

# *Buffalo Billion*

## *Workforce Update*

April 15, 2014

**Confidential/Draft**



*The Buffalo Investment Development Plan is defined by 6 Strategies that create a plan for sustainable economic and inclusive jobs growth*



➤ **High potential sectors** with the potential to form the foundation of Buffalo's next economy and to drive economic growth, employment, productivity and wealth

➤ **Key enablers** that will support Buffalo's new economy across high priority sectors

# Manufacturing is an important asset in Buffalo's economy, but has experienced the same challenges as the industry nationally

## Manufacturing is a core industry in Buffalo



### 3<sup>rd</sup> largest employment sector

Manufacturing is still the 3<sup>rd</sup> largest employment sector



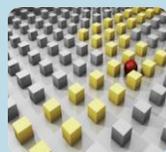
### Productivity trends

Productivity in the region has improved over the last decade (3.6% p.a.)



### Asset sectors

Chemicals, ceramics, metals and machinery, and med device/ pharma are specialized asset sectors



### Large, usable space

Many large, vacant factories can be used for expansion and new company attraction

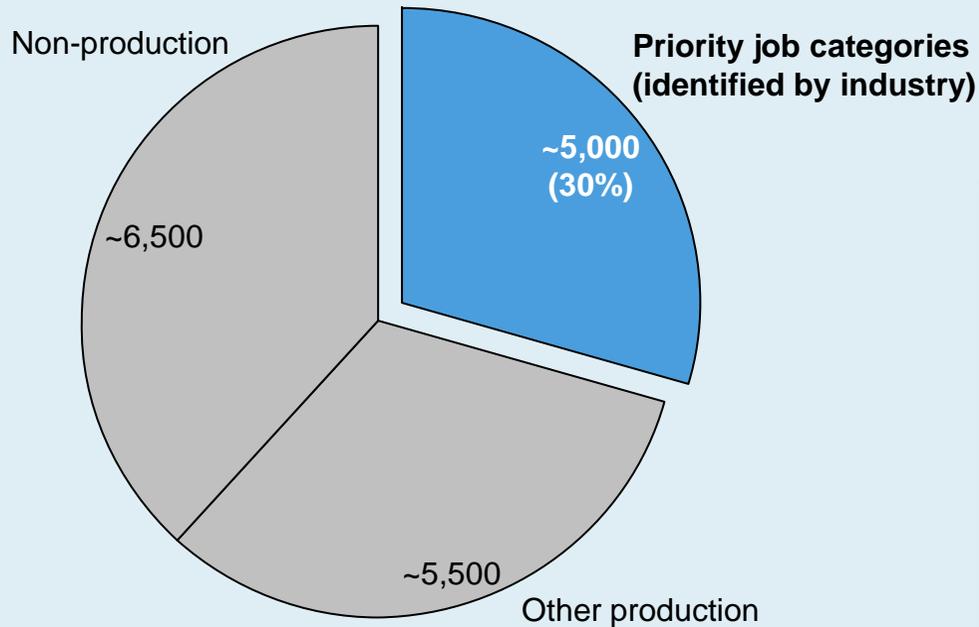
## However there are challenges that prevent Buffalo reaching full potential

- **Buffalo's manufacturing productivity is lower:** 9% lower than the U.S. and 64% lower than best-in-class U.S. cities
- **Buffalo's R&D-led innovation could be contributing to lower productivity:** concentration of small, family held businesses make best practices harder to access, and economies of scale from investments are smaller
- **Qualified candidates are hard to find:** Local manufacturers have difficulty finding candidates in the region with the right set of skills to fill their job openings
- **The challenge continues to grow:** A large wave of skilled employees are nearing retirement

# Buffalo Niagara manufacturing shows approximately 17,000 in training demand by 2020, with 30% of these from 6 industry-identified priority job categories

## Demand for priority job categories

2011-2020 (100% = ~17,000)



### Priority job categories identified by industry

- Electrician
- Electro-mechanical Technician
- Quality assurance inspector
- Welder
- Mechanic
- Machinist



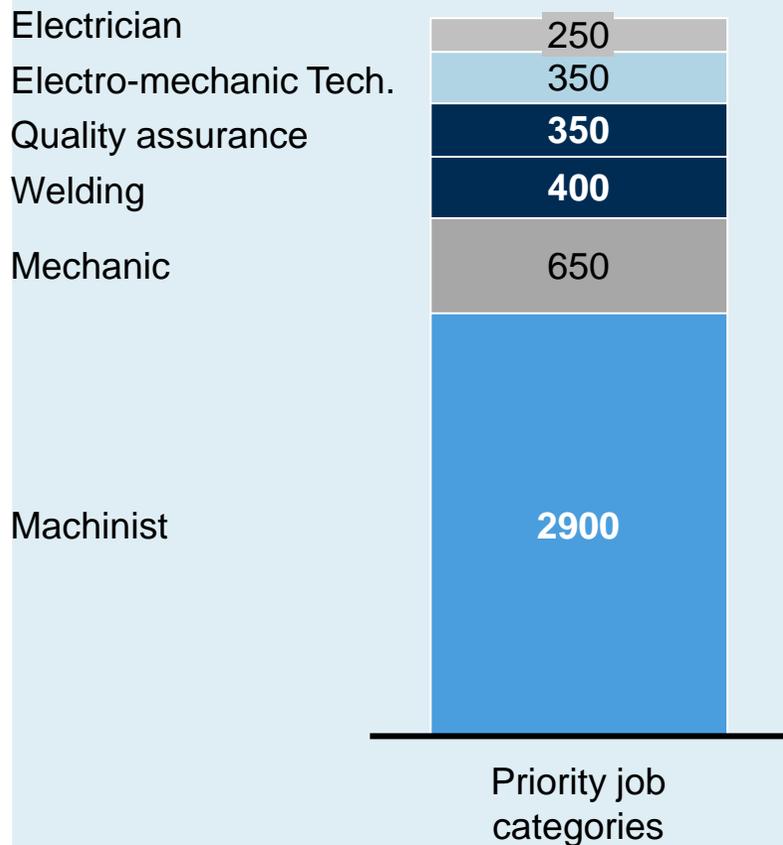
Source: NYS Dept. of Labor, Moody's, local manufacturers,  
Demand estimates derived from estimated retirements and industry employment projections



**BUFFALO BILLION**  
An initiative of the WNY Regional Economic Development Council

# By 2020, Buffalo Niagara manufacturers will need to fill 5,000 positions in these priority job categories

## Demand for priority job categories 2011-2020 (100% = ~5,000)

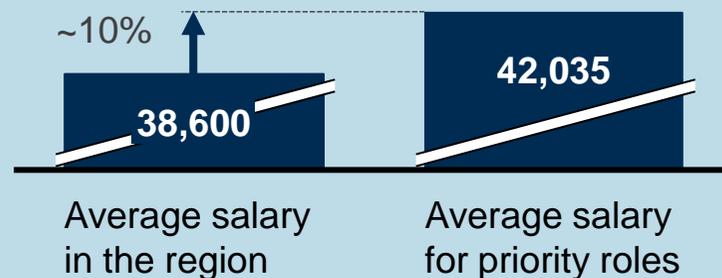


With the completion of the effort to fill these 5,000 jobs over the next several years, over

**\$200 million**

in local wages will be created

## Average salary of priority roles is ~10% higher than the regional average

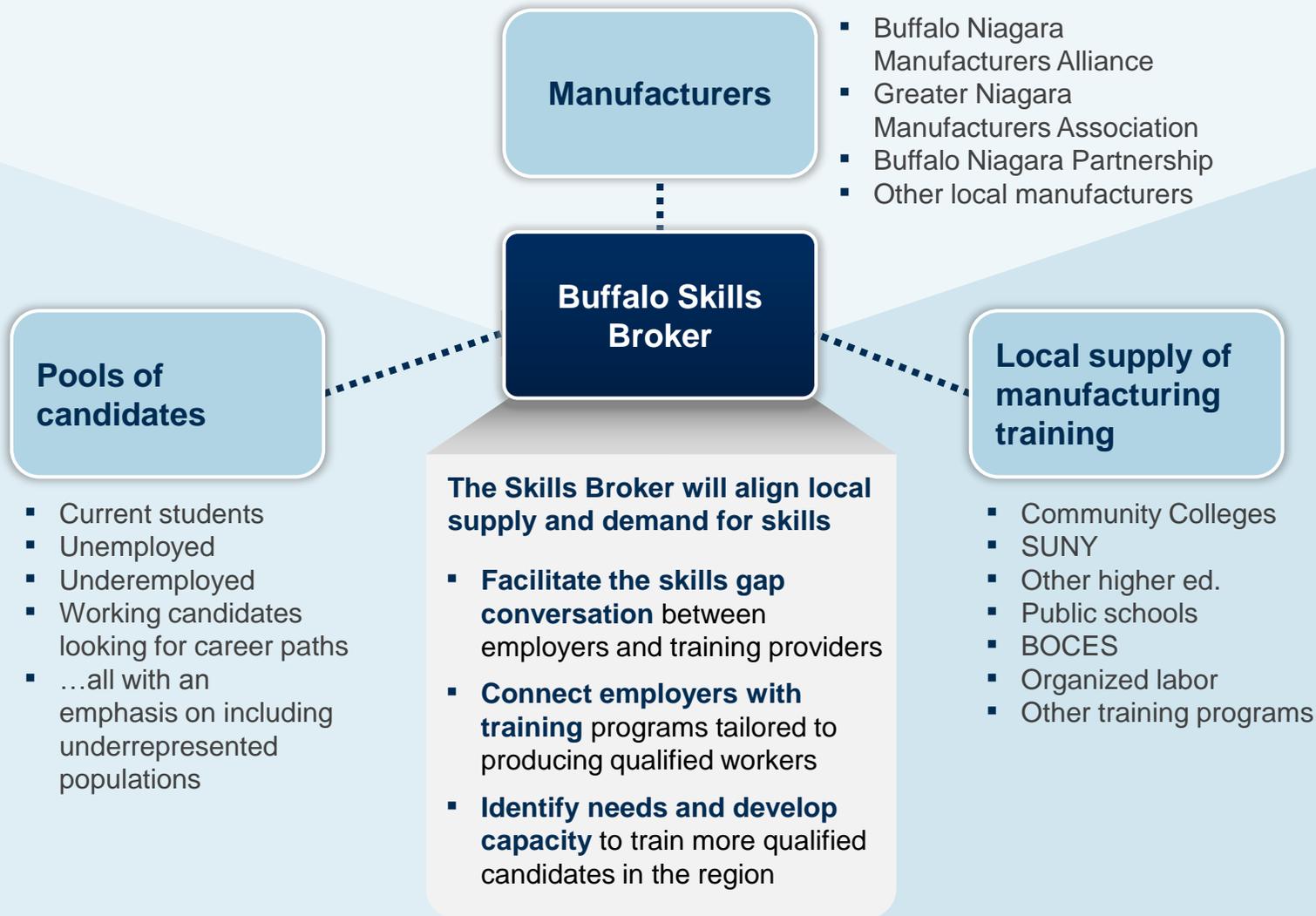


Source: NYS Dept. of Labor, Moody's, local manufacturers, Demand estimates derived from estimated retirements and industry employment projections

## How will we address the gap?

- Expand existing programs that already provide the training that employers need
- Ensure other existing programs provide skills employers demand
- Create a manufacturing training center to supplement capacity of current training providers
- Emphasize the creation of a workforce that includes underrepresented populations in the region

# The linchpin of the Buffalo Billion workforce development initiative is the skills broker which will align labor supply and demand





## JOB VACANCY

**Date:** May 23, 2013

**Title and Salary Grade:** Project Coordinator, (EQ-Grade 23)  
(Workforce Training Development Partnership Coordinator)

**Negotiating Unit:** PS&T

**NOTE:** Promotions may change appointees' negotiating unit. Applicants should be aware that changes in negotiating units may affect their salary, insurance and other benefits.

**Location and Number of Vacancies:** Division of Employment and Workforce Solutions  
One Vacancy, Buffalo

**Status of Vacancy and C.S. List:** Hourly -Temporary  
\$34.00 per hour

**Travel Requirements:** Frequent travel within region is required.

**Minimum Qualifications:** Bachelor's degree or higher and three years of progressively responsible management experience in one or more of the following areas:

Industry/manufacturing program management experience that includes the development and implementation of multi-stakeholder collaborative projects; **OR** Business/relationship development experience involving interaction with clients and/or facilitation of collaborative partnerships; **OR** Human resources management experience with an emphasis on analysis of workforce skills and assessment in order to meet current and future workforce needs and/or the development and implementation of employee training programs in order to meet the workforce needs.

A Master's degree may be substituted for up to one year of management experience.

**Preferred qualifications:**

- A master's degree in business administration or industrial/organizational psychology
- Strong interpersonal and networking skills with the ability to identify, create and develop relationships with key stakeholders
- Experience in the manufacturing industry
- Excellent communication and presentation skills with experience in developing and delivering PowerPoint presentations
- Knowledge of workforce development and planning

PT 145 (9-96) The Department is committed to the policy of Affirmative Action to achieve full and equal employment opportunity for minorities, women, disabled veterans and Viet Nam Veterans.

- Highly organized, proven analytical skills and track record in creative problem solving
- The ability to work independently and to plan, prioritize workload in a fast-paced environment, especially under tight deadlines
- Technology savvy with superb skills in using various computer applications to deliver PowerPoint presentations, prepare charts, graphs and visual reports, etc.

**Duties:** The Department of Labor seeks an innovator with management experience in industry/manufacturing, business/relationship development or human resources management to lead a new initiative to strengthen economic growth specifically in the area of training and skills development in New York State's Western Region.

Under the direction of the Deputy Commissioner, the Workforce Training Partnership Development Coordinator will be responsible for working with business, industry and educational institutions to create and maintain a partnership to align the educational and workforce systems with employers needs and build a foundation strengthening economic development and growth in the Buffalo area. Duties include but are not limited to: using management skills to work in partnership with employers to identify training and education needs and programs that build skills in demand by employers and coordinating with educational institutions to develop programs that meet those needs; identifying public and private funding streams that align the education and training systems with career pathways in critical emerging and expanding industries; developing a work plan that includes timelines and goals and measuring results/outcomes of their efforts and preparing various reports for senior level management.

As stated in the General Administration Manual Items 0612, each employee who is eligible and interested in being considered for appointment to this position must complete the Vacancy Application for (hard copy or electronic), and submit the form\* by [June 6, 2013 to the Albany Personnel Bureau, Building 12, Room 565, State Office Campus, Albany, NY 12240.](#)

**\*To apply on-line using the electronic form applicants may select the underlined hyperlink included in any vacancy announcement. Applicants may also apply by submitting a hard copy application. The hard copy application form can be found on the NYSDOL Intranet page by selecting as follows: "Employees Need To Know" then "Forms," then PT 30 vacancy application. The electronic and/or hard copy form must be submitted by [June 6, 2013.](#)**

It is not necessary to obtain comments from your immediate supervisor. However, if you do want to submit supervisory comments you may forward your application to your supervisor. Your supervisor will add comments and forward the completed application to the Personnel Bureau. Supervisory comments may be submitted on the hard copy or electronic [Vacancy Application](#) form. Additionally, the immediate supervisor should prepare this form for any employee who is absent when this notice is received on the assumption that the employee is interested. In the event that an eligible applicant and his/her supervisor are both filing for the same vacancy notice the applicant should mail his/her completed application (hard copy or electronic) directly to the Personnel Bureau as noted above.

**You do not have to be a current state employee to apply. If you are not a DOL employee, you do not need to complete a job application form. All candidates must submit a cover**

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# We have designed a pilot to quickly place skilled candidates into job openings and help build a full scale job matching & training program

## Pilot objectives

- **Quickly match a set of qualified candidates** from the area with local manufacturing job openings
- **Rapidly right-skill candidates** who fall just short of requirements
- **Develop an understanding of how to scale up** the Skills Broker model across both industries and regions
- **Emphasize inclusion of underrepresented populations** in local workforce

## Key pilot metrics

- **System responsiveness:** speed to identify and place qualified candidates; and time to right-skill under-qualified candidates
- **Success rate** at each stage of the job placement process
- **Applicant and job placement**

## Key design elements

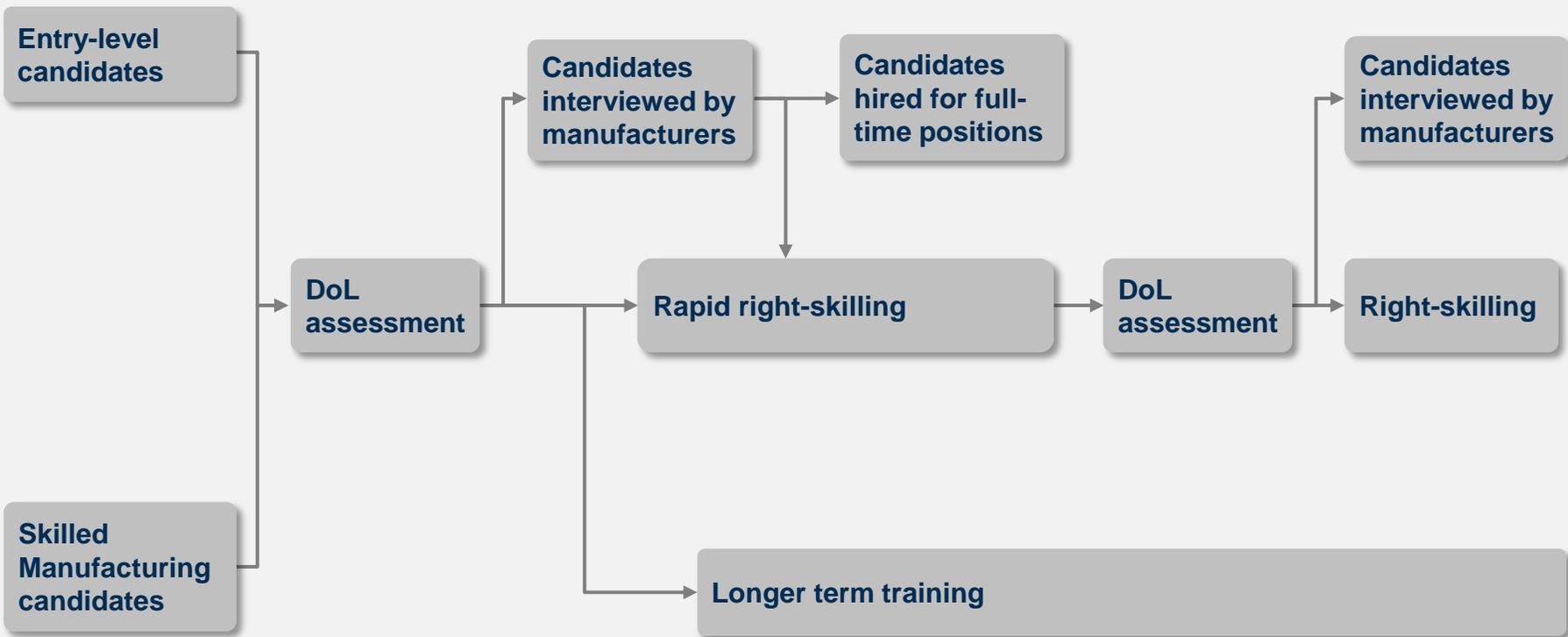
- **Manufacturers:** Manufacturer commitment, pilot scale and target occupations (based on participant openings)
- **Training providers:** Sources of applicants, right-skilling training partners
- **Pools of candidates:** Entry-level candidates from training programs as well as experienced candidates already in the workforce

## Initial timing

- The first batch of candidates placed within six months of the launch date

# In the pilot, candidates will be assessed by NYS DoL, placing the first batch of candidates with employers within 6 months of Pilot Launch

## Skills Broker Pilot Flow of candidates



# Manufacturer Commitment to the Pilot: Manufacturers will be asked to provide guidance both on pilot design and candidate quality during pilot

## Jobs

- Provide up front information on open positions in their company:
  - Number of openings they expect to have in each of 6 categories plus 2 entry-level positions in the next 6-9 months
  - Job descriptions of these openings for each category

## Candidate consideration

- Consider all of our candidates for the job openings we agree to target in pilot
- Participating manufacturers have right of first refusal on candidates, but candidates should be more aligned to what they need than what they typically see

## Feedback

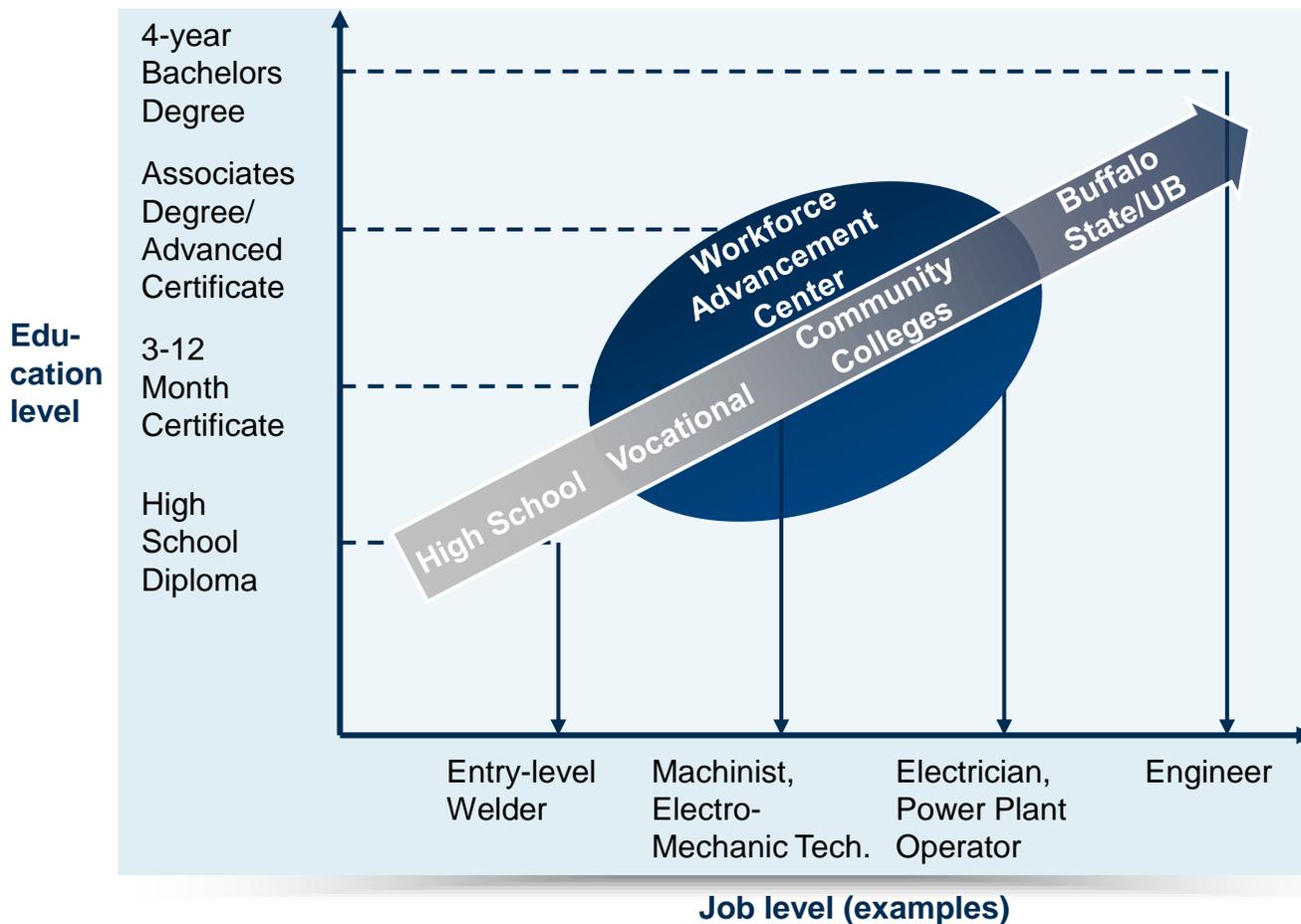
- Provide feedback on the candidates once they have completed each batch of interviews
- Help us to track performance of hired candidates including skill gaps that may not have been identified during interview process

## Time commitment

- We expect the primary pilot to be approximately 6 months, with two rounds of interviews from the manufacturers
- 3 months after the pilot we will conduct a follow-up on candidates that were placed

**We are currently identifying options for providing grant support to manufacturers that hire candidates through these programs (e.g., 'Flexible' OJT grant money from DoL)**

# In addition to the Skills Broker, we are designing stackable education pathways supported by a new Workforce Advancement Center



## Workforce Advancement Center

- Managed by community college
- “On-ramps” from BOCES, manufacturers, and new “Skills Broker”
- “Off-ramps” for jobs at several levels of educational attainment
- Credits transferable throughout SUNY
- Promote training of underrepresented populations in Western NY

# ***What did we do?***

- Recruited 67 Employers and over 2000 Job Candidates expressed interest
- Developed a marketing campaign for diverse outreach
- Built a website portal
- Screened Job Candidates and placed in jobs
- Placed Job Candidates in two Welding I training classes
- Held three job fairs in Welding and CNC Machining
- Facilitated meetings with manufacturers to create 6 job skills matrices
- Placed over 100 job candidates in employment
- Over 1200 candidates in pipeline awaiting assessment

## Advance Buffalo – CNC Machinist Skill Levels

### Level I – Machine Operator

- Under 100% supervision - Can perform basic machine operations

#### Process

- Basic understanding of tooling & machining
- Read & interpret Blueprints
- Manual machine operation
- Able to load machine
- Able to make off-sets
- Shop protocol
- Physical Labor required

#### Machines

- Basic understanding of Manual & CNC Lathes, Mills, Grinders

#### Tools/Technology

- Ability to use measuring devices (i.e. calipers, gauges, micrometers, inspection tools)
- SPC knowledge
- Understand Tool changes
- Knowledge of offset equipment

### Level II

- Must be an experienced Operator;
- Experience using Lathe, Mill

#### Process

- Able to run multiple machines
- Perform basic set-ups; troubleshoot;
- Should be able to check own work using inspection equipment
- Understand manufacturing terminology
- Understand L call-up; read and edit; L tool wear
- Perform machine maintenance
- Able to build parts from scratch

#### Machines

- Operational understanding of various controllers such as Fanuc, Siemens, Heidenhain,
- Ability to operate a 4 axis machine tool

#### Tools/Technology

- Understand variation, parts –run charts, parts, machine
- Understanding G code, and Advance G/M code basics and the purpose
- Understand tool geometry & selection
- Understand speed/feed technology
- Change tools and make tool offsets
- Should understand conversational programming basics
- CAD/CAM – basic understanding

### Level III

- Advanced applications exp.

#### Process

- Able to perform set-ups for other machine tools;
- Verify conformance of finished work piece to specifications, using measuring instruments
- Workholding/Fixturing
- Ability to prove out 1<sup>st</sup> article programming

#### Machines

- Swiss machining; Multi- Axis

#### Tools/Technology

- CAD/CAM
- Advanced programming
- 3-D model programming
- Qualified inspector – using micrometers, height gauges and gauge blocks
- Troubleshooting
- Advance Tool Selection, i.e. special tooling

### Level IV

- Full autonomy; capable of lead role; ability to perform all the other levels

#### Process

- Senior Technician
- Interface with Engineering Dept
- Able to provide estimate to customer
- Documentation and tech transfer
- Software error proofing

#### Machines

- 8 Axis Lathes, Vertical Lathes, Twin Spindle, Vertical Mills, EDM, 5 Axis Mills

#### Tools/Technology

- Master programmer
- Master CAD/CAM and set-up machinist
- Applications experience

**Key success factors**

- 5S Training
- Safety awareness
- Drug free
- Verbal communication
- Team player, helping to meet dept & company goals and objectives.

**Key success factors**

- Enhanced Level I
- Work independently
- Mentor Level I
- Convert between English/Metric
- Must be aware of and comply with related ISO 9002 procedures.

**Key success factors**

- Enhanced Level I -II
- Lead person, Trainer of Jr. Associates
- Monitor work of Level I-II
- Team Leader

**Key success factors**

- Engineering Technician (Manufacturing)
- Supervision of other staff/department

**Education/Experience**

- GED/HS
- Mechanically inclined
- Basic industrial exp
- Certificate from BOCES, Community college

**Education/Experience**

- 3 -5 years experience or 2 yr degree + 1 yr exp
- Strong Math background

**Education/Experience**

- 5 yrs+ exp
- OR 2yr degree + 2 yrs exp
- 1-3 yrs exp programming

**Education/Experience**

- 10 yrs exp OR 4 yr degree
- 3 yrs programming

**Machinist Additional Checklist of Skills**

- Soft skills incorporated in all levels
- Reliable
- Problem solving abilities
- Detail oriented
- Being able to work with others
- Time management skills
- Speaks up for themselves in a positive way
- Multi-task
- Communication skills
- Self sufficient- independent
- Self confident
- Team worker
- Open and honest

# Advance Buffalo—Welding Skill Levels

Level I	Level II	Level III	Level IV
<ul style="list-style-type: none"> <li>Effective under supervision – “Can stick two pieces of metal together”</li> </ul>	<ul style="list-style-type: none"> <li>Minimal supervision – “Can tell the welder what to do and it gets done”</li> </ul>	<ul style="list-style-type: none"> <li>No supervision; possible mentoring of others; mastery of employer specific skills</li> </ul>	<ul style="list-style-type: none"> <li>Full autonomy; capable of lead role; possesses specialized skills</li> </ul>
<b>Process</b>	<b>Process</b>	<b>Process</b>	<b>Process</b>
<ul style="list-style-type: none"> <li>MIG, FCAW, stick</li> </ul>	<ul style="list-style-type: none"> <li>TIG, Sub-arc (plus Level 1)</li> </ul>	<ul style="list-style-type: none"> <li>X-ray (plus Level 1-2)</li> </ul>	<ul style="list-style-type: none"> <li>Full body of knowledge</li> </ul>
<b>Positions</b>	<b>Positions</b>	<b>Positions</b>	<b>Positions</b>
<ul style="list-style-type: none"> <li>Orientation and basic positions</li> </ul>	<ul style="list-style-type: none"> <li>Positions 1-3; Flat board, horizontal, overhead</li> </ul>	<ul style="list-style-type: none"> <li>Mastery of all positions (1-6)</li> </ul>	<ul style="list-style-type: none"> <li>Full body of knowledge</li> </ul>
<b>Materials</b>	<b>Materials</b>	<b>Materials</b>	<b>Materials</b>
<ul style="list-style-type: none"> <li>Knowledge of basic materials</li> </ul>	<ul style="list-style-type: none"> <li>Mastery of basic materials</li> </ul>	<ul style="list-style-type: none"> <li>Alloys, exotics; trainable on all materials</li> </ul>	<ul style="list-style-type: none"> <li>Full body of knowledge</li> </ul>
<b>Tests/Certifications</b>	<b>Tests/Certifications</b>	<b>Tests/Certifications</b>	<b>Tests/Certifications</b>
<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>AWS, ASME, Bend test, Leak test</li> </ul>	<ul style="list-style-type: none"> <li>Can pass any certification – AWS, ASME, PED, NQA</li> </ul>	<ul style="list-style-type: none"> <li>Can pass any certification</li> </ul>
<b>Key success factors</b>	<b>Key success factors</b>	<b>Key success factors</b>	<b>Key success factors</b>
<ul style="list-style-type: none"> <li>Machine set-up, metal prep.</li> <li>Appearance – polishing/finishing/grinding</li> <li>Material handling – jib crane &amp; forklift skills</li> <li>Safety awareness</li> <li>Mechanical aptitude</li> <li>Math skills – geometry</li> <li>Blueprint reading exposure; basic ability to read and understand procedures</li> <li>Drug free</li> <li>Verbal comm. (English)</li> </ul>	<ul style="list-style-type: none"> <li>Enhanced cosmetics/aesthetics</li> <li>Knows weld symbols</li> <li>Dye check</li> <li>Fabrication/fitting (beginning)</li> <li>Can run one piece of equipment (e.g., Miller, Lincoln)</li> <li>Understands metallurgy</li> </ul>	<ul style="list-style-type: none"> <li>Higher-level cosmetics/aesthetics</li> <li>Fabrication/fitting</li> <li>Produces documentation</li> <li>Provide feedback to Engineering Dept.</li> <li>Fluent in reading drawings</li> <li>Strong vessel and pipe work</li> </ul>	<ul style="list-style-type: none"> <li>Trainer role</li> <li>Inspection (possible CWI)</li> <li>Possible business-side responsibilities</li> <li>&lt;1% re-weld rate (x-ray)</li> </ul>

## Quality Assurance Skill Levels

### Level – I (Quality Tech)

Inspect processed, machined, fabricated, or assembled parts or products for defects, wear, and deviations from specifications.

### Level – II (Quality Inspector)

Will use precision measuring instruments and complex test equipment to ensure products meet specifications.

### Level – III (Quality Engineer)

Design, develop, test, and evaluate integrated systems for managing industrial production processes, including, quality control, inventory control, logistics and material flow, cost analysis, and production coordination

### Level IV (Quality Manager)

Plan, direct, or coordinate quality assurance programs. Formulate quality control policies and control quality of laboratory and production efforts

#### Skills

- Mechanically inclined
- Knowledge of basic measuring equip., rulers, calipers, micrometers
- Attention to detail (demonstrated)
- Shop math
- Blueprint (move possibly to #2)
- Good communication skills
- Good writing skills
- MS office experience
- Willing to learn about other manufacturing jobs
- Customer service skills (internal & external)

#### Skills

- Math, geometry, trig, proficient in Excel, Access, basic chemistry, basic statistics, high school physics
- Demonstrate leadership ability
- Calibration skills
- Knowledge of threads, mechanical aptitude
- Understanding of lean and ISO principals
- Ability to operate CMM, advanced measuring equipment.
- Organizational skills
- Basic machining knowledge
- Understanding ability to follow various specifications

#### Skills

- Operate CMM (interpret results)
- Portable CMM; Laser trackers
- Comprehensive understanding of GD&T; SPC (statistical process control)
- More software
- Proficient in use of CAD (manipulate model)
- Certified in specialized disciplines such as CW1, 6 sigma, NDE, ASQ
- Certified as a Lead Auditor; Welding inspector.
- Troubleshooting: root cause analysis, cause/effect, corrective action, pa
- Interface with sales & proposals, SPC/SQC

#### Skills

- Heavy in statistics (black belt a plus)
- Financial (cost benefit analysis)
- Industry specific
- ISO & 9000 preferred
- GD&T
- Project Management background/exp.
- Good time management skills

#### Key Success Factors

- Driver's license required
- People skills; Communication
- Team work ; Critical thinking skills, Problem solving; Conflict resolution
- Ethics, Personal responsibility
- Honestly/integrity; Accuracy
- Business Etiquette

#### Key Success Factors

- Product & material science knowledge
- Calipers, micrometers, ruler
- CAD; Blueprint reading
- Basic knowledge GD&T
- Enhanced Level I

#### Key Success Factors

- Technical writing: ability to read procedures
- Multi-tasking is huge.
- Supervision/Lead
- Working knowledge of Six Sigma
- Advanced problem solving
- Enhanced Levels I & II

#### Key Success Factors

- Strong people skills-cross departmental interaction with all levels
- Highest ethical/trustworthy
- Must be fair, conflict resolution oriented

#### Education/Experience

- 1 year work experience/does not need to be in mfg.
- GED/HS minimum
- \$12 - \$14 per hour

#### Education/Experience

- 2 – 3 years exp in mfg.
- 2 year Associate Degree/ASO cert or 1-3 years experience in mfg
- \$14 – 18 per hour

#### Education/Experience

- B.S. Engineering (Mechanical/Industrial)
- Experience 3-5 years or AAS preferred + 1-2 years experience in quality
- \$16 -\$24 per hour

#### Education/Experience

- Industrial Engineer or Chemical Engineer preferred
- 2-5 years experience
- \$30+ per hour



### Job Titles

- Quality Tech
- Quality Inspector
- Quality Engineer
- Quality Manager

Education Providers

Service Technicians

ECC Industrial Technology

Soft skills

Business etiquette



## Advance Buffalo – Mechanical Skills Level

### Level – I –(Maintenance Helper)

Works under 100% supervision, perform basic mechanical maintenance

**Level – II -** Performs functions related to the set up, installation, maintenance, safety and repair of plant machinery, structures, systems and basic electrical/electronic work.

**Level III – (Field Technician)** Full autonomy, capable of lead role, possesses specialized skills

#### Process

- ✚ Basic knowledge of mechanical physics / basic machining fundamentals
- ✚ Basic electricity / basic hydraulics
- ✚ Basic blueprint reading/drawing/schematics
- ✚ Basic knowledge of fasteners
- ✚ Basic troubleshooting
- ✚ Read tape measure
- ✚ Read & understand equipment manuals

#### Process

- ✚ Diagnostic & troubleshooting problems
- ✚ Machining skills, experience (metal removal, deburring, grinding)
- ✚ Power transmission
- ✚ Ability to adjust parts
- ✚ Learn instruments;
- ✚ Advance blueprints; use measuring tools
- ✚ Check own work

#### Process

- ✚ Knowledge of laser (align), thermal (imaging)
- ✚ Alignment techniques
- ✚ Assist engineering with design
- ✚ Knowledge of vibration analysis
- ✚ Advanced machining techniques / experience
- ✚ Advanced troubleshooting and diagnostic

#### Key Success factors

- ✚ Own basic tools and know how to use
- ✚ Standard safety oriented (OSHA)- forces, pressure, hazard
- ✚ Basic math / shop math (know how to do conversion)
- ✚ Ability to follow directions; basic computer skills
- ✚ Mechanical aptitude (e.g. not afraid to change brakes or a tire)
- ✚ Communication skills; Able to receive constructive criticism
- ✚ Be able to work independently or in a team
- ✚ Physical requirements (heavy lifting, tolerance of heights)
- ✚ Dress appropriately

#### Key Success Factors

- ✚ Enhanced Level I
- ✚ Mentor to Level I
- ✚ Advanced computer skills
- ✚ Hydraulics, pneumatics, AC/DC knowledge
- ✚ Transformers, motors, relay logic
- ✚ Electronics / electrical schematics; Digital logic
- ✚ Knowledge of lighting/HVAC
- ✚ Basic sketching skills (ability to convey blueprint information to others)
- ✚ Confident with working /communicating with other outside of company
- ✚ Excellent customers service skills suppliers
- ✚ Creative problem- solving
- ✚ Maintains required records (electronic and/or hard copy).

#### Key Success Factors

- ✚ Enhanced Level I & II
- ✚ Ability to train others
- ✚ Ability to perform pressure and vacuum testing
- ✚ Full knowledge of hydraulics, electrical
- ✚ Ability to perform failure analysis in the field and repair
- ✚ Field fabrication
- ✚ Excellent customer service skills
- ✚ Must be able to travel
- ✚ Excellent computer skills
- ✚ Journey person
- ✚ Supervisor

#### Education/Experience

- ✚ High school (GED) w/BOCES vocational
- ✚ Hands-on
- ✚ \$10-\$12 an hour

#### Education/Experience

- ✚ High school (GED)
- ✚ 3 – 5 years experience
- ✚ Some type of vocational tech
- ✚ 2 year Associates degree + but not required
- ✚ \$16 - \$18 an hour

#### Education/Experience

- ✚ 5 – 10 years experience
- ✚ 2 year Associates degree
- ✚ Above \$20 an hour



## Advance Buffalo – Mechanical Skills Level

### Job Titles

Industrial Maintenance Mechanic

Field Technician

Machine Repair

Millwright

Maintenance Mechanic



Source: Manufacturers Electro Mechanical Summit, October 31, 2013



**BUFFALO BILLION**  
*An Initiative of the WNY Regional Economic Development Council*

## Advance Buffalo – Industrial Electrician Skills Levels

Level I – Electrician Helper 100% supervision	Level II – Able to install, maintain and repair electrical wiring, equipment	Level III – Advance level. Able to test design and set up	Level IV – Full autonomy; capable of lead role; ability to perform all the other levels
<p><b>Process</b></p> <ul style="list-style-type: none"> <li>• Able to read blueprint or read CAD printouts</li> <li>• Begin to read mechanical blueprint</li> <li>• Understand tool set (hand tools)</li> <li>• Understand safety concerns and knowledge</li> <li>• Understand Low voltage 120/240</li> <li>• Single phase and DC circuits</li> </ul>	<p><b>Process</b></p> <ul style="list-style-type: none"> <li>• Sketch a blue print and read High voltage 480/600</li> <li>• Knowledge of NEC (code)</li> <li>• 3 phase power (industrial)</li> <li>• Knowledge of beginning machine control (CNC, PLC, DCS)</li> <li>• Use tool set including multi meter</li> <li>• Read instruction manuals in any language</li> <li>• Begin testing and troubleshooting (calibration verify work done)</li> </ul>	<p><b>Process</b></p> <ul style="list-style-type: none"> <li>• Test design and set-up</li> <li>• Support level I &amp; II as necessary</li> <li>• High voltage 600+ (substation work)</li> <li>• Identify hazards and able to teach/train in OSHA regulations</li> <li>• Read CAD via computer</li> <li>• Uses PLC, CNC, DCS to troubleshoot</li> <li>• Proficient in each class of environment</li> <li>• Proficient in NEC (code)</li> </ul>	<p><b>Process</b></p> <ul style="list-style-type: none"> <li>• Knowledge of Design techniques</li> <li>• Understand engineering concepts through experience</li> <li>• Can use CAD as a tool (in design)</li> <li>• Programming CNC, PLC, and DCS</li> <li>• Management and budget and scope a job</li> </ul>
<p><b>Key Success Factors</b></p> <ul style="list-style-type: none"> <li>• Ability to communicate/reporting</li> <li>• Listening skills/ability to follow directions</li> <li>• Comfortable working in a team</li> <li>• Able to have insight and knowledge needed to carry out the job</li> <li>• Available to work 24/7 &amp; overtime</li> </ul>	<p><b>Key Success Factors</b></p> <ul style="list-style-type: none"> <li>• Enhanced Level I</li> <li>• Mentor Level I</li> <li>• Work independently</li> </ul>	<p><b>Key Success Factors</b></p> <ul style="list-style-type: none"> <li>• Enhanced Level I &amp; II</li> <li>• Supervisory skills</li> <li>• Leadership</li> <li>• Ability to instruct others</li> <li>• Analytical skills</li> </ul>	<p><b>Key Success Factors</b></p> <ul style="list-style-type: none"> <li>• Some formal education in principles of engineering. Possibly continuing education (pro-active)</li> <li>• Supervision of other staff/departments</li> </ul>
<p><b>Education/Experience</b></p> <ul style="list-style-type: none"> <li>• Read and write English</li> <li>• High school/GED, physics a plus</li> <li>• Documented work experience (2 years, need not be in the electrical field)</li> <li>• Knowledge of OSHA</li> <li>• Vocational degree</li> </ul>	<p><b>Education/Experience</b></p> <ul style="list-style-type: none"> <li>• Read and write English</li> <li>• Associates degree or higher</li> <li>• Electrical technology</li> <li>• 5 years experience minimum</li> <li>• \$15 - \$20 an hour</li> </ul>	<p><b>Education/Experience</b></p> <ul style="list-style-type: none"> <li>• Deliberate/methodical/plan and validate before any action is taken</li> <li>• Associates degree or higher</li> <li>• Journey person</li> <li>• 5 + years as an electrician</li> <li>• \$20+ an hour</li> </ul>	<p><b>Education/Experience</b></p> <ul style="list-style-type: none"> <li>• 10 years +</li> <li>• Associates degree or higher</li> <li>• \$20+ an hour</li> </ul>



Source – Electrical Manufacturers Summit, October 21, 2013



**BUFFALO BILLION**  
An initiative of the WNY Regional Economic Development Council

## Advance Buffalo – Industrial Electrician Skills Levels

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### Types of Industry Electricians

#### Construction Electrician

- L Wire Pullers
- Conduit Management
- Wire Types

#### Panel Builder

#### Controls Electrician

L PLC's, variable speed drives

- Communications

#### Facilities Electrician

- L knowledge of 480
- Power distribution

#### Process instrument



Source – Electrical Manufacturers Summit, October 21, 2013



**BUFFALO BILLION**

*An initiative of the WNY Regional Economic Development Council*

## Advance Buffalo – Electro Mechanical Skills Levels

### Level – I – Entry Level,

Under 100% supervision. Can perform basic electro - mechanical , maintenance of equipment.

**Level – II** -Performs all functions as required with regard to the set up, installation, maintenance, safety and repair of plant machinery, systems and structures. Performs electronic and/or mechanical diagnostic trouble- shooting and repair of plant equipment machinery

### Level – III – Advanced level, Senior Technician

#### Process

##### Electrical Skills

- Basic knowledge of AC/DC motor circuits (low voltage)
- Understanding of panel building, motor controls, power distribution, conduits

##### Instrumentation/Mechanical Skills

- Knowledge of automated valves, hydraulics, pneumatics, basic welding,
- Flow, pressure/temperature measurement

#### Process

##### Electrical/Mechanical

- Troubleshooting skills
- PLC/loop drawing/DCS
- Variable speed drives
- Basic machining
- Process control
- Pump rebuilding
- Analytical predictive and preventive maintenance assistance
- Spindle rebuilding
- Rebuild instrumentation

#### Process

##### Electrical/Mechanical

- Knowledge of Digital logic, Microprocessor based technology
- 3D mechanical schematic experience
- AC/DC Electric power (low voltage below 600v) and high voltage (above 600v)
- Motor control (Servo)
- Variable speed drive
- Advance machining
- Bearings, power transmission
- Drive systems, slide ways, Advance welding(stick); rebuild a pump, automatic valves

#### Tools/Equipment

- Knowledgeable to basic hand tools, calibers, micrometers

#### Tools/Equipment

- Electronic diagnostic meters, scopes, calibrating and test equipment, etc. Able to operate power tools including; drills, saws, grinder, jack/nail hammers, threading equipment, etc. Weld and burning equipment, lathes, mills, or other machinery as required

#### Tools/Equipment

- Advanced level

#### Key success factors

- Schematic Reading
- Knowledgeable of OSHA rules
- Basic computer skills
- Math skills (up to calculus)
- Knowledge of Chemistry/Physics
- Oral & written communication skills
- Team Player
- Attendance, willingness to work overtime
- Ability to work outside

#### Key success factors

- Enhanced Level I
- Able to mentor Level I
- Analysis all types of circuits, or wiring systems using wiring diagrams, drawings, specifications, etc., as required to install, troubleshoot, maintain, calibrate, modify or otherwise service all types of electronic devices, production machinery, plant wiring, or other systems as directed.

#### Key success factors

- Enhanced Level I & II
- Supervision of associates
- Repair, rework, or calibrate hydraulic or pneumatic assemblies or systems to meet operational specifications or tolerances.
- Train others to install, use, or maintain robotic systems

#### Education/Experience

- H.S./GED, Preferred Vocational Ed +

#### Education/Experience

- Associates and/or 3 -5 years exp

#### Education/Experience

- Bachelors degree and/or 7 years exp



Source: Manufacturers Mechatronics Summit 10.31.2013



**BUFFALO BILLION**  
An initiative of the WNY Regional Economic Development Council

- Mechanically inclined
- 

### **Electro Mechanical Job Titles**

#### **Utilities**

Line Mechanic  
Service Technician  
Cable Splicer  
Substation

#### **Manufacturing**

Instrument and Control Technician  
Oiler Mechanic  
Maintenance Mechanic  
CNC Specialist  
Electrical Technician  
Electro-Mechanical Technician (E/M Technician),  
Electronic Technician,  
Test Technician, Tester,  
Mechanical Technician,  
Product Test Specialist,  
Electro-Mechanic,  
Electronic Instrument Technician,  
Laboratory Technician,  
Maintenance Technician



# *Recommendations*

- Have skills broker in place upon launching pilot.
- Formalize policies and documentation on the intake process, candidates screening, and referrals before pilot launch.
- Ramp up staff to meet candidate applications
  - Buffalo currently has 1200 unscreened applicants, but lacks adequate staff to process.
  - DOL is currently partnering with 3 temporary placement agencies to help screen applicant backlog.

# Questions ?



# ***Advance Buffalo Hiring Details***

GENDER	AGE	RACE	Company	Job Title	Date of Hire
Male	25-34	Black or African American	Aerotek	Claims Processor (Part B Prep)	10/2/13
Male	35-44	White	Alstom Power	AB- Welder Assemblers	11/20/13
Male	<24	White	Alstom Power	AB- Welder Assemblers	11/20/13
Male	45-54	Black or African American	Calgon Carbon	Production Technician	12/12/13
Male	25-34	White	Dimar Manufacturing	AB- Welders - Level 1 -2	10/11/13
Male	45-54	Black or African American	Dimar Manufacturing	AB- Welders - Level 1 -2	10/23/13
Male	55-64	White	Dimar Manufacturing	AB- Welders - Level 1 -2	10/23/13
Male	55-64	White	Dimar Manufacturing	AB - Welder	11/26/13
Male	35-44	White	DKP Buffalo	General Labor - FT	10/23/13
Male	55-64	Black or African American	DKP Buffalo	General Labor - FT	11/17/13
Male	45-54	Asian (Refugee)	Eastern Machine	AB-Machinist	1/20/14
Male	25-34	Black or African American	Ford Motor Co	AB- Production	11/18/13
Male	25-34	White	Ford Motor Co	AB- Production	11/18/13
Male	45-54	White	Ford Motor Co	AB- Production	11/18/13
Male	45-54	Alaskan or American Indian	Ford Motor Co	AB- Production	11/18/13
Male	25-34	Hispanic or Latino	Ford Motor Co	AB- Production	11/18/13
Female	35-44	White	Ford Motor Co	AB- Production	11/18/13
Female	45-54	White	Ford Motor Co	AB-Production	1/13/14
Female	25-44	White	CM COMPONENTS	AB- General Assembler/Machine Operator	10/7/13



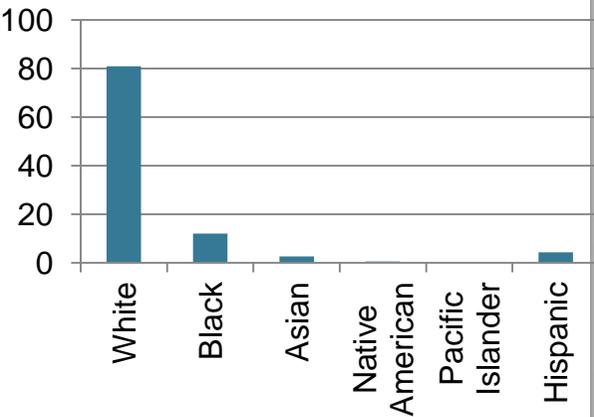
GENDER	AGE	RACE	Company	Job Title	Date of Hire
Female	55-64	Black or African American	GM COMPONENTS	AB- General Assembler/Machine Operator	11/7/13
Male	35-44	Black or African American	GM COMPONENTS	AB- General Assembler/Machine Operator	11/7/13
Male	25-34	Black or African American	GM COMPONENTS	AB- General Assembler/Machine Operator	11/7/13
Female	35-44	Black or African American	GM COMPONENTS	AB- General Assembler/Machine Operator	11/7/13
Male	35-44	Black or African American	GM COMPONENTS	AB- General Assembler/Machine Operator	11/14/13
Male	45-54	Hispanic or Latino	Goodyear	Electrician	10/7/13
Male	45-54	Alaskan or American Indian	Greenwich Associates	Phone Interviewers	10/21/13
Male	25-34	White	HDM Hydraulics LLC	AB-Tester	8/27/13
Male	25-34	Hispanic or Latino	Home Depot	Cashiers, Sales	10/23/13
Male	55-64	Black or African American	Installs Inc. LLC	Customer Service Reps. - FT	11/25/13
Female	35-44	Asian (Refugee)	Mod Pac	Production	11/7/13
Female	25-34	White	Multisorb Technologies	AB- Production Operator	11/25/13
Male	45-54	Black or African American	Niagara Thermal	AB- Stacker/ Assembler (Entry)	12/30/13
Male	25-34	White	Norampac Industries	AB- Production Line	1/9/14
Male	45-54	White	North American Carbide	Machine Operators	12/2/13
Male	35-44	White	Packstar	Press Machine Operator	1/15/14
Male	35-44	White	Quality Park Products	AB- Die Cut Operators	11/25/13
Female	45-54	White	Superior Technical	AB- EElectronic Assembler	10/7/13

GENDER	AGE	RACE	Company	Job Title	Date of Hire
Male	45-54	White	Tonawanda Coke	AB- Industrial Electrician	11/29/13
Male	35-44	Alaskan or American Indian	Tonawanda Coke	AB- Repairman/Mechanical - Level II	12/4/13
Male	55-64	Black or African American	Tonawanda Coke	AB- General Laborer	1/13/14
Male	45-54	White	Tonawanda Coke	AB- General Laborer	1/13/14
Male	55-64	White	Tonawanda Coke	AB- General Laborer	1/13/14
Male	35-44	Black or African American	Tonawanda Coke	AB-General Laborer	1/13/14
Male	35-44	White	Tonawanda Coke	AB- Industrial Electrician	12/3/14
Male	55-64	White	Unifrax I LLC	Plant Operator B	7/24/13
Male	25-34	White	Unifrax I LLC	Plant Operator B	8/12/13
Male	45-54	White	Unifrax I LLC	Plant Operator B	8/21/13
Male	25-34	White	Unifrax I LLC	Plant Operator B	8/22/13
Male	25-34	White	Unifrax I LLC	Plant Operator B	8/22/13
Male	25-34	White	Unifrax I LLC	Plant Operator B	8/22/13
Male	25-34	White	Unifrax I LLC	Plant Operator B	10/16/13
Male	35-44	White	United Biochemicals	Maintenance Mechanic	11/26/13
	45-54	Alaskan or American Indian	UPS	Driver Helpers - PT Seasonal	11/4/13
Male	55-64	White	Xylem Heat	AB- Welder/Fabricator - Level 2	11/18/13

# Diversity – Race/Ethnicity

## Region<sup>1</sup>

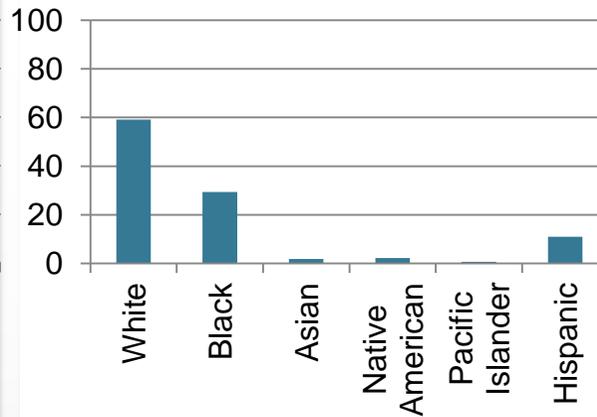
Percent



White	80.9%
Black	12.1%
Asian	2.6%
Native American	0.6%
Pacific Islander	0.1%
Hispanic	4.3%

## Pilot Pipeline

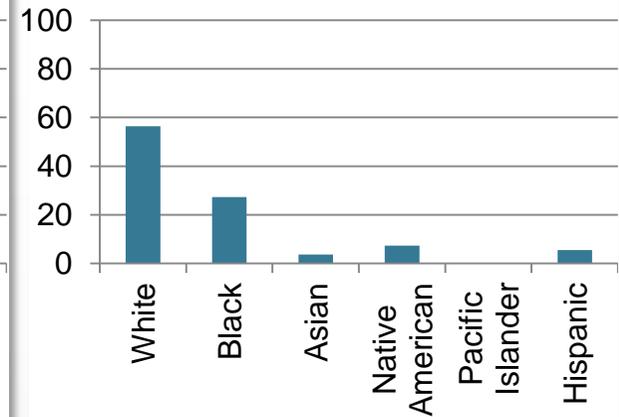
Percent



White	59.2%
Black	29.4%
Asian	1.8%
Native American	2.2%
Pacific Islander	0.6%
Hispanic	11.0%

## Hired

Percent

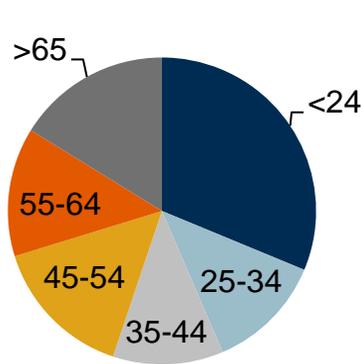


White	56.4%
Black	27.3%
Asian (Refugee)	3.6%
Native American	7.3%
Pacific Islander	0.0%
Hispanic	5.5%

<sup>1</sup>Source: US Census, American Community Survey 2012 (Erie & Niagara Counties)

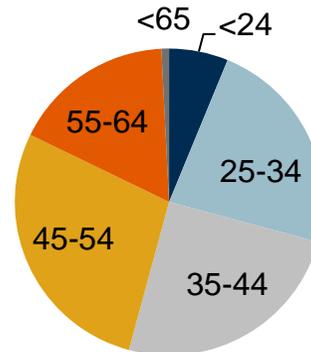
# Diversity – Age

## Region<sup>1</sup>



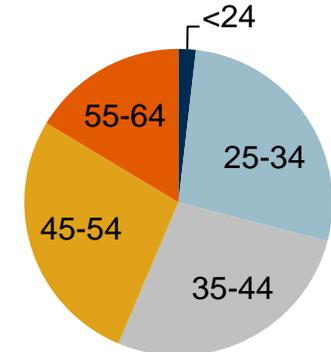
Under 24	31.3%
25-34	12.3%
35-44	11.6%
45-54	15.1%
55-64	13.6%
65 and over	16.2%

## Pilot Pipeline



Under 24	6.2%
25-34	23.0%
35-44	25.0%
45-54	28.0%
55-64	17.0%
65 and over	0.8%

## Hired

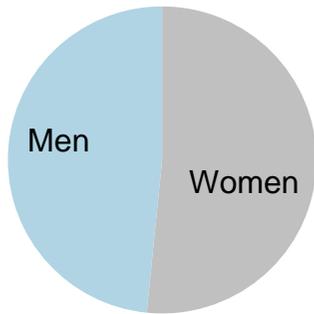


Under 24	1.8%
25-34	27.3%
35-44	27.3%
45-54	27.3%
55-64	16.4%
65 and over	0.0%

<sup>1</sup>Source: US Census, American Community Survey 2012 (Erie & Niagara Counties)

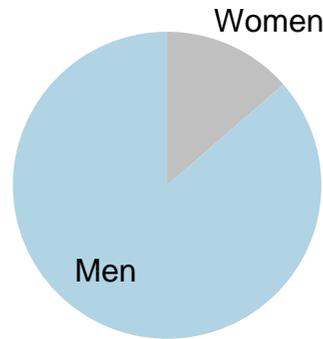
# Diversity – Gender

## Region<sup>1</sup>



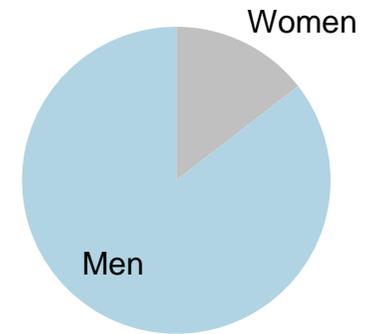
Women	51.6%
Men	48.4%

## Pilot Pipeline



Women	13.6%
Men	86.4%

## Hired

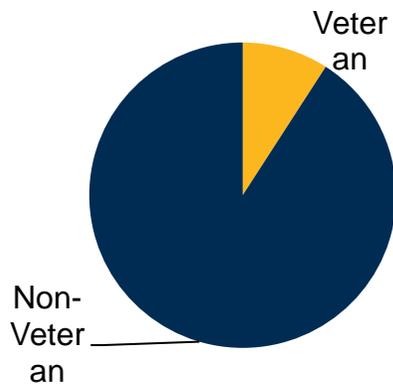


Women	14.5%
Men	85.5%

<sup>1</sup>Source: US Census, American Community Survey 2012 (Erie & Niagara Counties)

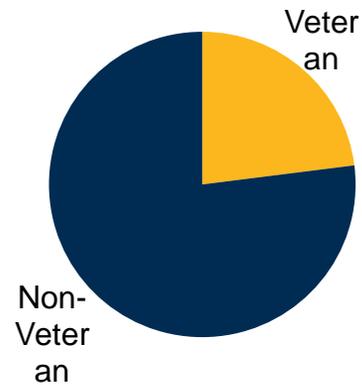
# Diversity – Veterans

## Region<sup>1</sup>



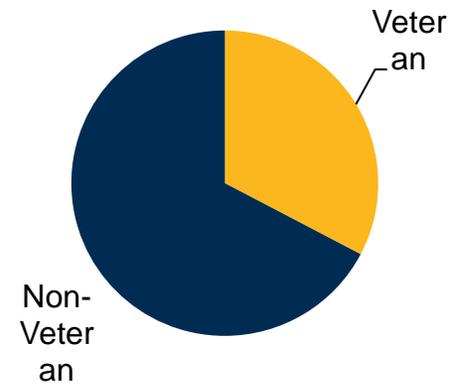
Veteran	9.1%
Non-Veteran	90.9%

## Pilot Pipeline



Veteran	23.0%
Non-Veteran	77.0%

## Hired



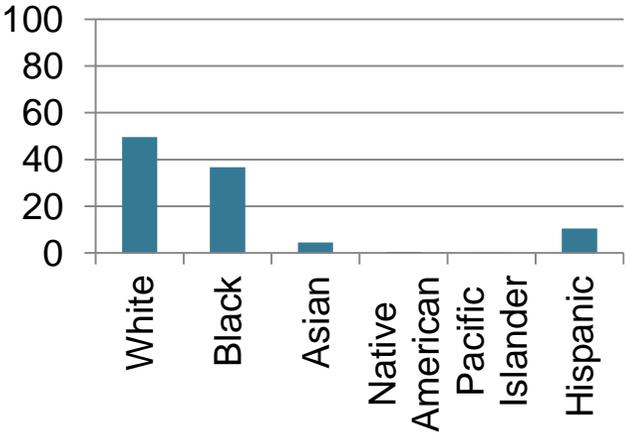
Veteran	32.7%
Non-Veteran	67.3%

<sup>1</sup>Source: US Census, American Community Survey 2012

# City Data - Buffalo

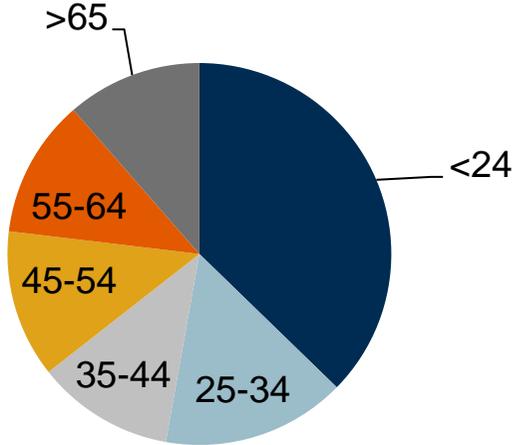
## Race<sup>1</sup>

Percent



White	49.6%
Black	36.7%
Asian	4.5%
Native American	0.4%
Pacific Islander	0.1%
Hispanic	10.5%

## Age<sup>1</sup>

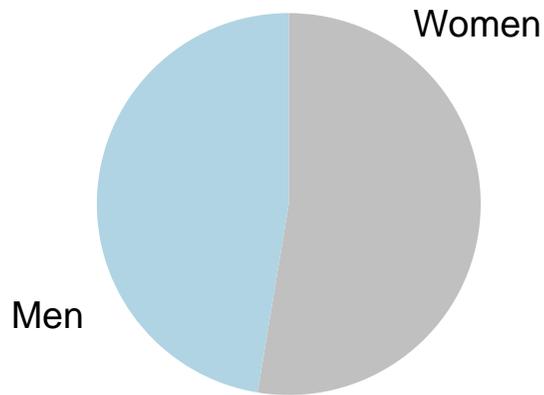


<24	37.3%
25-34	15.5%
35-44	11.6%
45-54	12.5%
55-64	11.7%
>65	11.4%

<sup>1</sup>Source: US Census, American Community Survey 2012

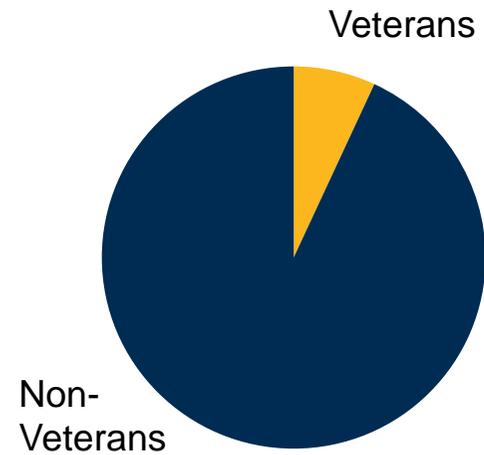
# City Data - Buffalo

## Gender<sup>1</sup>



Women	52.6%
Men	47.4%

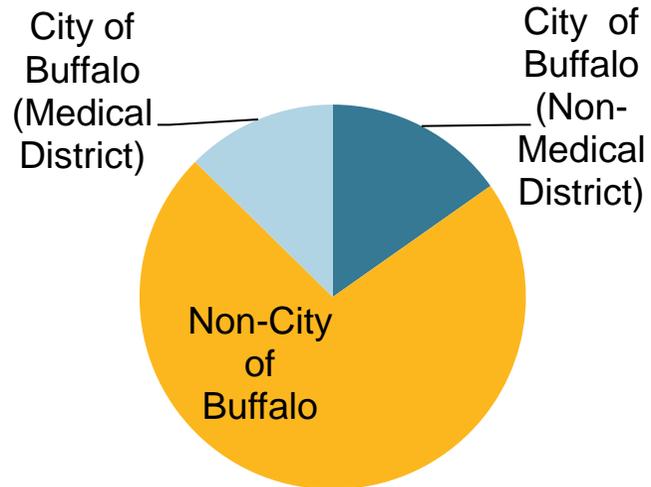
## Veteran Status<sup>1</sup>



Veteran	6.9%
Non-Veteran	93.1%

# Diversity – City of Buffalo Residents

## Pilot Pipeline



City of Buffalo (Total)	27.8%
City of Buffalo (Medical District)	12.6%
City of Buffalo (Non-Medical District)	15.2%
Non-City of Buffalo	72.2%