data Framework**
 - ▶ **Implication and Application of Data:**
 - ▶ Instructional Design & Delivery of Curricula
 - ▶ Student Pipeline
 - ▶ Staffing & Operations
 - ▶ Partnerships
- ▶ **What We've Learned**
 - ▶ **Q&A**



Context for Career Pathway Work

The mission of the Economic Development & Innovative Workforce Services (EDIWS) division is to support the businesses and organizations within the greater Rochester area with innovative integrated credit and non-credit workforce and career technical education.

- Actively create and promote a robust applied-STEM, CTE and middle-skill career pathway system
- Support investment in curricula and equipment for academic CTE and industry targeted workforce programming
- Proactively address shortage in educational pipeline (future workforce) and skills gaps in existing (incumbent) workforce
- Aggressive and pervasive outreach to Rochester business and industry using B2B best practices

Career Pathways: A Systems Understanding



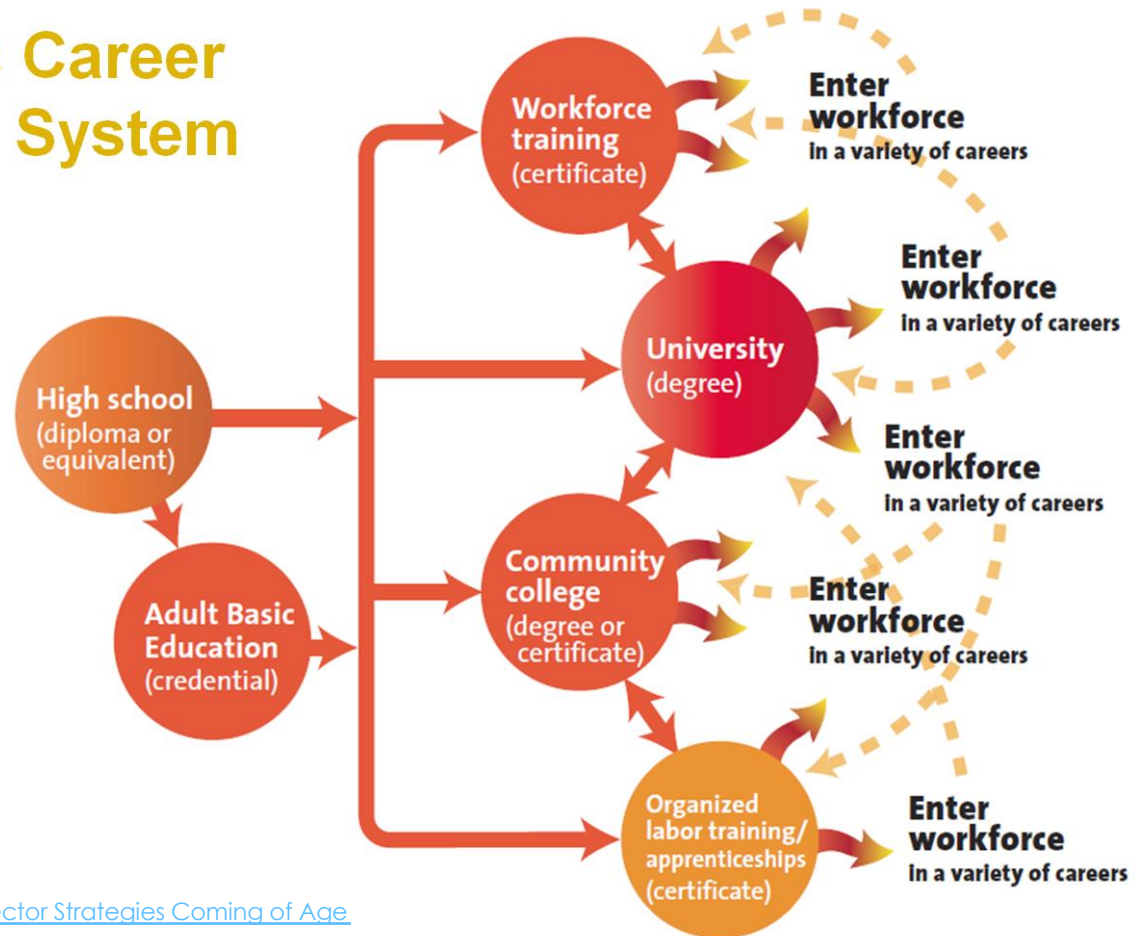
A Career Pathway is a series of connected education and training programs and student support services that enable individuals to secure a job or advance in a demand industry or occupation.

Career Pathways focus on easing and facilitating student transition from high school to community college; from pre-college courses to credit postsecondary programs; and from community college to university or employment.

Applied Economics Perspective of Mission: Increase the number of NY'ers with certificates, credentials, and degrees that are aligned to well paying careers identified and measured within the local economy.

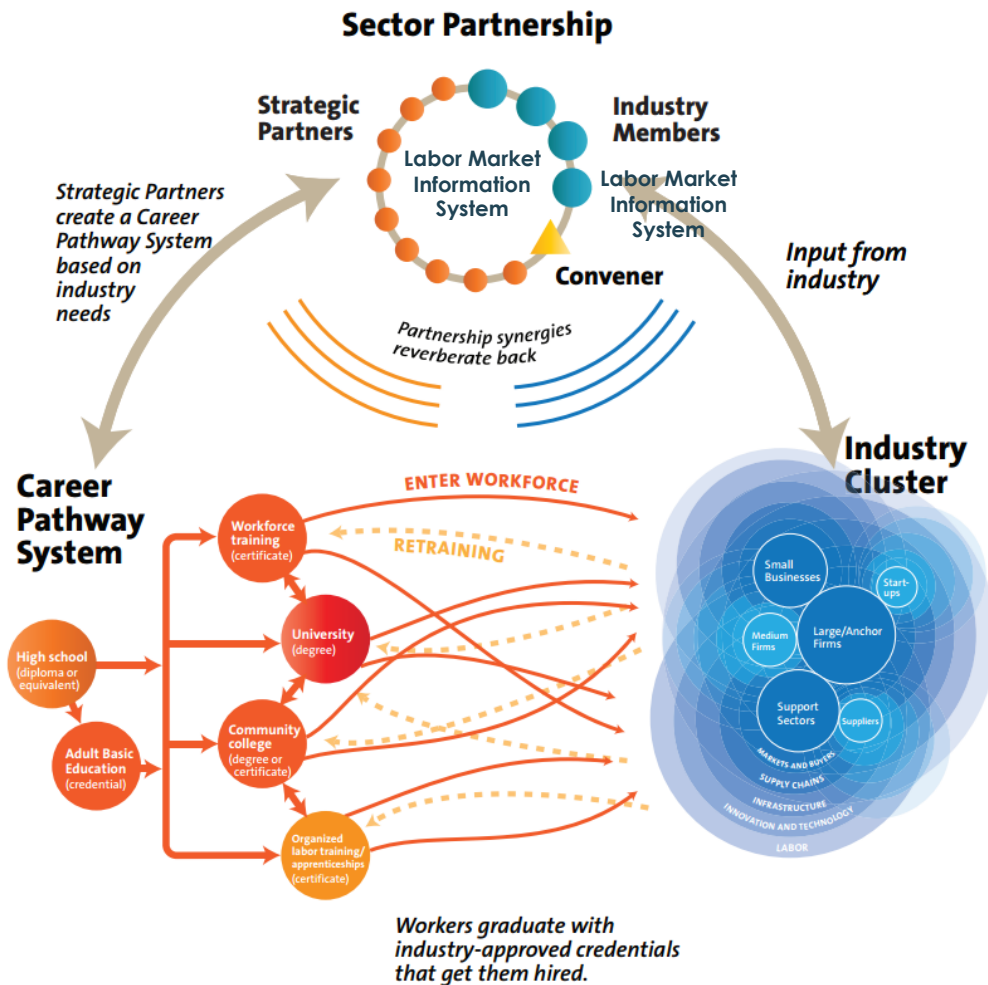


Dynamic Career Pathway System



Source: [National Governors Association: State Sector Strategies Coming of Age](#)

Labor Linking & Careers Pathways

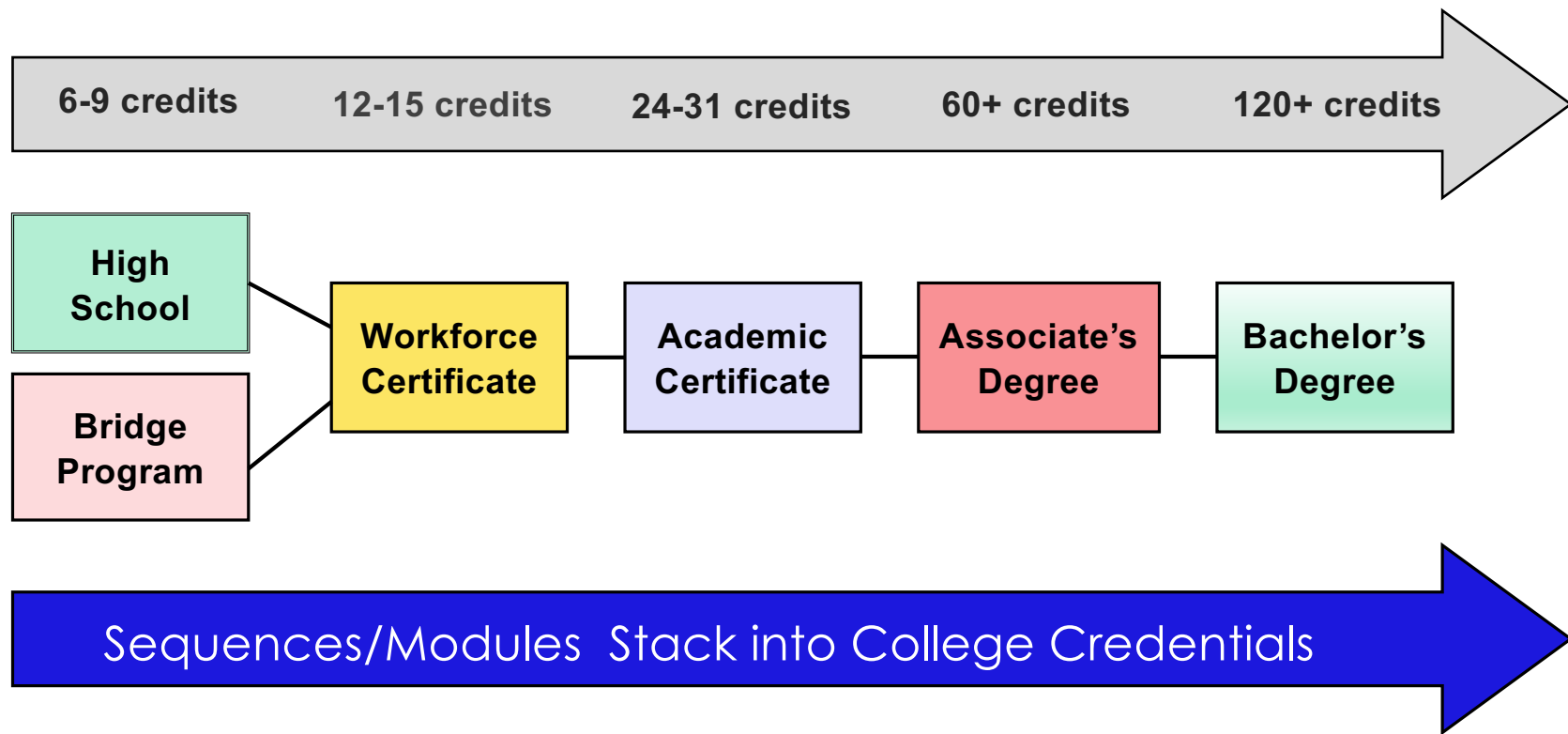


Support for economic development and workforce development partners focused on increased need for access to qualified technical workers

Source: [National Governors Association: State Sector Strategies Coming of Age](#)



Modularized Educational Pathway



Visual adapted for presentation from Batec.org

Definition: What is a Middle-Skilled Worker?



“Middle Skill” occupations refer to those job titles that require education and/or training beyond high school, but not a four-year college degree.

Most job titles in the Middle Skills category require one of the six following educational/training credentials:

- High School diploma (or equivalent) + apprenticeship
- High School diploma (or equivalent) + moderate on-the-job training
- High School diploma (or equivalent) + long-term on-the-job training
- Post-secondary non-degree award (e.g., certificate programs such as Medical Assistant and Certified Nurse Aide)
- Some college, no degree
- Associate Degree

Other terms – New Collar, Gold Collar, Middle Wage, Community College Labor Market



Common Middle-Skilled Workforce Clusters

Advanced
Manufacturing
(skilled
production)

Health Care

Skilled Trades /
Apprenticeship

Travel,
Hospitality &
Tourism

Transportation &
Logistics

Construction

Energy

Information &
Computer
Technology

Applied
Technologies



Conceptual Framework



Summary of Recognized Elements of a Functional Career Pathway



An introduction to career opportunities in a region's high-wage, high-demand employment sectors.

Incorporation of stackable credit certificates along an associate's degree pathway.

Continuing upgrade training.

Addresses the basic skills needed to succeed in postsecondary education and training.

Internships, co-ops and employment as part of a curriculum.

Social and academic supports throughout as necessary

Fink & Inkelas Five-Point Typology Representative of a Learning Community Model



1. Paired or clustered courses.
2. Smaller cohorts among large enrollments, including learning communities.
3. Coordinated or team-taught series of courses.
4. Learning communities for special populations.
5. Residentially based learning communities.

Structured-Based Solutions Implied by *Structure Hypothesis*



Improved access to information & navigation

- More intensive and intrusive advising
- Use of technology to streamline bureaucracy

K-12 curriculum design

- Instructional program coherence
- Constrained curriculum
- New York State's Pathways in Technology (P-Tech) Early College High School program
- 1 + 1 models

Cohort-based Learning communities

- Accelerated associate degree programs (ASAP)
- Accelerated academic certificates
- Stackable certificates/credentials

Integrated post-secondary and developmental curricula

- Washington State's I-BEST program



Developing the Data Model





How to Measure a Career Pathway?

- Create an evaluation framework
- Moving from *estimated* labor outcomes to *actual* labor outcomes
- Translate the data into meaningful change
- Being prepared to organize and provide access to curricula in new ways
- Measuring results
- Working across education and industry partners to align resources and programs – regionally
- Augment Operations for Improvement and Impact

Research Questions Driving MCC's Workforce Practice



What is the annual demand for occupations aligned to a CP?

What are graduates earning in the local labor market in the first five years, after graduation?

How well does an occupation(s) provide the graduate:

- Year over year wage growth
- Attainment of regional self-sufficiency thresholds
- Employment retention/occupational stability/workforce persistence
- Lifetime earnings compared to other CP/Opportunity costs
- Performance relative to a direct four-year degree pathway

How do non-completers working within the career pathway perform in comparison to graduates that have obtained a credential?

Is there a viable and validated practice within CP industry(ies) for occupational progression?

Variables to consider when evaluating a career pathway



- Occupations Linked/Mapped and Aligned to College programming
- Occupational Demand and Industry Growth (Replacement & New)
- **Supply (Completions) and Demand Analysis**
- Wages & Time for Wage Progression
- Benefits as a Percent of Total Compensation*
- Index to Regional Self-Sufficiency Standards & Regional Metrics
- Occupational Churn and Attrition
- Occupational Demographics – 10 Year Age Out Rate
- **Credentials, Competencies and Skills required by employers**
- Ability of workers to ladder to next step occupations within the career pathway(s)



Talent Management and Analysis

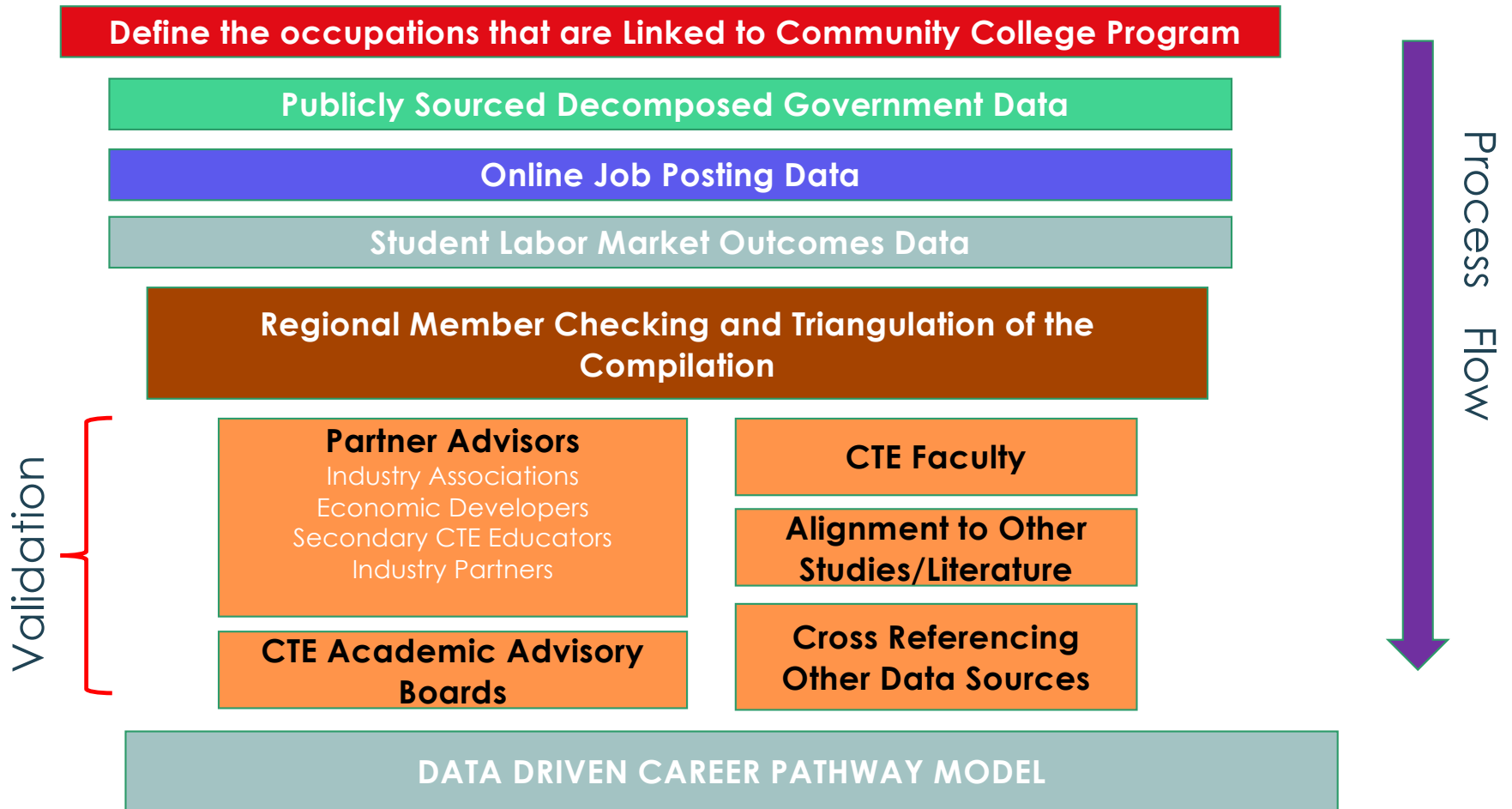
Competitive Factors and Alternative Opportunities:

- Wage range
- Desired education
- Skillsets
- Experience

Factors to compete for scarce supply of workers:

- Identified career progression
- Mission driven organization (e.g., environmental purpose, community focus, etc.)
- Professional development/growth
- Tuition reimbursement
- Organizational culture
- Physical work environment

Compiling A Regional Dataset: MCC's Model



Monroe Community College 2003-2017 Graduate Wage Outcomes in New York State



	MCC Students				Regional Comparison				
	5 th Year Hourly Wage	% Change at 5 th Year	\$ Increase at 5 th Year	Est. Return on Education	50 th %ile for Peer Group	% of 50 th %ile	% of Self-Sufficiency for 1 Adult & 1 Child	% of Self-Sufficiency for 2 Adults & 1 Child	% of 4-Year Degree Wage in the Region
HVAC (AAS)	\$20.16	12.2%	\$10.08	28.8%	\$23.89	84.4%	109.8% <input checked="" type="checkbox"/>	80.6%	75.3%
HVAC (CER)	\$18.58	11.1%	\$8.71	28.8%	\$21.57	86.1%	101.2% <input checked="" type="checkbox"/>	74.3%	69.4%
Computer Systems Technologies (AAS)	\$20.55	8.9%	\$8.22	21.1%	\$26.75	76.8%	111.9% <input checked="" type="checkbox"/>	82.2%	76.7%
Computer Information Systems (AAS)	\$21.84	9.1%	\$8.92	20.4%	\$36.85	59.3%	119.0% <input checked="" type="checkbox"/>	87.4%	81.6%
Electrical Engineering Technologies	\$23.47	7.2%	\$8.04	24.4%	\$26.32	89.2%	127.8% <input checked="" type="checkbox"/>	93.9%	87.6%
Mechanical Engineering Technologies	\$24.46	10.2%	\$10.83	20.8%	\$25.90	94.4%	133.2% <input checked="" type="checkbox"/>	97.8%	91.3%
Optical Systems Technology (AAS)	\$23.81	11.9%	\$11.66	25.5%	\$23.34	102.0% <input checked="" type="checkbox"/>	129.7% <input checked="" type="checkbox"/>	95.2%	88.9%
Tooling & Machining (AAS)	\$23.81	11.9%	\$11.66	25.5%	\$23.34	102.0% <input checked="" type="checkbox"/>	129.7% <input checked="" type="checkbox"/>	95.2%	88.9%
Welding, Non-Credit (CER)	\$18.65	8.9%	\$7.44	38.5%	\$15.93	117.1% <input checked="" type="checkbox"/>	101.6% <input checked="" type="checkbox"/>	74.6%	69.9%

Supply and Demand Analysis: 102 Occupations across 28 Groupings



Advanced Manufacturing

Program	Occupational Group Size	Hourly Wage	Annual Regional Completions	Estimated Annual Demand	Estimated Gap (Δ)	Unique Postings	Posting Intensity	10 Year Age Out
Aggregate Cluster - Advanced Manufacturing	42	\$22.32	275	2,107	-1,832	1,130	5.1	30.7%
Applied Integrated Technologies/Mechatronics	13	\$23.17	84	947	-863	300	5.2	31.7%
Electrical Engineering Technologies	10	\$26.31	43	233	-190	348	5.3	27.2%
Mechanical Engineering Technologies	10	\$25.89	36	596	-560	400	5.6	30.7%
Optical System Technologies	10	\$23.33	31	562	-531	270	6.3	32.2%
Tooling & Machining	20	\$19.54	174	914	-740	311	4.3	30.4%

Applied Technologies

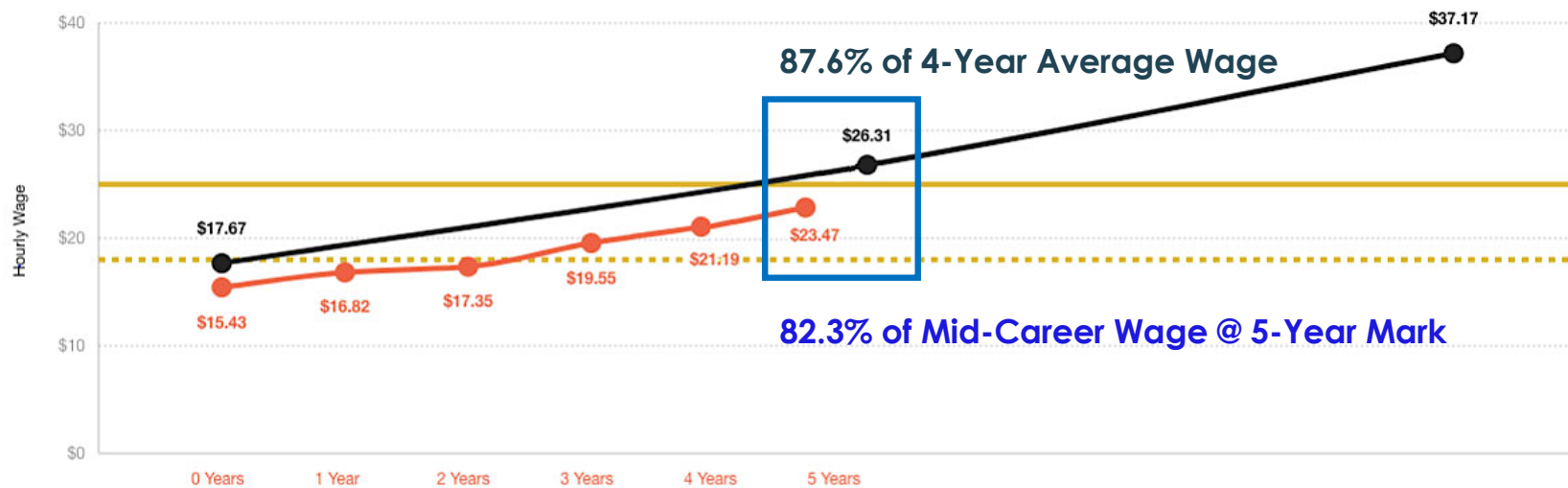
Program	Occupational Group Size	Hourly Wage	Annual Regional Completions	Estimated Annual Demand	Estimated Gap (Δ)	Unique Postings	Posting Intensity	10 Year Age Out
Aggregate Cluster - Applied Technologies	41	\$22.19	514	2,762	-2,248	743	6.3	22.3%
Automotive Technologies	10	\$17.02	190	607	-417	318	6.2	19.1%
Construction Technologies	7	\$25.13	67	601	-534	56	3.8	19.0%
Heating, Ventilation, & Air Conditioning (HVAC)	23	\$23.92	109	1,404	-1,295	376	6.7	25.7%
HVAC: Solar Thermal Technology	3	\$19.89	39	174	-135	52	4.4	16.8%
HVAC: Technologists & Helpers	4	\$21.59	47	413	-366	84	6.5	17.4%
Welding	3	\$15.92	89	169	-80	52	3.3	20.9%

All data is based on the 9 county region: Genesee, Livingston, Monroe, Ontario, Orleans, Seneca, Wayne, Wyoming, and Yates. Aggregate clusters represent unduplicated data for all occupations within that workforce cluster. Occupational Group Size is counted at the 6-digit SOC level. Hourly wage is at the 50th percentile. Completions data is sourced from the Integrated Postsecondary Educational Data System (IPEDS), all other data is sourced from Q4 Emsi Occupational Data. July 2016-June 2017 completions data for associates degrees, awards of at least 1 but less than 2 academic years, awards of less than 1 academic year, and non-credit awards of 1 academic year or less were sourced. Unique Postings and Posting Intensity are for December 2018. The regional average for posting intensity is 4.5:1. 10 Year Age Out is the percentage of individuals 55 years of age or older in that occupational group. A total of 102 individual occupations are captured in this report. More information is available at www.mcclmi.com.

Electrical Engineering Technology



SHOW CLASS EARNINGS CURVE



- Total Workforce Wages for Occupational Group (10th, 50th and 90th percentile)
- 5-Year Median Wage MCC Graduates in Related Programs
- \$25 Self-sufficiency standard for 2 adults + 1 preschooler (Monroe County, NY)
- \$18 Self-sufficiency standard for 1 adult + 1 preschooler (Monroe County, NY)

Understanding the Impact to the Student / Future Worker

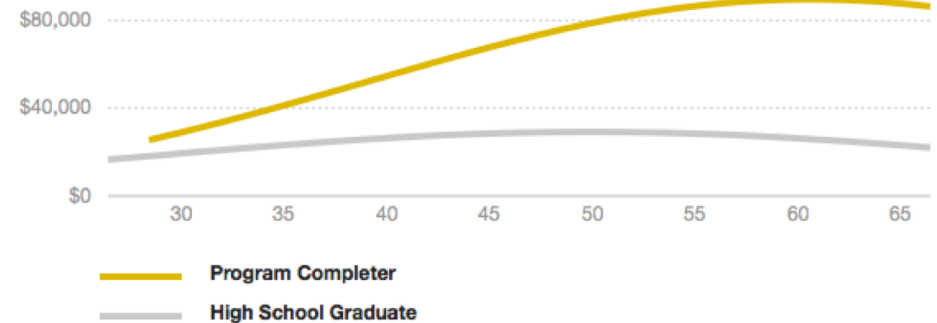


Student Return on Investment.

For every dollar students invest in their education in the Electrical Engineering Technologies program at MCC, they will receive an estimated \$9.70 back over the course of their working lives. This investment provides a 24.4% rate of return. This is a favorable return, especially when compared to the U.S. stock market 30-year average return of 10.1%.

Lifetime Earnings.

Average Annual Earnings



What Defines a Powerful Career Pathway?



Creating a Rubric for Evaluation

Within five years:

- Attained 85% of peer occupational group median wage in 5-years
- Positive year-over-year wage growth for student cohorts
- Met or passed Monroe County self-sufficiency standards
 - 1) Single Parent - \$18 hr., 2). Two working parents + 1 preschooler - \$25hr.
- Achieved 60% attainment of four-year average wage (Monroe County)
- Performance metrics for students of color and females

Overall:

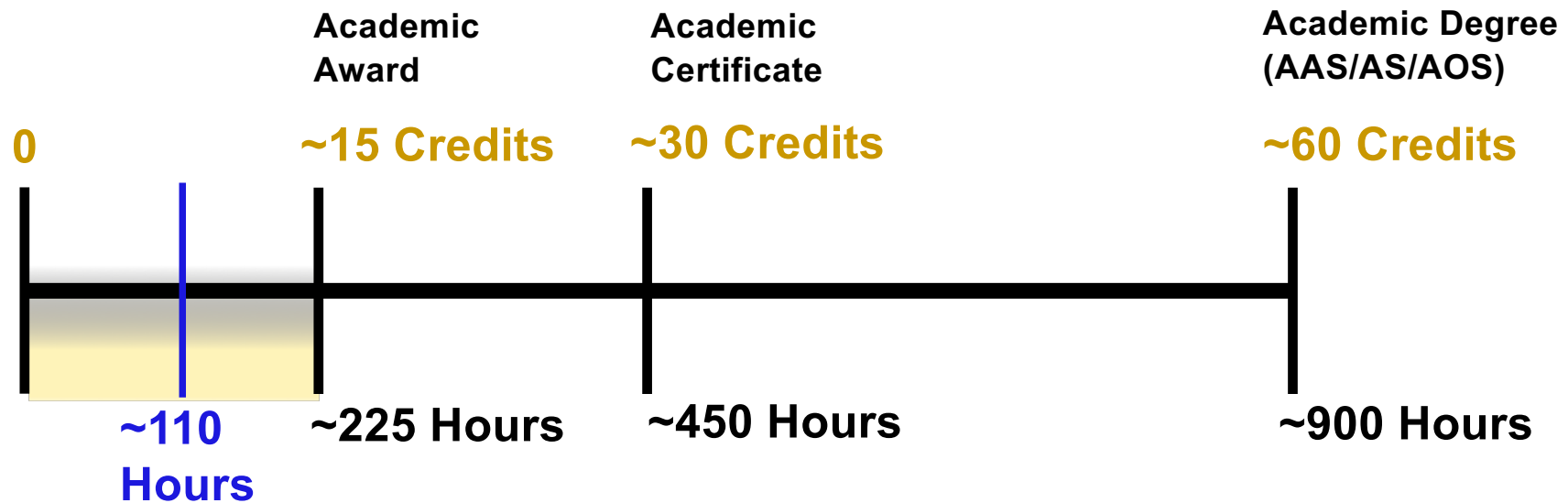
- Significantly greater lifetime earnings over low skill occupation



Modularizing a Career Pathway with Local Labor Market Data



Understanding Career Pathways using Labor Market Outcomes



1st Semester equivalent, stackable

- Intro to Mechatronics
 - Precision Machining
 - HVAC Fundamentals
 - Computer Literacy/Office Tech non-credit courses/certificate
- \$16.00

One-year academic certificate

- Mechatronics Certificate, credit
 - Precision Machining, credit
 - HVAC, credit
 - Medical Office Assistant, Academic Certificate
- \$18.58

Two-year AAS/AOS degree

- Applied Integrated Tech, AAS
 - Precision Machining, AAS
 - HVAC, AAS
 - Office Tech AAS
- \$20.16

Actualizing the Continuum to Scale



Functional Career Pathways

- Modular and Stackable Curricula Design
 - Micro-credentials
- Early College HS, 1+1, Dual Enrollment Sequences
- Active and Measurable Job Placement
- Emphasis on Self-Sustaining and Family-Level Wages
- Accelerated and Cohort-Based Instructional Options
- Emphasis on the non-traditional/contemporary student characteristics and background
- Leading toward Measurable Pathways to Equity
- Increased Appreciation for Risk, Innovation and Non-Traditional Models To Serve Non-Traditional Populations
- Increased demand by industry for bundled competency based education

Interventions & Models



Cohort-based Learning Models

- Peer Cohort
- Faculty Cohort
- Block Schedule for Classes
- Increased Student Support
 - Faculty & Peer to Peer
- Active Job Placement

Early College Career Exploration

- Aligned secondary and post-secondary integration
 - Early College HS/Dual enrollment Sequences
 - 1 + 1 Programs
- Public awareness for middle-skills occupations
- City School District, Industry Associations, Economic Dev.

Early College HS: Career Pathways System Project



Overview

- New 3.5 year project to launch in February 2019
- Focus on developing formal linkages between BOCES, CTE HS programs and MCC Engineering and Applied Technologies programs
- Address select Middle Skills gaps by graduating more students at the post-secondary level (MCC)
- Goal increase MCC yield on CTE oriented students among RCSD, BOCES, Greece and CTE Charter Schools
- Provide nearly \$650K worth of scholarships for high school students taking CTE courses at MCC
- Create **systematic regional awareness** and promotion of Applied-STEM career pathways housed at MCC and their linked job opportunities

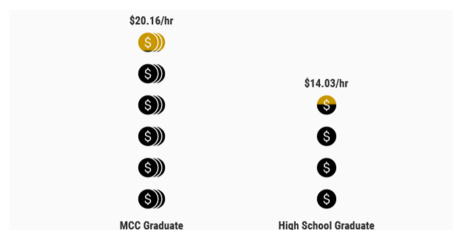




LMI as a Retention Tool: Email Blast to Student

We noticed you haven't registered for courses this coming semester. In case you're wondering...

Why should I finish my MCC degree?
It's worth it.



Graduates from your program earn

44%

more than the typical high school graduate.

SOURCE: www.mccolmi.com

Graduates from MCC's **HVAC** program typically earn **\$20.16** by the fifth year after graduation. That is **44%** more than a typical high school graduate earns at the peak of their lifetime earnings.

The registration deadline is fast approaching. So as you consider your next steps, just remember: completing your MCC degree is **WORTH IT!**

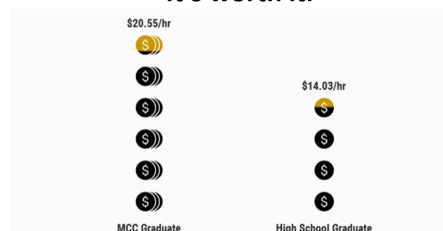
[Click here to register for classes. The deadline is January 15th, 2019.](#)

Click for more information on [advising](#) and [career services](#).

Click for more information on [financial aid](#).

We noticed you haven't registered for courses this coming semester. In case you're wondering...

Why should I finish my MCC degree?
It's worth it.



Graduates from your program earn

46%

more than the typical high school graduate.

SOURCE: www.mccolmi.com

Graduates from MCC's **Computer System Technology** program typically earn **\$20.55** by the fifth year after graduation. That is **46%** more than a typical high school graduate earns at the peak of their lifetime earnings.

The registration deadline is fast approaching. So as you consider your next steps, just remember: completing your MCC degree is **WORTH IT!**

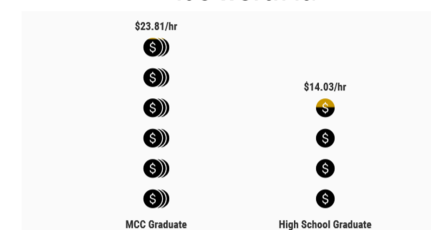
[Click here to register for classes. The deadline is January 15th, 2019.](#)

Click for more information on [advising](#) and [career services](#).

Click for more information on [financial aid](#).

We noticed you haven't registered for courses this coming semester. In case you're wondering...

Why should I finish my MCC degree?
It's worth it.



Graduates from your program earn

70%

more than the typical high school graduate.

SOURCE: www.mccolmi.com

Graduates from MCC's **Optical Systems Technology** program typically earn **\$23.81** by the fifth year after graduation. That is **70%** more than a typical high school graduate earns at the peak of their lifetime earnings.

The registration deadline is fast approaching. So as you consider your next steps, just remember: completing your MCC degree is **WORTH IT!**

[Click here to register for classes. The deadline is January 15th, 2019.](#)

Click for more information on [advising](#) and [career services](#).

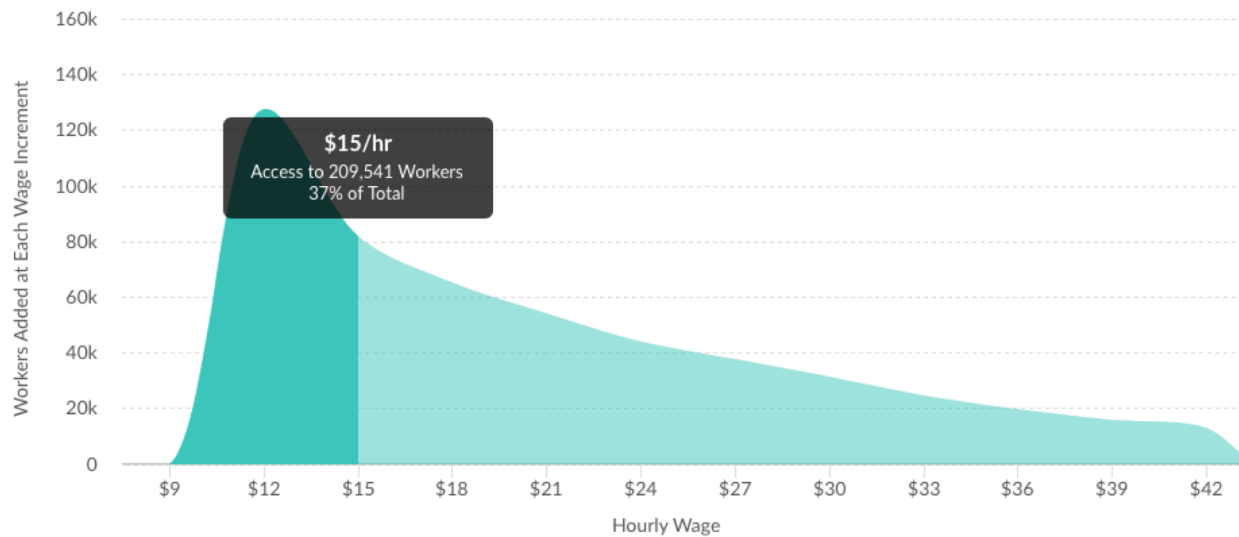
Click for more information on [financial aid](#).

Availability of Workers by Wage Level - Upskilling



Availability by Wage

At **\$15.00/hr**, your available workforce is 209,541.
That's 37% of the entire workforce.



Availability of Workers by Occupation - \$15 hour



Occupation	Workers Making ≤ \$15.00/hr	
Retail Salespersons	15,033	
Cashiers	14,275	
Combined Food Preparation and Serving Workers, Including Fast Food	13,354	
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	8,242	
Personal Care Aides	7,439	
Waiters and Waitresses	6,409	
Teacher Assistants	6,198	
Customer Service Representatives	5,467	
Stock Clerks and Order Fillers	5,357	
Office Clerks, General	4,929	

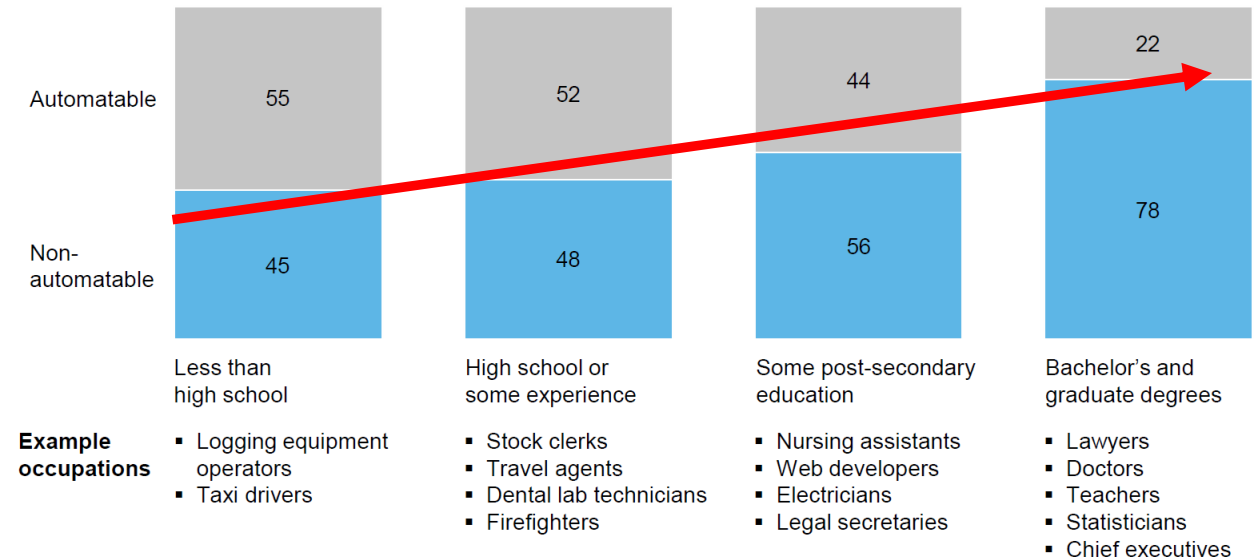
Transitioning the Workforce – Industry 4.0



Exhibit 4

Occupations requiring higher levels of education and experience have lower automation potential

Technical automation potential of work activities by job zone in the United States
%



NOTE: We define automation potential according to the work activities that can be automated by adapting currently demonstrated technology.

SOURCE: US Bureau of Labor Statistics; O*Net; McKinsey Global Institute analysis



Implications on Operations and Staffing

- **Curriculum Development and Apprenticeship**
- **Embedded Education to Employment Services**
- **Corporate Relations Management**
- **Business to Business (B2B) Marketing**
- **Customer Relationship Management**
 - Business/Labor Market Intelligence
- **Academic Recruiter/Program Coordinators**
- **Integration of Credit and Non-credit programming organized along AAS/AOS educational pathways**



A 21st Century Approach to Regional Workforce Education



A partnership between MCC, Monroe County, and area businesses to recruit, train, and place workers quickly into the most in-demand careers in the region with a focus on short cycle training.

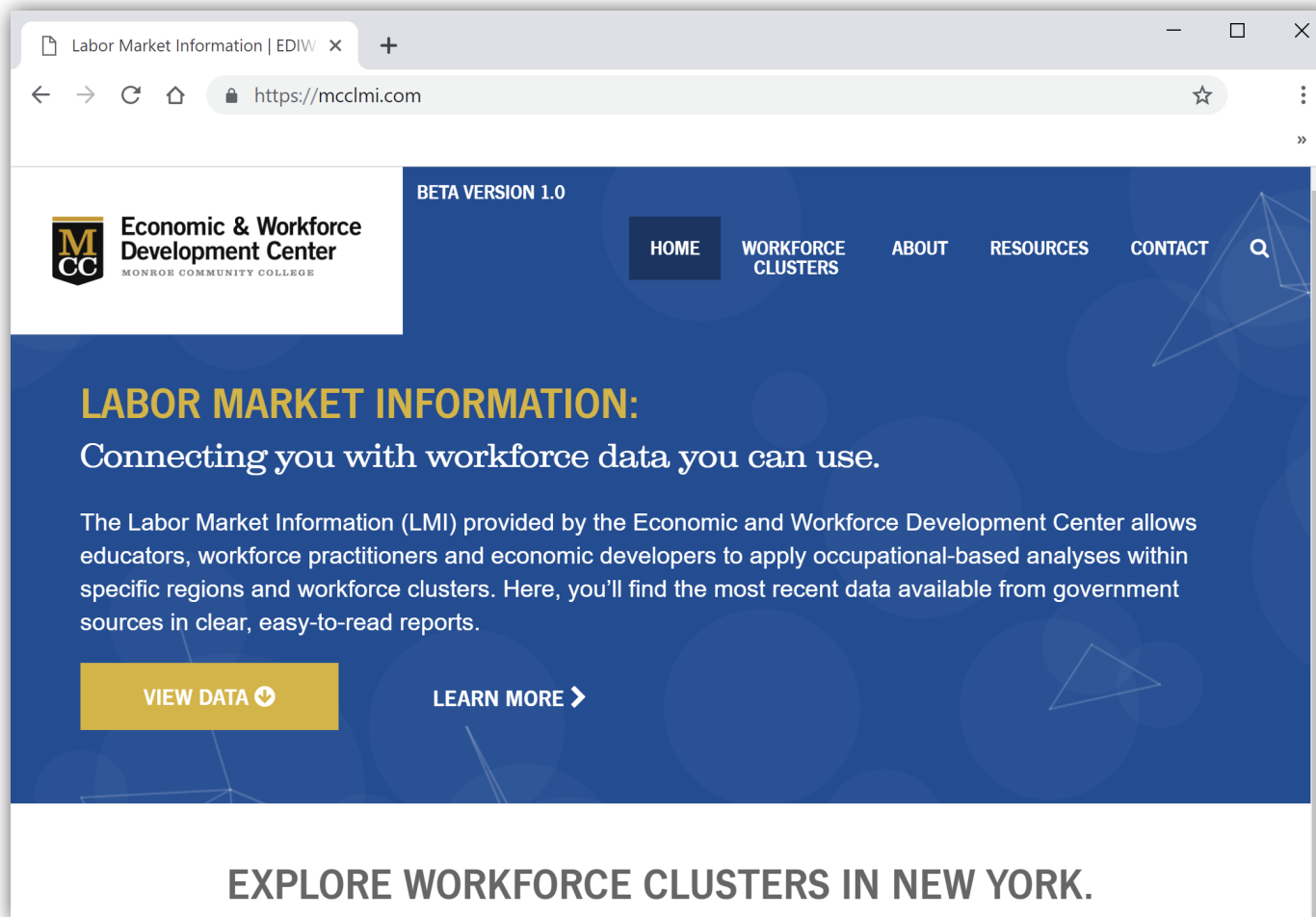
**Renewed for 3 years:
\$1,469,187**

<u>Program to date:</u>	
Total Training Costs:	\$707,910
Total LadderzUP Support:	\$531,093
Total Participants Served:	<u>729</u>



Resources





The screenshot shows a web browser window with the URL <https://mcclmi.com>. The page is titled "Labor Market Information | EDIW" and is labeled as "BETA VERSION 1.0". The header includes the Monroe Community College logo and the text "Economic & Workforce Development Center" and "MONROE COMMUNITY COLLEGE". The navigation menu contains links for "HOME", "WORKFORCE CLUSTERS", "ABOUT", "RESOURCES", and "CONTACT", along with a search icon. The main content area features the heading "LABOR MARKET INFORMATION:" followed by the sub-heading "Connecting you with workforce data you can use." Below this is a paragraph explaining that the LMI is provided by the Economic and Workforce Development Center and allows users to apply occupational-based analyses within specific regions and workforce clusters. At the bottom of the main content area are two buttons: "VIEW DATA" and "LEARN MORE". A white banner at the very bottom of the page reads "EXPLORE WORKFORCE CLUSTERS IN NEW YORK."

Labor Market Information | EDIW

https://mcclmi.com

BETA VERSION 1.0

Economic & Workforce Development Center
MONROE COMMUNITY COLLEGE

HOME WORKFORCE CLUSTERS ABOUT RESOURCES CONTACT

LABOR MARKET INFORMATION:
Connecting you with workforce data you can use.

The Labor Market Information (LMI) provided by the Economic and Workforce Development Center allows educators, workforce practitioners and economic developers to apply occupational-based analyses within specific regions and workforce clusters. Here, you'll find the most recent data available from government sources in clear, easy-to-read reports.

VIEW DATA LEARN MORE

EXPLORE WORKFORCE CLUSTERS IN NEW YORK.



BETA VERSION 1.0

LABOR MARKET RESOURCES.

Access current and past PDF publications compiled by the Economic and Workforce Development Center.

A Supply and Demand Analysis of 28 Middle-Skill Occupations within the Finger Lakes Region

Advanced Manufacturing

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020
Manufacturing Occupations	3	27	47	52	52	52	52	52	52
Manufacturing Jobs	1	100	100	100	100	100	100	100	100
Manufacturing Wages	1	100	100	100	100	100	100	100	100

Applied Technologies

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020
Applied Technologies Occupations	3	27	47	52	52	52	52	52	52
Applied Technologies Jobs	1	100	100	100	100	100	100	100	100
Applied Technologies Wages	1	100	100	100	100	100	100	100	100

Monroe Community College 2013-2020 Graduate Wage Outcomes in New York State

Advanced Manufacturing

Year	2013	2014	2015	2016	2017	2018	2019	2020
Advanced Manufacturing Graduates	100	100	100	100	100	100	100	100
Advanced Manufacturing Wages	100	100	100	100	100	100	100	100

Applied Technologies

Year	2013	2014	2015	2016	2017	2018	2019	2020
Applied Technologies Graduates	100	100	100	100	100	100	100	100
Applied Technologies Wages	100	100	100	100	100	100	100	100



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Select References

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Questions and Discussion

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