

Work-Based Learning Policy Academy TA Webinar Series: **Registered Apprenticeship in STEM**

Friday, March 24, 2017
12:00-1:30 PM EST

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National Governors Association

Housekeeping

- Today's workshop is being recorded
- Participant phone lines are muted
- Submit questions through chat box, question box, or by raising hand
- If you are having technical difficulties with the webinar platform, please submit questions to Geoff King at gking@nga.org.

Webinar Overview

- Registered Apprenticeship Basics and Resources
- Eric Easton – Central Piedmont Community College (Charlotte, NC)
- Pamela Howze – North Carolina Department of Commerce
- Jamie Bernthal – Wisconsin Department of Workforce Development
- Questions & Answers and Wrap-Up

Work-Based Learning Continuum

Career Awareness

Learning ABOUT work.

Build awareness of the variety of careers available and the role of postsecondary education; broaden student options.

Sample Student Learning Outcome

Student can articulate the type of postsecondary education and training required in the career field and its importance to success in that field.

Experience Defined by:

- One-time interaction with partner(s), often for a group of students
- Designed primarily by adults to broaden student's awareness of a wide variety of careers and occupations

Experiences might include:

- Workplace tour
- Guest speaker
- Career fair
- Visit parents at work

Career Exploration

Learning ABOUT work.

Explore career options and postsecondary for the purpose of motivating students and to inform their decision making in high school and postsecondary education.

Sample Student Learning Outcome

Student can give at least two examples of how the student's individual skills and interests relate to the career field and/or occupations.

Experience Defined by:

- One-time interaction with partner(s) for a single student or small group
- Personalized to connect to emerging student interests.
- Student takes an active role in selecting and shaping the experience
- Depth in particular career fields.
- Builds skills necessary for in-depth work-based learning

Experiences might include:

- Informational interview
- Job shadow
- Virtual exchange with a partner

Career Preparation: Practicum and Internships

Learning THROUGH work.

Apply learning through practical experience that develops knowledge and skills necessary for success in careers and postsecondary education.

Sample Student Learning Outcome

Student builds effective collaborative working relationships with colleagues and customers; is able to work with diverse teams, contributing appropriately to the team effort.

An Experience Differentiated by:

- Direct interaction with partners over time
- Application of skills transferable to a variety of careers
- Activities have consequences and value beyond success in the classroom.
- Learning for student and benefit to partner are equally valued

Experiences might include:

- Integrated project with multiple interactions with professionals
- Student-run enterprise with partner involvement
- Virtual enterprise or other extended online interactions with partners
- Projects with partners through industry student organizations
- Service learning and social enterprises with partners
- Compensated internship connected to curriculum

Career Training

Learning FOR work.

Train for employment and/or postsecondary education in a specific range of occupations.

Sample Student Learning Outcome

Student demonstrates knowledge and skills specific to employment in a range of occupations in a career field.

An Experience Differentiated by:

- Interaction with partners over extended period of time
- Benefit to the partner is primary and learning for student is secondary
- Develop mastery of occupation specific skills
- Complete certifications or other requirements of a specific range of occupations

Experiences might include:

- Internship required for credential or entry to occupation
- **Apprenticeship**
- Clinical experience
- On-the-job training
- Work experience

Source: College & Career Academy Support Network, University of California, Berkeley

What is Apprenticesability?

An apprenticeable occupation is one which is recognized by industry

- Involve skills that are customarily learned in a practical way through a **structured, systematic program** of on-the-job supervised learning;
- Be **clearly identified and commonly recognized** throughout an industry;
- Involve the progressive attainment of technical skills and knowledge which, in accordance with the industry standard for the occupation, would require the completion of **at least 2,000 hours of on-the-job learning to attain**; and
- **Require related instruction** to supplement the on-the-job learning.

Basic Program Design for RA – Occupations and Format

Occupation
and Skill
Needs

- Is this an occupation that is widely recognized in the industry or is this a new occupation? (Apprenticeability)
- How long does it take for new workers to become proficient? General minimum: one year/2000 hours.

Program
Design/
Format

- How will you determine when apprentices are proficient?
- Three Options: Time, competency, or hybrid (combination)

Basic Program Design – OJT and Instruction

On the Job Training
(OJT)

- What are the competencies that apprentices must learn on the job?
- Develop a **Work Process Schedule**
- Determine amount of time that is needed to learn competency (many models are available with your Apprenticeship Representative).
- Who will teach and supervise your apprentices?

Technical
Instruction
(Classroom)

- Will you provide the job-related instruction or work with an education partner?
- Many options: Online, community college, vocational schools, in-house, or multiple combinations.
- Recommended Minimum: 144 hours of “classroom instruction”

Deciding on How to Register a Program

Local/State Program

- Most apprenticeship programs will likely be local/state.
- Is the program in a State Apprenticeship Agency State or OA state?
- Meet with apprenticeship staff for guidance.

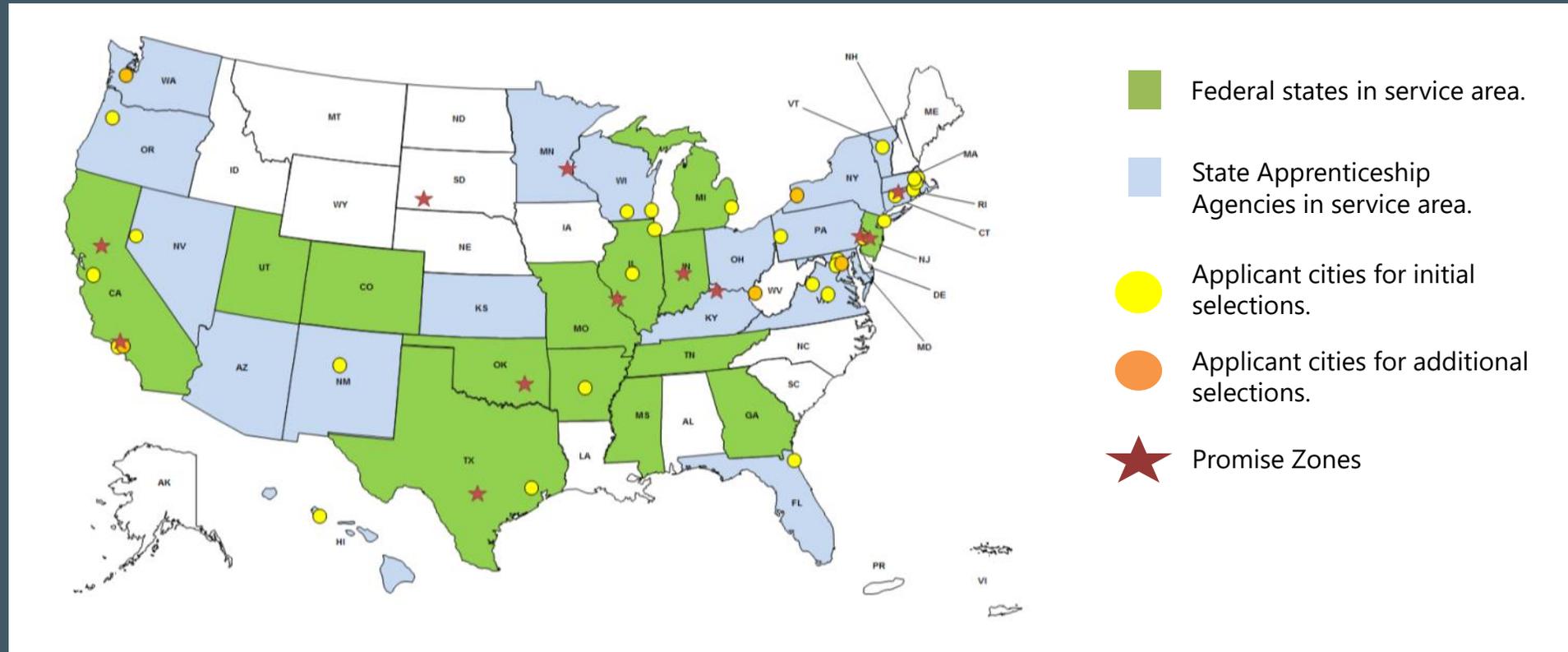
National Guideline Standards

- National organization with local affiliations
- Needed flexibility to meet local needs of the program
- NGS are building the basic standards
- Certified by DC office

National Program Standards

- Recognized in every state
- Multistate – 3+
- 500+ employee firms/ Multinational
- 20 or more apprentices
- One standard that employers/company can agree to train
- Locations in 5 or more states
- Certified by DC office

Transforming Apprenticeship American Apprenticeship Initiative (AAI) Grants



\$175 million
46 grantees
34,000+ apprentices

The projects in the following industries:

- 27% IT
- 28% Advanced Manufacturing
- 16% Healthcare
- 29% Business, Skilled Trades, Construction and Transportation

The FY 16 ApprenticeshipUSA Initiative Features \$90 Million to Expand Registered Apprenticeship.

**ApprenticeshipUSA State Accelerator Grants
\$9.5 Million**

**ApprenticeshipUSA State Expansion Grants
\$50 Million**

**Industry Partnerships to Scale Apprenticeship, Equity Partnerships to Enhance Diversity, and Other Innovations
\$30 Million**

Investing \$60 Million to Support Smart State Strategies to Expand Apprenticeship

Providing \$30 Million for Industry Partnerships, Efforts to Enhance Diversity, and Other Innovations to support Registered Apprenticeship

AAI Technical Assistance Partnership



USDOL Federal Project Officers

- ***Support grantees in:***
 - Technical aspects of grant start-up
 - Matters related to statutory, regulatory, and administrative requirements
 - Reporting and analysis of financial and performance data
 - Developing grant modification requests

Apprenticeship Consultants

- ***Support grantees to:***
 - Develop and register new apprenticeship programs
 - Identify challenges in meeting national apprenticeship guidelines
 - Address technical aspects of industry partner apprenticeship programs

National Governors Association Center for Best Practices

- ***Supports grantees to:***
 - Implement grant strategies
 - Surface their challenges and lessons learned
 - Learn from peers across the cohort
 - Develop strategies for scale and sustainability
 - Align programs with state, regional, and local policy and institutions
- ***Maximize national learning from grants***

Success Factor Framework

INDUSTRY ENGAGEMENT

Engaging employers in providing insights into industry and workforce needs; becoming partners in design, implementation and investment of resources; and developing longer-term relationships.

PARTNERSHIP BUILDING

Identifying and collaborating with a broad range of partners needed to implement your grant effectively.

ENGAGING UNDERREPRESENTED POPULATIONS

Having a continuum of processes and services that enable you to effectively serve targeted populations.

LEVERAGING RESOURCES

Leveraging local, state, federal, and private sector resources to increase the impacts of grant funding.

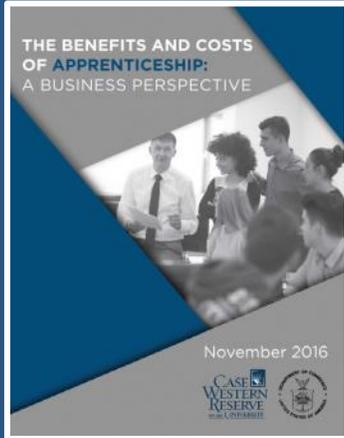
DATA-INFORMED DECISION MAKING

Using labor market information, industry and occupational trends, assessment data, and other information to guide investment, programmatic, and other key decisions regarding grant planning, implementation, and system capacity.

POLICY ALIGNMENT

Aligning and connecting with policies and initiatives in workforce development, economic development, education, and other systems to improve grant outcomes and create longer-term conditions for success.

Apprenticeship Works for... Business



Department of Commerce Study: The Benefits and Costs of Apprenticeship: A Business Perspective

This report contains findings from 13 case studies of businesses and intermediaries that have experience and success in implementing registered apprenticeships. The programs varied in structure and cost from company to company, but **all found that an investment in apprenticeship pays off.**

Key Findings:

- Across industries from manufacturing to construction, healthcare, retail, and IT, the single most common benefit of apprenticeships was filling jobs that otherwise sat vacant.
- Apprenticeships broadened companies' recruiting pool by opening doors to less-skilled candidates from more diverse backgrounds who would otherwise not be recruited.
- Internal production data from two companies helped put a dollar value on some of the benefits.

National Occupational Frameworks (NOF)

Urban Institute is serving as DOL's contractor for developing and vetting consensus-based, national occupational frameworks

- Create competency-based programs (historically, apprenticeships have been time based)
- Improve quality and consistency of apprenticeships in a given occupation and across occupations
- Increase confidence in apprenticeship training
- Expedite registered apprenticeship approval
- Reduce barriers to entry – OJT, RI, program design
- Expedite recognition of newly apprenticeable occupations
- Populate pull-down menus in Standards Builder

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Discussion

How is your state leveraging federal investments to increase the scale and quality of registered apprenticeship opportunities?

Central Piedmont Community College (Charlotte, NC)

Apprenticeship Partnerships

Presented by Eric Easton

Program Coordinator for the Engineering Technologies Division

Eric.Easton@cpcc.edu



Response to Industry Need via Apprenticeships

- Local businesses contacted CPCC to help with skills gap
- Relationship began in 1995 with Blum Inc. and Daetwyler
- European apprenticeship model influence
- Transitioned from informal to formal apprenticeship model “dual educational”



Early Stages Prior to Implementation

- Educate business partners on your higher education landscape
- Tour their facility, and host them at yours introducing faculty/subject matter experts
- Explain Program Options: certificates, diplomas, degree, continuing corporate education (different terms, different institutions)
- FERPA
- Recommend companies have 1 contact, this same person perform administrative tasks

Advisory Committees

- Each CACC Engineering Technologies Program is required to have an advisory committee
- Consist of local employers that hire program graduates, and potentially local 4 year higher education institution staff
- Purpose is to inform of recent curriculum developments and ask for feedback on latest trends in specific industry
- Quarterly apprenticeship meeting attendance
- Mechatronics Digitization - TAACT Grant
 - Industry input on flipped classroom approach

Curriculum Identification

- Choose Program
- Employer input as to latest industry trends & needs
- Decide length, full time, part time, special sessions, etc.
- Companies collaborating together is advantageous
- Traditional, Hybrid, Online class offerings
 - 1 day / 2 day, customized, structured
- Develop cohorts
- Flow charts for course sequencing
- Learn Theory, Apply it Practically
- Retention, Retention, Retention

CENTRAL PIEDMONT COMMUNITY COLLEGE (A40350) Mechatronics Apprentice2000 Track Curriculum

Summer 1*	Fall 1	Spring 1	Summer 2*	Fall 2	Spring 2	Summer 3*	Fall 3	Spring 3*	Summer 4*	Fall 4
4 Credit Hours	3 Credit Hours	4 Credit Hours	6 Credit Hours	9 Credit Hours	10 Credit Hours	6 Credit Hours	10 Credit Hours	9 Credit Hours	5 Credit Hours	10 Credit Hours
EGR 125 Application Software for Technicians <small>[3 contact, 2 credit]</small>	MAT 121 Algebra / Trigonometry I <small>[4 contact, 3 credit]</small>	ELC 131 Circuit Analysis Controls <small>[6 contact, 4 credit]</small> HYBRID	MEC 130 Mechanism <small>[4 contact, 3 credit]</small> HYBRID	MAT 122 Algebra / Trigonometry II <small>[4 contact, 3 credit]</small>	DFT 154 Introduction to Solid Modeling <small>[5 contact, 3 credit]</small>	ISC 212 Metrology <small>[3 contact, 2 credit]</small>	MEC 265 Fluid Mechanics <small>[4 contact, 3 credit]</small> HYBRID	MEC 210 Applied Mechanics <small>[4 contact, 3 credit]</small>	MEC 110 Introduction to CAD/CAM <small>[3 contact, 2 credit]</small>	MEC 260 Fundamentals of Machine Design <small>[5 contact, 3 credit]</small>
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Senior Year of High School Thru Career and College Promise </div>				ELC 130 Advanced Motors & Controls I <small>[4 contact, 3 credit]</small> HYBRID	PHY 131 Physics – Mechanics <small>[5 contact, 4 credit]</small>	ELC 213 Instrumentation <small>[5 contact, 4 credit]</small> HYBRID	ELN 260 Program Logic Controller <small>[6 contact, 4 credit]</small> HYBRID	MEC 180 Engineering Materials <small>[5 contact, 3 credit]</small> HYBRID		PCI 173 Programmable Systems <small>[6 contact, 4 credit]</small>
ISC 112 Industrial Safety <small>[2 contact, 2 credit]</small> ONLINE	Apprenticeship 2000		MEC 161 Manufacturing Processes <small>[3 contact, 3 credit]</small> ONLINE	ENG 111 Expository Writing <small>[3 contact, 3 credit]</small> ONLINE	ENG 114 Professional Research and Reporting <small>[3 contact, 3 credit]</small> ONLINE		COM 110 Introduction to Communication <small>[3 contact, 3 credit]</small> ONLINE	ATR 112 Introduction to Automation <small>[5 contact, 3 credit]</small> HYBRID	ECO 251 Principles of Microeconomics <small>[3 contact, 3 credit]</small> ONLINE	PHI 240 Introduction to Ethics <small>[3 contact, 3 credit]</small> ONLINE
Contact 5	Contact 4	Contact 6	Contact 7	Contact 11	Contact 13	Contact 8	Contact 13	Contact 14	Contact 6	Contact 14

Structuring Apprenticeships

- Each program varies and is customizable to duration
- Apprenticeship2000 Model - 1600 hours Classroom, 6400 OJT
 - North Carolina of Commerce coordinates the apprentice Journeyman's Certificate Awarded
- Recruitment - high school, current college students, other
- Onboarding - application, placement tests, transcripts
- Class Scheduling - across college departments, special date/times, out of state
- Employers cover expenses (tuition, fees, books, etc.)
- Student Success - connect to various college support services
- Necessary resources & college staff to coordinate
- Graduation & transfer opportunities

Apprenticeship Pathway Alterations Examples

- Originally Curriculum was Manufacturing Technology AAS
- Mechatronics ET - Mechanical and Electrical Track
 - Automated, Robotics, Zeiss Computerized Measurement Machine, Digital
- Mechatronics ET - Single Track (including digitization)
 - PLC software added, Calypso software (company requests), Fluid Mechanics (pneumatic emphasis)
- Incorporating high school students / earlier grad date
- Computer Integrated Machining AAS Apprentice Pathways
 - Developed apprentice curriculum for Siemens
 - Manual Machining included with Computer Numerical Control

Apprenticeship Charlotte

- CPCC's response to apprenticeship demand
- Customize program to fit a company's employment needs
- CPCC staff work with companies to identify a program and length
- Coordinate meeting with NC DOC and can assist with recruitment
- Serve student apprentices throughout the duration of their education
- Any industry can participate and is encouraged to do so



<http://www.cpcc.edu/workplacelearning/Apprenticeships>

Apprenticeships Continue to Grow

- US companies should continue to come on board
- May be best to target European owned companies early on
- Long term goal vs. short term goals
- Expense vs. Investment
- Grow their own work force
- Quality vs. Quantity

Journeyman's
Certification

Spending
\$\$\$

College
Degree

Guaranteed
Job

In Demand
Career

**Benefits of an
Apprenticeship**

Earn While
You Learn

Promotion
Opportunities

Gain
Practical
Experience

No
College
Debt

Educational
Advancement



Thank you for your time

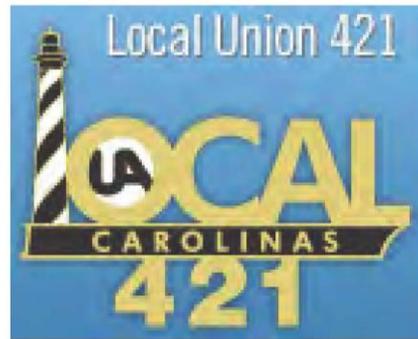
Please don't hesitate to ask questions: eric.easton@cpcc.edu



Dr. Pamela Howze



Thank you Sponsors and Donors



TOTAL FACILITY SOLUTIONS



PotashCorp

Helping Nature Provide



Apprenticeship 2000



Thank you to our volunteers and team members!

- Apprenticeship Council Members
- Apprenticeship Council Committee Members
- Apprenticeship Conference Committee Members
- Apprenticeship Team



Apprenticeship Journey

- No more fees!
- Recurring state funding \$850,000
- USDOL recurring \$350,000
- Additional state funding \$500,000
- Community College tuition waiver
- Federal grant \$200,000
- Applied for USDOL \$1.3 million on September 7



Apprenticeship

- PY 13-14: Actual number of registered apprentices 2828
- PY 14-15: Actual number of registered apprentices 3622
- PY 15-16: target number of registered apprentices 4375 (CURRENT)
- PY 16-17: target number of registered apprentices GOAL 6561
- PY 17-18: target number of registered apprentices GOAL 8750



Camp Lejeune



Fort Bragg





North Carolina State Fair



Partnerships

- Apprenticeship 2000
- Apprenticeship Catawba
- Apprenticeship Charlotte
- Apprenticeship 321 (Gaston)
- Apprenticeship Montgomery
- NC Triangle Apprenticeship Program
- Career Accelerator Program (Alamance)
- Guilford Apprenticeship Partners



Apprenticeship Projects

- Durham
- Wilson
- Burke
- Avery
- Asheville
- Rowan-Cabarrus
- Rockingham
- Vance Granville



Maximize Carolina

The Maximize Carolina grant is available for a business-led collaborative group within a local area. The goal should be to:

- Solve a workforce problem related to applicant pipelines, skills gaps, or sector workforce shortages
- The goal is to implement sector partnerships within regions; be integrated with local career pathways



Approved Sectors



Information technology
Energy
Advanced manufacturing
Environmental sustainability
Aerospace
Defense
Analytics
Industrial maintenance
Healthcare
Tourism and Hospitality



Maximize Carolina Grant

- Up to \$50K for projects with one business partner
- Up to \$125K for projects with two to three business partners
- Up to \$250K for projects with four or more business partners
- DWS provides:
 - 85% match for rural projects
 - 65% match for urban projects
- Crowd-funding allowed (technical assistance by DWS)
- Workforce Boards approved for 5% administrative cost



Sector Strategies

- Advanced Manufacturing
- Healthcare
- Information Technology



Outreach Program

- Youth Apprenticeship Consultant
- Outreach Campaign for:
 - Parents
 - Youth
 - Educators and Administrators
- Tools and Technology



Contact Information

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DWD

Department of Workforce Development

Wisconsin Youth Apprenticeship



Jamie Bernthal

Policy Analyst – State of Wisconsin

YA Program Overview



- Statewide **paid work experience** program
- Standardized **two-year** program with one-year option
- Combines **academic and technical instruction** with mentored **on-the-job training**
- **900** hours work-based learning and **360** hours classroom instruction (450 and 180 for one-year option)
- Receives Certificate of Occupational Proficiency upon completion

Start-Up Funding:

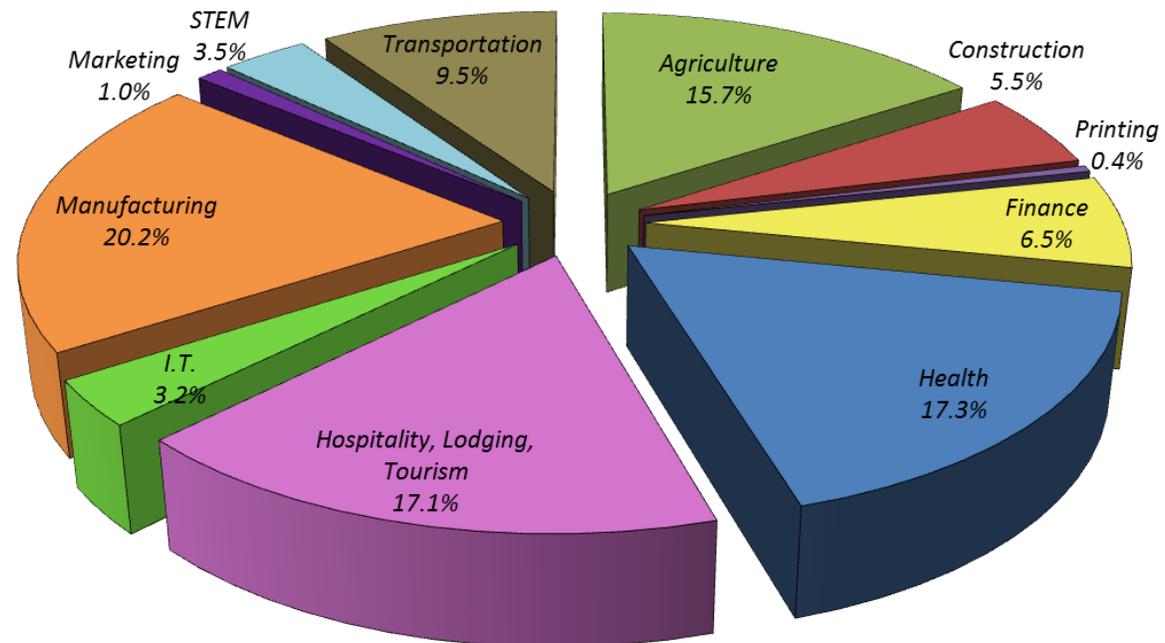
- General Purpose Revenue (GPR) funds for administration:
 - WI Act 39 created in 1991
- School-to-Work Opportunities Act:
 - Investment Capitol
- Wisconsin Act 9:
 - Local YA Grants Begin
- Program Operation and Grant Funds

YA Participation

2015-16 Year:

- ▶ YA Enrollees: 3,377
- ▶ Employers: 2,145
- ▶ Consortia: 32
- ▶ Average Wage: \$9.70
- ▶ Completion Rate: 83%
- ▶ Demographics:
 - 40% female
 - 10% minority

Youth Apprentices by Career Area 2016-17

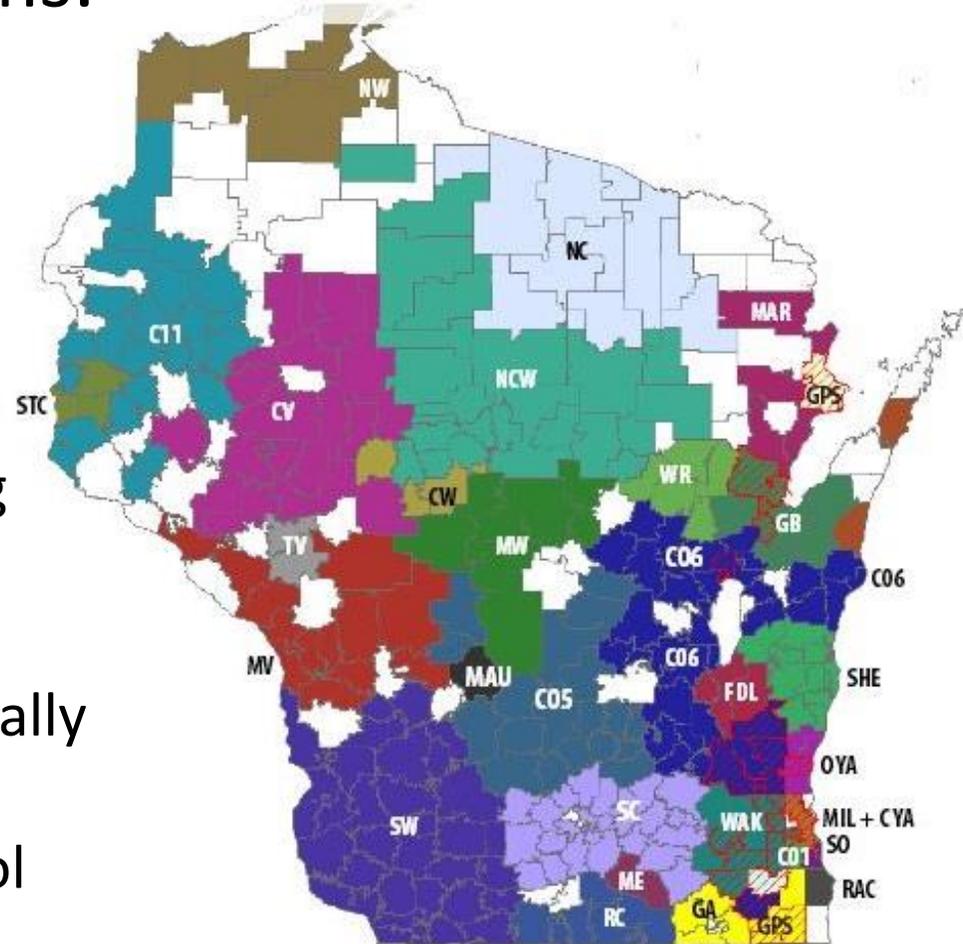


YA Program Implementation



YA Regional Consortiums:

- WI is divided into 32 YA consortiums
- Each consortium has a designed YA Regional Coordinator and a Steering Committee
- Regional Coordinator typically recruits businesses, is employed outside of school district



YA Program Implementation, continued...

Participating School Districts:

- 271 school districts participate
- 324 high schools participate
- On-site teacher/staff coordinator

Advantages of Localized Model:

- Responsive to local economy
- Selects appropriate education
- Reduces administrative costs



Picture: Wisconsin Governor Scott Walker meets with YA students working at a dairy.

Program Design: Standardized Skill Competencies



- Developed by industry
- Standardized statewide
 - Links to RA!
- Simultaneous work/learning:
 - Learning Objectives show student knowledge
 - Worksite Competencies show student skills/abilities
- Flexible instruction delivery



Starting a YA program



- Assess the local climate:
 - Recruit industry support
 - Develop statewide standards
- Design a program for the local community:
 - Utilize existing community organizations
 - Find appropriate classroom instruction
 - Train instructors and workplace mentors
 - Recruit and select students

Note: Start-up costs may be significant!

Questions?



Youth Apprenticeship Coordinators

ya@dwd.wisconsin.gov

<http://ya.wi.gov>

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DWD

Department of Workforce Development

Resources

[Innovative Apprenticeship](#)

[The Benefits and Costs of Apprenticeships: A Business Perspective \(Dept. of Commerce/Case Western U.\)](#)

[Can the United States Expand Apprenticeship? Lessons from Experience \(Robert I. Lerman\)](#)

[National Occupational Frameworks](#)

[DOL Apprenticeship Website](#)

UPDATE - Upcoming Events

Next Learning Network Call: Wednesday, April 12

Next Webinar: Friday, April 28 on Messaging and Communications