

# GREEN MANUFACTURING : State of the Industry



Green Expo II  
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MANUFACTURING INDUSTRIAL COUNCIL

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# Who Cares About Green Jobs?



*According to a 2007 MonsterTRAK study, 80 percent of young adults are interested in securing a job that impacts the environment in a positive way, and 92 percent give preference to working for a company that is environmentally friendly.*

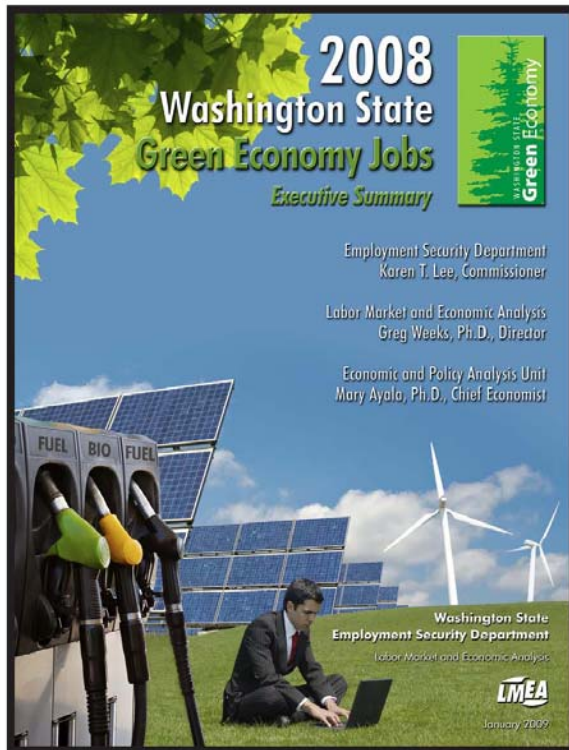


# What is a Green Job?

There is **no uniform definition** of a green job

...jobs that have a **direct, positive impact on the environment** have become known as **green jobs**; they include jobs at all levels of the earnings and skills spectrum.

**Green jobs are not necessarily new jobs**, but often traditional jobs in industries and companies that are **adapting to new markets and opportunities** available in a clean energy economy



An estimated **47,194 green jobs exist** among private-sector employers located **throughout Washington.**



# What is a Green Economy?

...green jobs are represented in nearly all economies, industries, and occupations, suggesting that the question is more about understanding what shades of green exist in an economy.

Source: 2008 Washington State Green Economy Jobs - January 2009 - Employment Security Department

The green economy is best thought of as the “greening” of our existing economy through the development of new products, techniques and services that promote environmental protection and/or energy security.



Source: Washington State's Green Economy: A Strategic Framework  
January 2009 – WA State Dept CTED



# Green Economy Industries

## A. Clean energy

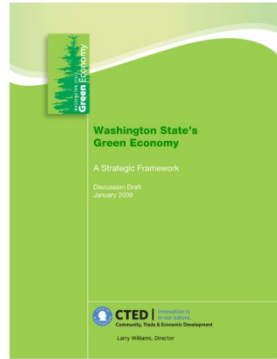
- Efficiency
- Renewable
- Alternative

## B. Green building

## C. Green transportation

## D. Environmental protection

- Waste management
- Water conservation



# Green-Industry Opportunities

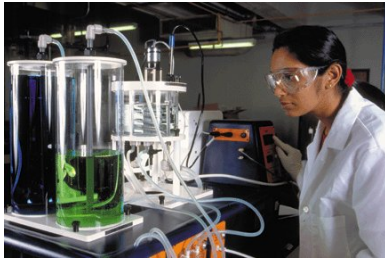
Although the industries are relatively small and in the early stages of development, Washington has strong near-term and long-term economic potential in:

- Solar manufacturing
- Wind power development
- Green-building design
- Bioenergy
- Smart-grid technologies
- Solid waste and recycling
- Water conservation



# SKILLED WORK FORCE

Washington has significant educational assets, including:



- An outstanding range of public and private universities and colleges



- An unparalleled apprenticeship training system

And yet, the state is not well-prepared to maintain or grow a labor force to support a profitable economy, **green or otherwise.**





There are no jobs in modern manufacturing for uneducated, unskilled workers.

## Typical Employee Profile of a 250-Person Wind Manufacturing Firm (Selected Occupations)

Occupation (sorted by number of employees)	Employees	Earnings	Bach Degree	Tech Train	OJT
Engine and Other Machine Assemblers	31	\$36,300		X	
Machinists	27	\$40,500		X	
Team Assemblers	16	\$30,100			X
Computer-Controlled Machine Tool Operators	12	\$40,600		X	
Mechanical Engineers	10	\$71,600	X		
First-Line Supervisors/Managers of Production	10	\$59,600			
Inspectors, Testers, Sorters and Samplers	8	\$40,400		X	
Lathe and Turning Machine Tool Operators	6	\$40,000		X	
Drilling and Boring Machine Tool Operators	4	\$39,800		X	
Welders, Cutters, Solderers and Brazers	4	\$39,900		X	
Laborers and Freight, Stock and Material Movers	4	\$29,800			X
Maintenance and Repair Workers	4	\$44,100		X	
Tool and Die Makers	4	\$43,600		X	
Grinding/Polishing/Buffering Machine Tool Operators	4	\$34,800		X	
Multiple Machine Tool Operators	4	\$40,800		X	
Industrial Engineers	3	\$70,400	X		
Industrial Machinery Mechanics	3	\$46,000		X	
Purchasing Agents	3	\$56,200	X		
Engineering Managers	3	\$108,300	X		
Shipping, Receiving and Traffic Clerks	3	\$32,100			X
Accountants and Auditors	2	\$59,800	X		
Executive Secretaries and Administrative Assistants	2	\$43,200			
Electricians	2	\$49,600		X	
Mechanical Engineering Technicians	2	\$50,900		X	
Janitors and Cleaners	2	\$29,800			X
			12%	66%	14%

Source: Management Information Services Inc., & American Solar Energy Society, 2007



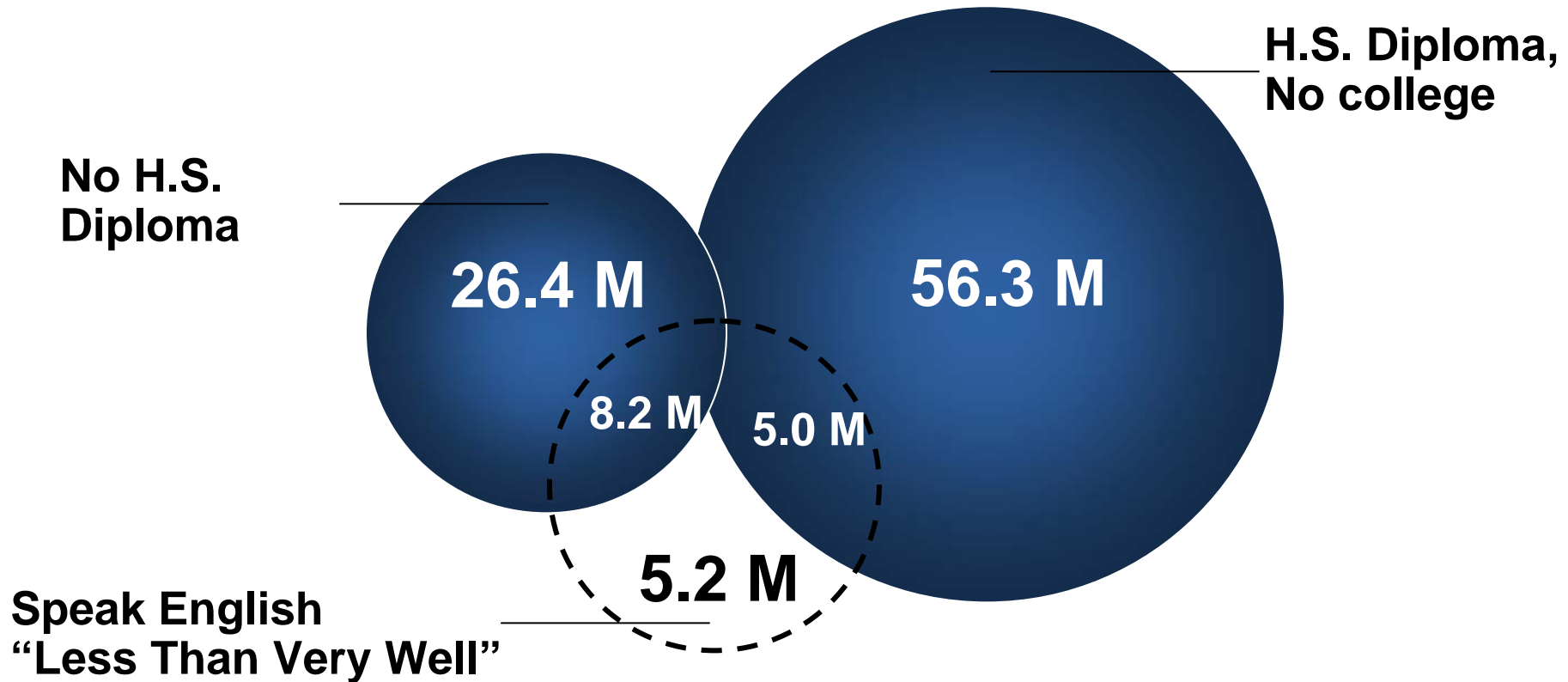


- The NAM is the largest multi-industrial trade association, with 11,000 companies of all sizes as members
- The NAM represents every industrial sector
- The NAM is composed of members from all 50 states

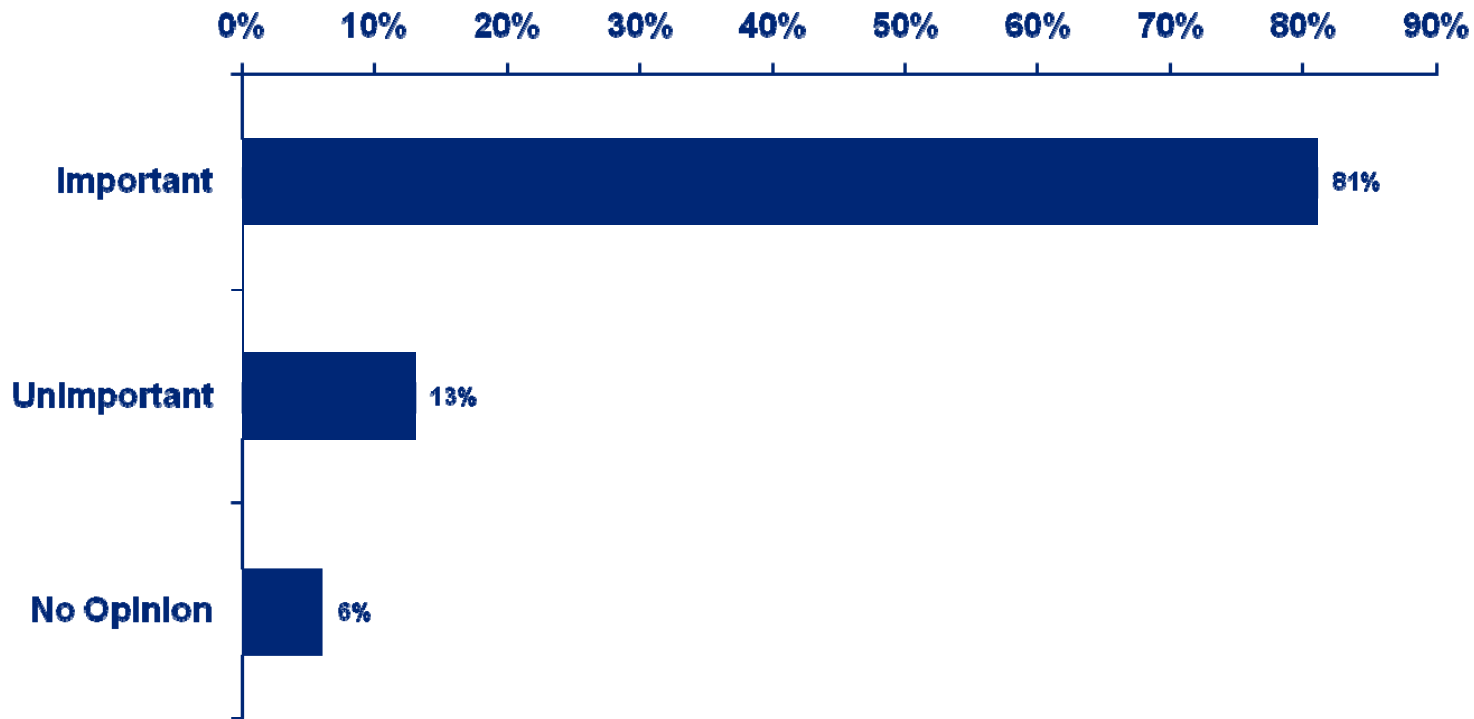
The Manufacturing Institute is the research and education arm of the NAM

# Education Barriers:

*88 M Adults have at least one education barrier*



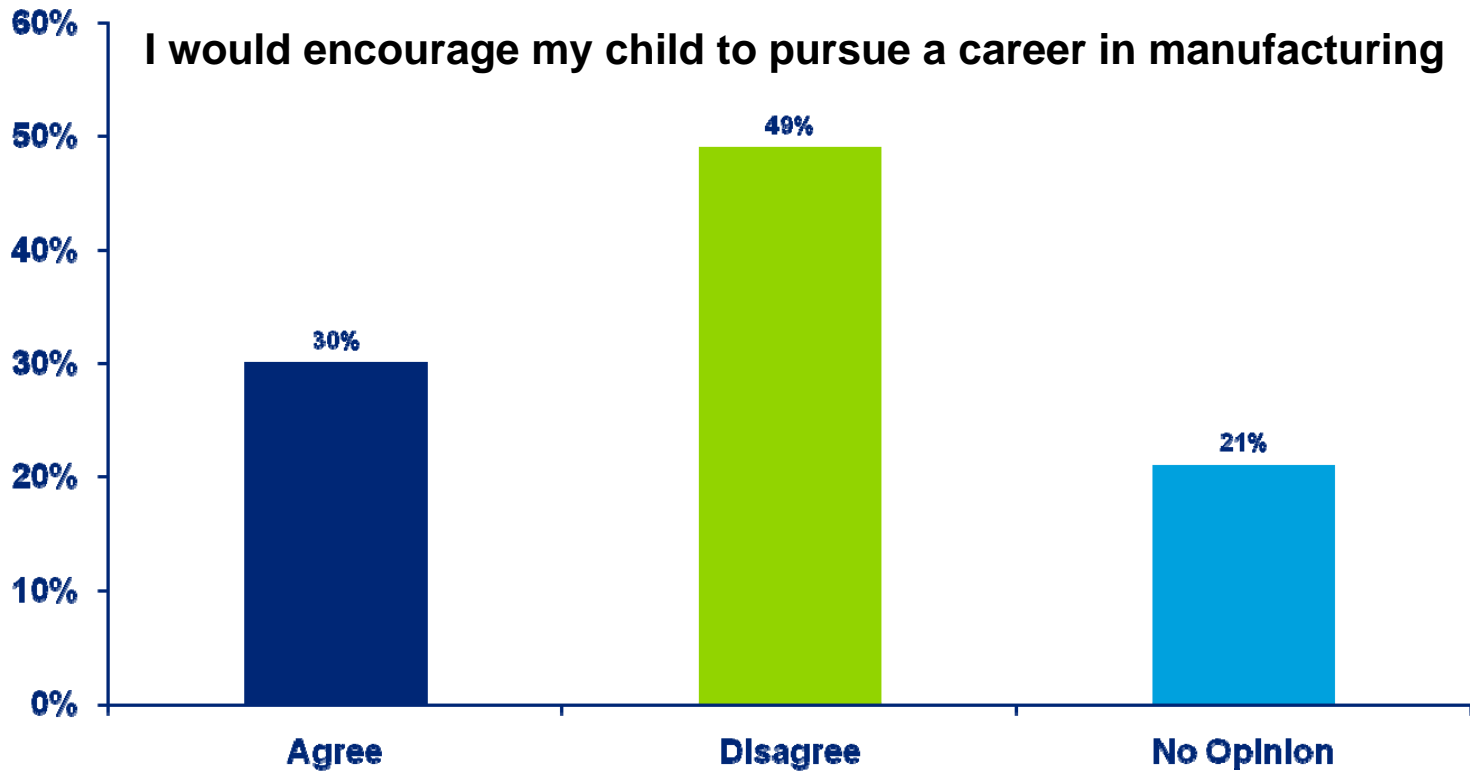
# Manufacturing and Our Standard of Living



Public viewpoint on manufacturing

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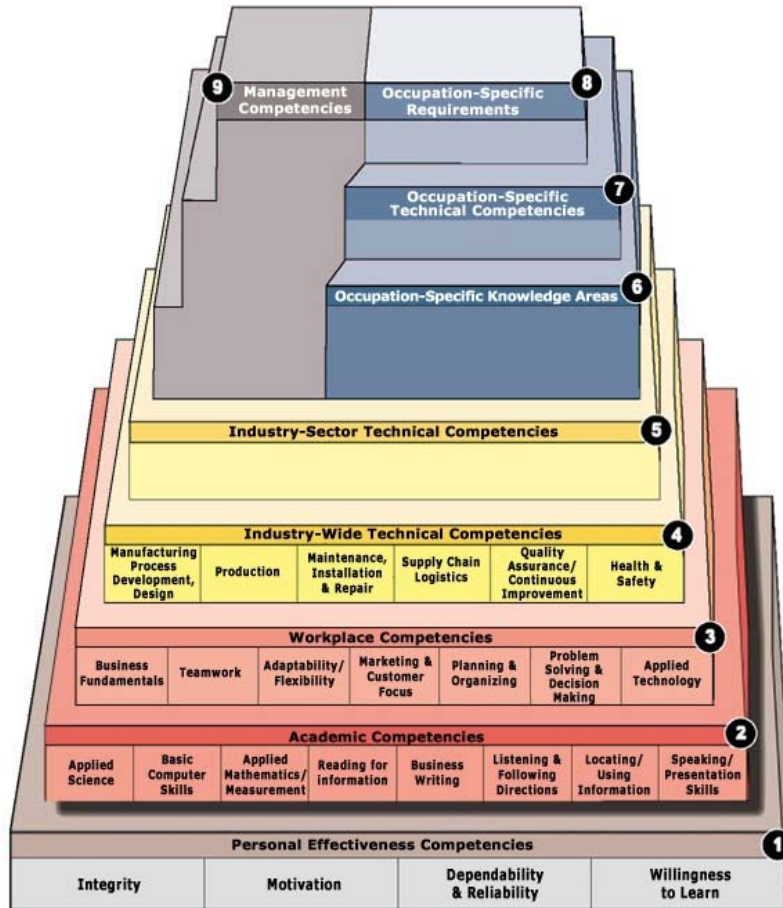
# Only 3 out of 10 Want Children to Pursue Manufacturing Career



**Providing competency-based,  
customized education and  
training for the manufacturing  
workforce...today and tomorrow.**

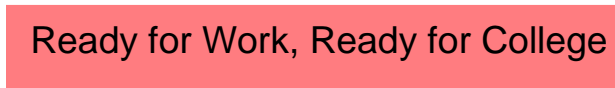
***NAM-Endorsed***  
***Skills Certification System***  
*Producing a High-Performance Manufacturing Workforce*

# Advanced Manufacturing Competency Model



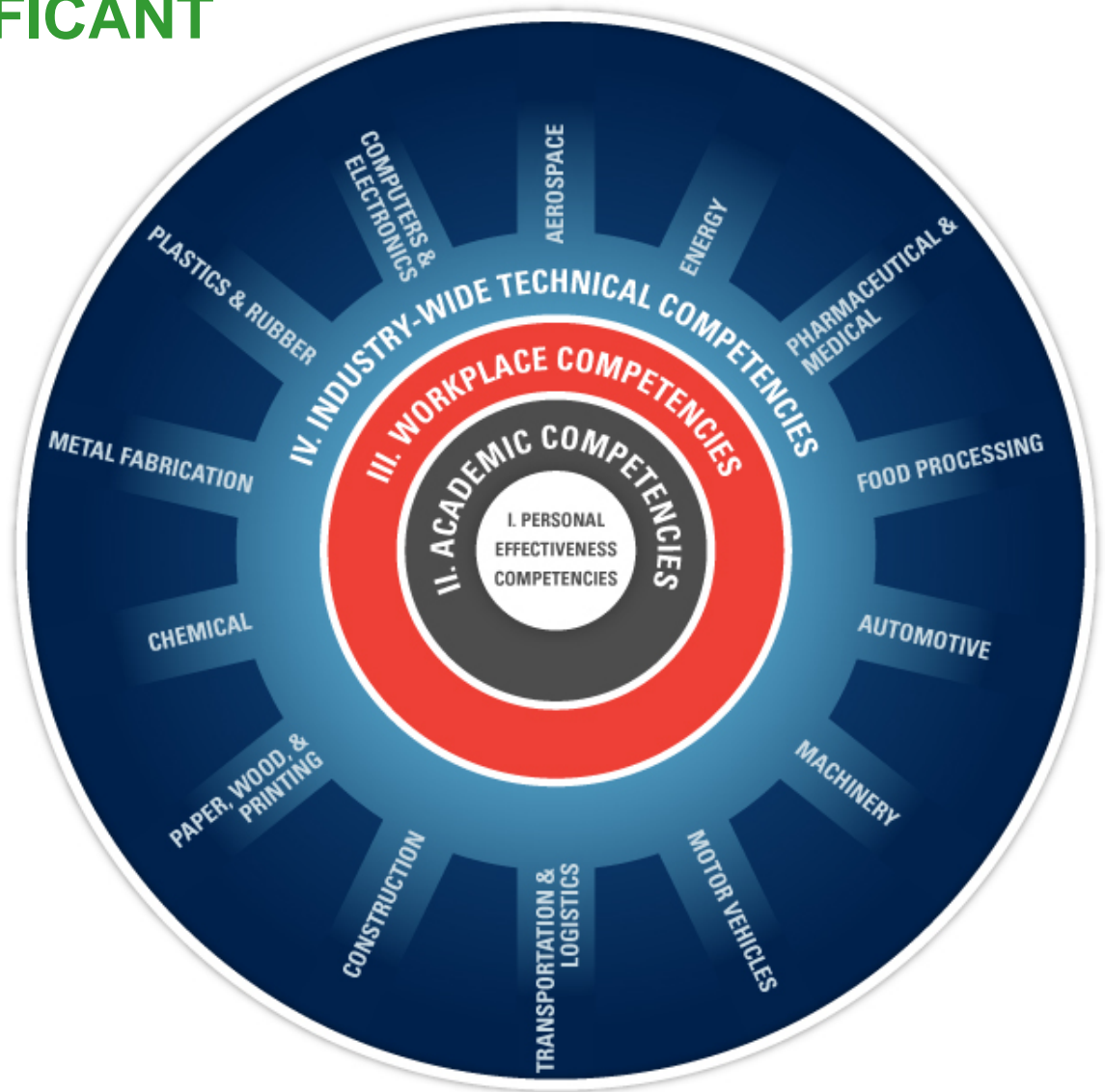
Career Paths – Life Long Learning

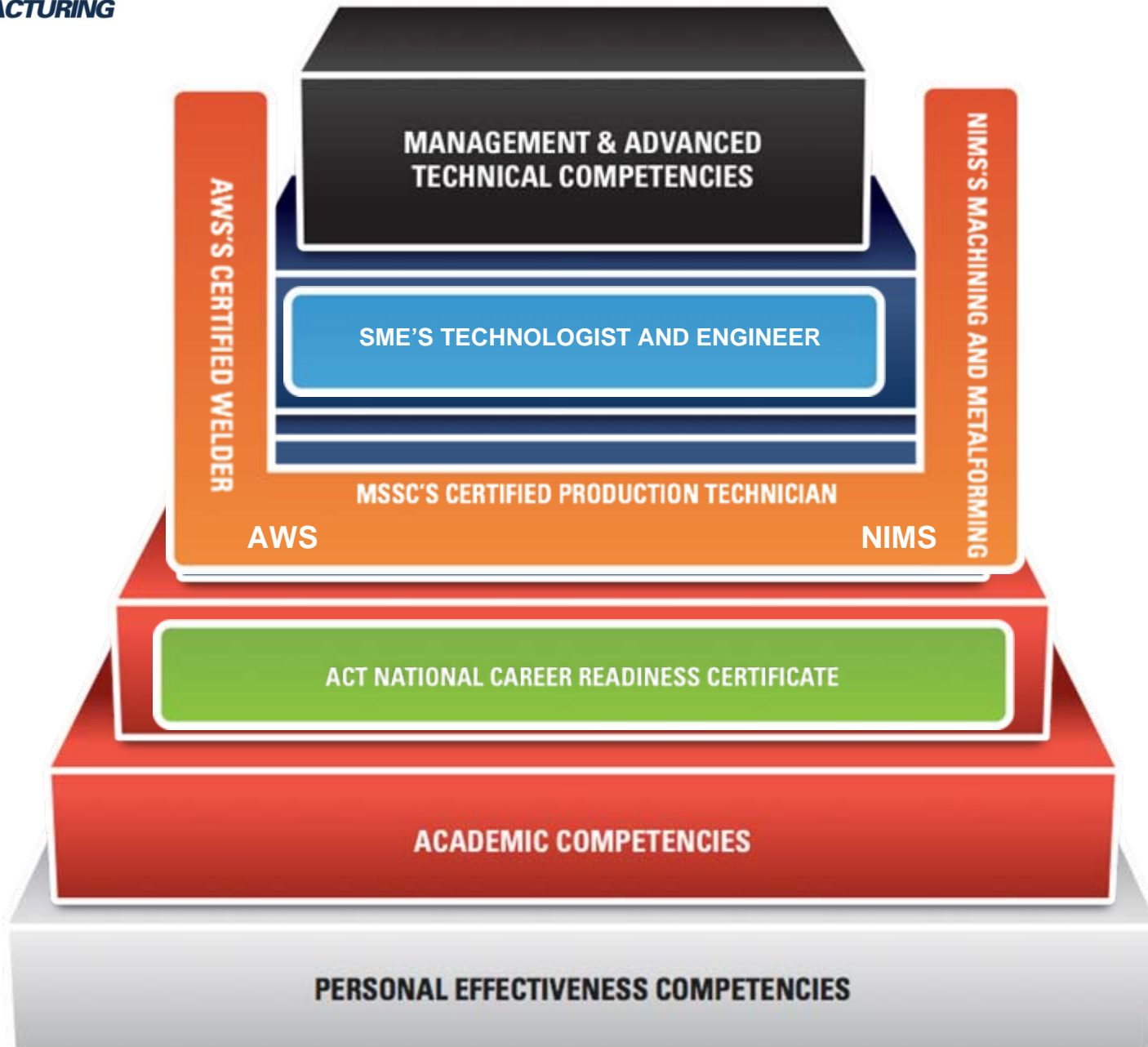
*High Quality Middle Class Jobs*

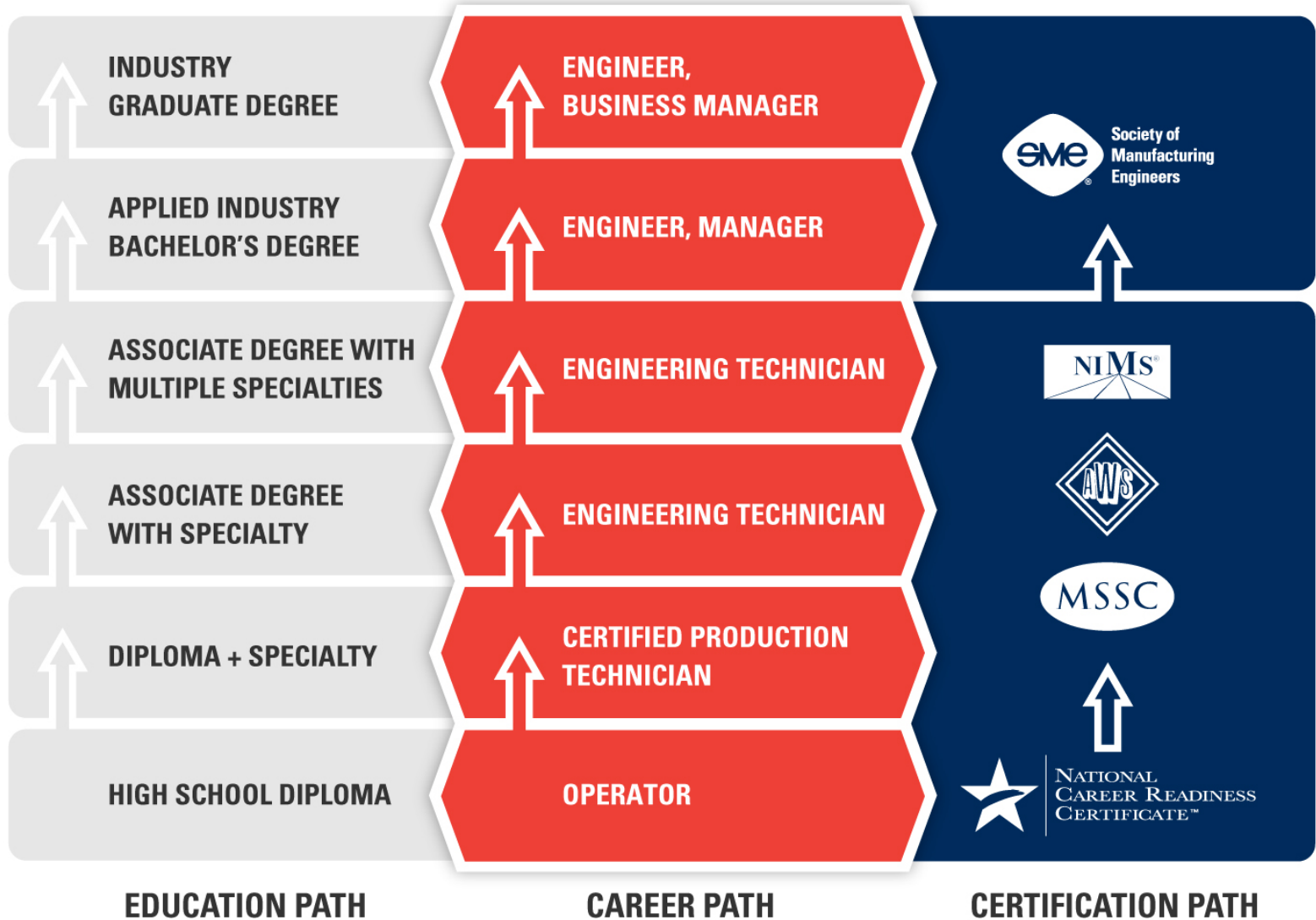


# WA STATE'S SIGNIFICANT MANUFACTURING SECTORS:

- AEROSPACE
- ENERGY
- FOOD PROCESING
- MACHINERY
- TRANSPORTATION & LOGISTICS
- CONSTRUCTION
- PAPER, WOOD & PRINTING
- METAL FABRICATION







# SYSTEM DEPLOYMENT

## “Deep Dive” Deployment

North Carolina

Ohio

Texas

Washington

*WA in-state resource/contacts will be*

*Shoreline Community College and*

*WA Manufacturing Services (WMS)*

## Industry Leadership for Deployment

Alabama

Florida

Indiana

Kentucky

Maryland

Mississippi

Nebraska

New York

Pennsylvania

Arkansas

Illinois

Iowa

Louisiana

Michigan

Missouri

Nevada

Oregon

Wisconsin



# ACCELERATING DEPLOYMENT

## Accessing ARRA Resources Accessing WIA Resources

### Leveraging National Tools Under Development

- Blueprint for Deployment
- Integrated Curriculum
- Alignment of Certifications
- Web-based Resource
- Updated Dream It. Do It. materials aligned to certification
- Aggressive Industry Engagement, educating the Demand

[www.manufacturingskills.org](http://www.manufacturingskills.org)

**Framework of Competencies by the Advanced Manufacturing Industry**

**Tier 1: Personal Effectiveness**

**Personal Effectiveness Competencies**

- 1. **Identity**: Displaying accepted social and work behaviors.
  - List good manners
  - Maintain confidentiality as appropriate about matters encountered in the workplace
  - Treat supervisors and co-workers with respect
  - Perform quality work
  - Practice honesty with regard to company time and property
- 2. **Initiative**: Demonstrating a willingness to work.
  - Take responsibility for completing one's own work assignments
  - Show initiative in carrying out work assignments
  - Take initiative in seeking opportunities to learn new skills and tasks
  - Take initiative in seeking opportunities to demonstrate responsible behaviors at work
- 3. **Dependability/Reliability**:
  - Avoid absenteeism
  - Demonstrate appropriate grooming and hygiene
  - Maintain appropriate appearance in the job
  - Do not attend to personal business on the job
  - Manage stress; observe safety and health
- 4. **Willingness to Learn**: Understanding the importance of learning new information.
  - Accept feedback from supervisors and co-workers
  - Learn new/additional skills related to the job
  - Learn about the products or services of the organization
  - Contribute to solving problems on the job through suggestions, recommendations or communication

**Tier 2: Foundation Academic Competencies**

**Academic Competencies**

- 1. **Applied Science**: Using scientific principles involved in industry-specific production processes.
  - Apply basic science principles to work-related problems & production processes
- 2. **Scientific Principles**:
  - Understand the scientific principles involved in industry-specific production processes
  - Apply basic science principles to work-related problems & production processes
- 3. **Mathematics**:
  - Physical
  - Chemical
  - Biological
  - Environmental

**Tier 3: Workplace Competencies**

**Workplace Competencies**

- 1. **Business Fundamentals**: Determining how an economy functions as a whole. Money is allocated and spent to get the work done, and accounting for these expenditures.
  - Economic/Financial Principles
    - Supply/Demand
    - Characteristics of markets
    - Profit and loss
    - Cost and pricing of products
  - Fundamentals of Accounting
  - Understand how one's performance can impact the success of the organization.
  - Economic System as a Framework for Decision-making
    - Understand the relative costs and benefits of potential actions to choose the most appropriate
    - Consider the relative costs and benefits of the company, your co-workers, your community, the environment.
  - Business Ethics—Act in the best interests of the company, your co-workers, your community, the environment.
    - Compliance with the spirit of applicable laws as well as the letter
    - Proper use of company property, minimizing loss and waste, report loss, waste or theft of company property to appropriate personnel
    - Maintain privacy and confidentiality of company information, as well as that of co-workers and co-workers
    - Environmental safety and disposal of toxic or hazardous materials
    - Environmental safety and disposal of toxic or hazardous materials
    - Maintain a neat and safe environment and report any violations/discrepancies
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    - Environmental safety and disposal of toxic or hazardous materials
- 2. **Customer Service**:
  - Treat co-workers fairly and with respect
  - Ensure proper handling and disposal of toxic or hazardous materials
  - Social
    - Treat co-workers fairly and with respect
    - Ensure proper handling and disposal of toxic or hazardous materials
    - Treat co-workers fairly and with respect
    - Ensure proper handling and disposal of toxic or hazardous materials
- 3. **Marketing**:
  - Develop an understanding of market trends, company's position in the market place, defined market segments
  - Understand the company and product trends through building and maintaining customer relationship
  - Highlight the company and product trends through building and maintaining customer relationship
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**Tier 4: Industry-wide Technical Competencies - Technician Level**

**Industry-wide Technical Competencies**

- 1. **MANUFACTURING PROCESS DESIGN/DEVELOPMENT**: Research, design, implement, and continuously improve the manufacturing process to ensure product meets customer needs.
  - Integrate manufacturing production and production support systems.
  - Design manufacturing production and production support systems.
- 2. **PRODUCTION**: Schedule to meet customer requirements.
  - Develop manufacturing process plans and documentation.
  - Monitor manufacturing process and systems.
  - Manage continuous improvement process.

From nanotechnology to robotics, innovative ideas happen every single day. But who transforms these ideas into the most-hyped products that improve the lives of everyone around us?

With a career in manufacturing, YOU WILL.

**Where The Thought becomes The Thing**

**Dream It Do It!**  
Your Future is Here for the Making

THE MANUFACTURING INSTITUTE

WWW.DREAMIT-DOIT.COM

# A Million-Dollar Investment

“I advise each of my staff that every worker hired is a million-dollar investment for this company. I’m calculating that most hires are under 45 years old; we intend to keep them for at least 20 years, and our average annual salary/benefits package is \$55,000. In other words, we can’t afford to make a mistake—to hire someone without the right skills. Verifiable skills certification programs can make the difference between a good investment and a high-risk.”

*Dennis Rohrs,  
Human Resource Manager  
Fort Wayne Metals, Inc.*



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