Workforce Diversity

Commissioner Eubanks, MPSC
Monica Martinez, Principal, Ruben Strategies
Carla Walker-Miller, Walker-Miller Energy Services
Supplier & Workforce Diversity
Michigan Energy Providers Conference
Mackinac Island, MI

Rachael Eubanks, Commissioner
Michigan Public Service Commission
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Personal Background

- Public finance career
- Past involvement related to Inclusion & Diversity (I&D)
- Definition of I&D
  - Respect and appreciation of our differences
  - Creation of an environment that allows everyone to be their most authentic selves
  - Diversity is about more than who we are when we’re born
- Successful organizations excel at both I&D because it brings organizational value
Current Involvement at National Level

- National Association of Regulatory Utility Commissioners (NARUC) Subcommittee on Supplier and Workforce Diversity
  - Diversity relevant in energy industry
  - Subcommittee goals
  - Facilitates change and encourages partnerships
  - Provides mutual economic benefits for ratepayers, investors, and Disadvantage Business Enterprises (DBE)
Welcome to the Toolkit!

On behalf of the Boards of Directors of the National Association of Regulatory Utility Commissioners and the National Utilities Diversity Council, and the Toolkit Task Force, we are pleased to welcome you to the Supplier Diversity Toolkit – a resource for utility and telecommunications regulators, suppliers, and companies. The Toolkit provides data and information on supplier diversity in the utilities, telecommunications, and cable and broadband industries, including:

- A compilation of aggregated spend data and publicly available information concerning supplier diversity and population in each State;
- Best practices across the spectrum of supplier diversity operations;
- Tools for encouraging supplier diversity; and
- Resources to help diverse suppliers identify opportunity.

Please feel free to download the attachments and use them to help advance diversity and opportunity in your own companies. Read More>>

http://nudc.com/toolbox/welcome-to-the-toolkit
Demographics

Figure 5-2. Electricity and Related Industry Employment Demographic Indicators, 2015

The electricity industry ranks far below the national average in employment of women, African Americans, Asian Americans, and Latinos. The oil and gas extraction and coal mining industries have similar demographic characteristics. The construction industry, where energy efficiency jobs are mostly located, has a higher percentage of employment of Hispanic or Latino Americans.
Aging Workforce

Figure 5-3. Age Distribution in Electric and Natural Gas Utilities in 2006 and 2014\textsuperscript{72}

The age distribution in electric and natural gas utilities has shifted between 2006 and 2014, reflecting both the higher proportion of the workforce that is nearing retirement and industry efforts to address the aging workforce by hiring younger employees.

Workforce Challenges Facing The Utility Industry

- Aging Workforce – around 30% of the utility workforce is reaching the age of eligible retirement in the next 10 years
- Loss of critical knowledge
- Procuring qualified replacements
- High demand for skilled trades workers
- New technologies require new and evolving skill sets for industry employees
- Long & steep learning curve
<table>
<thead>
<tr>
<th>Job Category</th>
<th>Job Description</th>
<th>Required Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lineman</td>
<td>Responsible for the installation and repair of overhead and underground distribution and transmission lines, poles, transformers, and other equipment.</td>
<td>High School</td>
</tr>
<tr>
<td>Power Plant Operator</td>
<td>Responsible for the maintenance and operation of all primary and auxiliary equipment required to generate electricity or meet natural gas customers' demands.</td>
<td>Vocational</td>
</tr>
<tr>
<td>Technicians (Transmission and Distribution)</td>
<td>Responsible for the repair of both electrical and mechanical equipment. This includes inspecting and testing electrical equipment in generating stations and substations.</td>
<td>Apprenticeship</td>
</tr>
<tr>
<td>Technicians (Generation)</td>
<td>Responsible for the construction, assembly, maintenance, and repair of steam boilers and boiler house auxiliary equipment.</td>
<td>Associates</td>
</tr>
<tr>
<td>Pipefitters and Pipelayers (Generation)</td>
<td>Responsible for the installation and maintenance of pipe systems and related equipment for steam, hot water, heating, sprinkling, and industrial production and processing systems.</td>
<td>Bachelors</td>
</tr>
<tr>
<td>Power Engineers</td>
<td>Focus on electrical systems, equipment, and facilities rather than on mechanical systems and other non-electrical systems involved in electric and natural gas energy services. It includes people involved in planning, research, design, development, construction, installation, and operation of equipment, facilities, and systems for the safe, reliable, and economic generation, transmission, distribution, consumption, and control of electricity.</td>
<td>Masters</td>
</tr>
<tr>
<td>All Other Engineers</td>
<td>Focus on non-electrical systems, processes, equipment, and facilities involved in electric energy services. It includes people involved in planning, research, design, development, construction, installation, and operation of equipment, facilities, and systems for the safe, reliable, and economic generation, supply, transmission, distribution, consumption, and control of electricity.</td>
<td>Doctorate</td>
</tr>
</tbody>
</table>

The electricity workforce includes several job categories, each with specific educational requirements (shown in orange). The striped orange boxes show where a specific level of education is sometimes required or infrequently required.

State of Michigan Efforts

- Going PRO in Michigan Campaign
  - [www.going-pro.com](http://www.going-pro.com)
  - Michigan faces a shortage of people trained in professional trades
  - Professional trades will account for more than 500k jobs in MI
  - 15k new job openings expected annually
  - Need is especially strong in Detroit
  - Michigan Department of Talent and Economic Development (TED) and Michigan Department of Education (MDE) to partner and work closely
State of Michigan Efforts

- Michigan Career Pathway Alliance
  - Result of Executive Directive from Gov. Snyder to TED and MDE
    - Ensure Michigan students are best prepared for a prosperous career
    - Address talent shortages threatening the state’s continued growth
  - Recommendations released June 26, 2017
    - Promote Student Success
    - Embed Michigan Merit Curriculum Flexibility
    - Increase Professional Trades Instructors
    - Support Career Development
    - Develop Practical Professional Trades Experiences For Students And Educators
    - Promote Career Pathways
State of Michigan Efforts

- Investments in Our State
  - $50M state-of-the-art equipment for community colleges
  - $20M K-12 Career & Technical Education Equipment and Innovation Grant - provide training for high-wage, high-demand job vacancies
  - $2.5M federal grant - boost number of apprenticeships in the state
  - Skilled Trades Training Fund
    - Grants to employers to train current and potential employees
State of Michigan Efforts

MAT²® MICHIGAN ADVANCED TECHNICIAN TRAINING PROGRAM

MAT²® – the Michigan Advanced Technician Training Program – is an innovative, industry-driven approach to education. Developed in conjunction with global industry technology leaders to combine theory, practice and work to train a globally competitive workforce. MAT² addresses two critical issues facing the manufacturing and technology industries: a widening skills gap and an aging workforce. This initiative functions similar to an apprenticeship program, where students alternate between classroom instruction and on-the-job training, gaining the necessary hands-on skills and real-world experiences for them to become a successful and productive member of the workforce.

http://mitalent.org/mat2

PURE MICHIGAN
Talent Connect
Partnerships In the State

THE POWER OF PARTNERSHIPS
Michigan Energy Workforce Development Consortium

WHO WE ARE
• Established in 2008 an alliance of Michigan employers, educators, workforce agencies, government agencies and veteran agencies
• Part of a nationally recognized energy consortium established to close the current gap of skilled workers in America
• Creating a pathway to careers in the energy industry

WHAT DRIVES US
• By 2020, FIFTY-PERCENT of current Michigan energy workers will be ELIGIBLE TO RETIRE
• Committed to SUPPORTING THE ENERGY SECTOR WORKFORCE needs in our state
• Focused on DEVELOPING A TALENT PIPELINE for a qualified and diverse workforce

WHAT HAVE WE ACCOMPLISHED
• Annually conduct "CAREERS IN ENERGY" WEEK proclaimed by the Governor
• Member companies received recognition as VETERAN-FRIENDLY ORGANIZATIONS
• In partnership with the Michigan Board of Education, obtained Michigan’s adoption of a 17th CAREER CLUSTER IN ENERGY
• Implemented the Talent Pipeline Management Model by SECURING GRANT FUNDING from the U.S. Chamber of Commerce Foundation
• Selected for inclusion in the TALENT INVESTMENT AGency’s ApprenticeshipUSA GRANT from USDOE

OUR GOALS ARE TO
• Promote a proficient talent pool
• Predict future industry workforce needs, including specific skill sets
• Align education and training resources across the state
• Communicate the value of the consortium to key decision makers

WHERE WE'RE GOING
• To increase the diversity of talent in the pipeline, we will IMPLEMENT TARGETED CAREER AWARENESS CAMPAIGNS
• IMPLEMENT CORE CURRICULUM in community colleges and high schools providing students with credentials and dual credit
• Through EDUCATIONAL SUMMITS with government and industry, energy-based curriculums will be in classrooms by fall 2017
• Increase AWARENESS OF THE CONTINUING NEED for an energy workforce in our state

http://consortia.getintoenergy.com/michigan/

November 2016
MPSC Recruitment Efforts

- New process and procedures developed
  - Organizational/Interest Group Contacts
  - College & University Portals
  - Outreach Activities
Thank you!

www.michigan.gov/mpsc
America’s Oil & Natural Gas industry creating more opportunities for all
Monica Martinez

Ruben Strategy Group

- Experts on low income energy assistance advocacy, low income and senior rate design, and regulations and operations to support the limited income customer experience
- Provides strategy services on workforce development and supplier diversity
- Advises clients on market development, regional wholesale market design and tariffs, and positions taken in regulatory proceedings.
- Provides technical information and testimony to the media, Congress, and state legislatures
- Represents clients in Washington, D.C., the Midwest, and South.
The American Petroleum Institute

- The premier national trade association representing all aspects of America’s oil and natural gas industry.

- Represents more than 650 member companies on legislative, regulatory, and other policy issues impacting the industry.

- Speaks on behalf of the industry in a variety of forums and public events, including the media.

- Provides services to members at both the national and state level, with 250 staff located in Washington, D.C. and in 33 state capitals.
Beyond the Pump: The Importance of Oil & Natural Gas
The inadequate supply of qualified and skilled talent is the second-biggest threat to U.S. companies’ ability to meet revenue or business performance targets. (Randstad US Workplace Trends Report, SIA, June 2016)

In 2015, the U.S. graduated just 106,658 engineers surpassed by China, India, and Russia.

32% of U.S. companies report difficulties filling jobs because of talent shortages. (The Manpower Group 2015)

20-30% of American students never graduate from high school.
The Workforce Challenge:

…but our students aren’t prepared

The U.S. ranks 17th in Technological Readiness

The Workforce Challenge: Underprepared in STEM

The Countries With The Most Engineering Graduates
Top countries for graduates in engineering, manufacturing and construction

- Russian Federation: 454,436
- United States: 237,826
- Iran: 233,695
- South Korea: 147,858
- Ukraine: 130,391
- France: 104,746
- Japan: 168,214
- Indonesia: 140,169
- Mexico: 113,944
- Vietnam: 100,390

* 2015 rank out of 124 economies. No data available for China, India

Sources: World Economic Forum 2015/UNESCO Institute for Statistics
WORKFORCE OPPORTUNITIES

Nearly 1.9 million job opportunities through 2035
Job Opportunities by Region

Period: 2015-2035

July 2017
In all regions, at least 50% of the job opportunities are projected to be in blue collar occupations, many of which will be skilled and semi-skilled.
About 70% of Hispanic workers and 60% of African American workers in the oil & natural gas and petrochemical industries are employed in blue collar jobs.
The share of minorities employed in the oil and gas and petrochemicals industries is rising—combined minority employment will rise from about one-quarter of the total jobs in 2010 to nearly 40% by 2035.

Period: 2015-2035
Minority workers are projected to fill 46% of blue collar occupations and 25% of management & professional occupations through 2035.
The petrochemical industry is projected to have the highest share of African American workers (15%). The highest share of Hispanic workers is projected to be in the midstream segment (36%).
The Millennial Workforce

Millennials in the Oil & Natural Gas and Petrochemical Industries
Compared to Baby Boomers and Gen-Xers, Millennials are More Diverse

44% of Millennials in 2015 were Hispanic, African American or another minority group, compared to 33% of Gen-Xers and 22% of Baby Boomers at the time they were first of working ages.
Compared to Baby Boomers and Gen-Xers, Millennials are Better Educated

About 65% of Millennials age 25-34 had at least some college coursework, compared with 56% of Gen-Xers at a corresponding age and 45% of Baby Boomers.
Compared to Baby Boomers and Gen-Xers, Millennials are Less Likely to be in the Labor Force

Among all Millennials age 18-24, only **65% are in the labor force** compared to **73% of Gen-Xers** and **74% of Baby Boomers** when they were the same ages.

- **Millennial women** who are not in the labor force are **much more likely to be in school** than women of previous generations.
- **Millennial men** who are not in the labor force are no more likely to be in school, suggesting a higher share of **discouraged workers** among young Millennial men than in previous generations.

![Labor Force Data: Participation vs. Students](image)

**Labor Force Data: Participation vs. Students**

(age 18-24 cohorts)

- Men Labor Force Participation Rate: Baby Boomers 82%, Gen-Xers 77%, Millennials 67%
- Women Labor Force Participation Rate: Baby Boomers 67%, Gen-Xers 70%, Millennials 63%
- Men Students as % of “not in Labor Force”: Baby Boomers 70%, Gen-Xers 70%, Millennials 71%
- Women Students as % of “not in Labor Force”: Baby Boomers 52%, Gen-Xers 35%, Millennials 64%
Compared to Baby Boomers and Gen-Xers, Millennials are More Likely to be in Professional, Technical, and Service Occupations

Nearly 50% of working Millennials are employed in professional, technical, and service occupations compared with 33% of Gen-Xers and 30% of Baby Boomers at the same age.
Employment by Generation, 2015

2015 Oil & Natural Gas and Petrochemical Industry Employment by Generation

- **Millennials**: 34% of 475,290
- **Gen-Xers**: 39% of 542,900
- **Baby Boomers**: 27% of 372,250

Period: 2015
About one-quarter of millennials currently employed in the oil & natural gas and petrochemical industries are minority workers.
Nearly 63% of all millennials working in the oil & natural gas and petrochemical industries are employed in blue collar occupations.
# Top Detailed Occupations

<table>
<thead>
<tr>
<th>Management, Business and Financial</th>
<th>Skilled Blue Collar</th>
</tr>
</thead>
<tbody>
<tr>
<td>General and Operations Manager</td>
<td>First-Line Supervisors of Constr. &amp; Extraction Worker</td>
</tr>
<tr>
<td>Construction Manager</td>
<td>Carpenter</td>
</tr>
<tr>
<td>Engineering Manager</td>
<td>Cement Masons and Concrete Finisher</td>
</tr>
<tr>
<td>Cost Estimator</td>
<td>Paving, Surfacing, and Tamping Equipment Operator</td>
</tr>
<tr>
<td>Accountants and Auditor</td>
<td>Operating Engineers &amp; Other Constr. Equipment Operator</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Professional and Related</th>
<th>Semi-skilled Blue Collar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architect</td>
<td>Electrician</td>
</tr>
<tr>
<td>Surveyor</td>
<td>Plumbers, Pipefitters, and Steamfitter</td>
</tr>
<tr>
<td>Engineers (Civil, Electrical, Mechanical, Petroleum, Other)</td>
<td>Derrick, Rotary Drill and Service Unit Operator</td>
</tr>
<tr>
<td>Architectural and Civil Drafter</td>
<td>Industrial Machinery Mechanic</td>
</tr>
<tr>
<td>Civil Engineering Technician</td>
<td>Maintenance and Repair Worker, General</td>
</tr>
<tr>
<td>Surveying and Mapping Technician</td>
<td>Petroleum Pump System Operator, Refinery Operator</td>
</tr>
<tr>
<td>Geoscientist</td>
<td>Crane and Tower Operator</td>
</tr>
<tr>
<td>Geological and Petroleum Technician</td>
<td>Pump Operators and Wellhead Pumper</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service</th>
<th>Unskilled Blue Collar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security Guard</td>
<td>Roustabout, Oil and Gas</td>
</tr>
<tr>
<td>Janitors and Building Cleaner</td>
<td>Helpers, Extraction Worker</td>
</tr>
<tr>
<td>Sales &amp; Related</td>
<td>Welders, Cutters, Solder, and Brazer</td>
</tr>
<tr>
<td>Sales Representatives, Wholesale &amp; Manufacturing</td>
<td>Inspector, Tester, Sorter, Sampler, and Weigher</td>
</tr>
<tr>
<td>Office &amp; Administrative Support</td>
<td>Truck Drivers Heavy and Tractor-Trailer</td>
</tr>
<tr>
<td>First-Line Supervisor, Office and Administrative Support</td>
<td>Excavating and Loading Machine and Dragline Operator</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bookkeeping, Accounting, and Auditing Clerk</th>
<th>Unskilled Blue Collar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secretaries and Administrative Assistant</td>
<td>Construction Laborer</td>
</tr>
<tr>
<td>Office Clerk, General</td>
<td>Fence Erector</td>
</tr>
<tr>
<td></td>
<td>Freight, Stock &amp; Material Mover, Hand</td>
</tr>
</tbody>
</table>
Oil and Natural Gas Jobs Pay Well
(average annual wages)

- Oil and natural gas extraction: $161,674
- Petroleum refineries: $131,977
- Pipeline transportation: $117,418
- Oil and gas industry average: $100,088
- Drilling oil and gas wells: $98,601
- Support activities for oil and gas: $86,112
- Oil and gas pipeline construction: $75,999
- U.S. average: $51,296

Discussion & Questions
With nearly 1.9 million job opportunities projected in the oil & natural gas and petrochemical industries through 2035, there is a vast opportunity for the industry to attract, retain, and develop lifelong careers for Millennials. Indeed, much of the future growth of the industries will depend on the ability to attract younger workers—both to replace a large number of retirees (a projected 585,000 workers through 2035) and to support the industry’s expansion. This study is part of a series of work to develop strategies, research, and programs to better understand the challenges and opportunities associated with engaging and growing high impact strategic partnerships. Millennials represent a critically vital and available talent pool to help meet the industry’s future workforce demands.

Millennials are defined as those born in 1981-2000 (and immigrants of corresponding ages). Thus, in 2015 Millennials in the workforce of ages 18-34 are those born in 1981-1997.

This analysis:

• Compares Millennials to Baby Boomers and Gen X-ers at the same age when they were the new entrants to the labor force;

• Estimates of the number of Millennials employed in the oil & natural gas and petrochemical industries in 2015;

• Projects Millennials’ future role in the industry through 2035.

BY COMPARISON

Compared to Baby Boomers and Gen X-ers, Millennials are:

• More diverse—44% of Millennials age 18-34 in 2015 were Hispanic, African American or some other minority group, compared to one-third of Gen-Xers and 22% of Baby Boomers at the time they were first of working ages.

• Better educated—About 65% of Millennials age 25-34 in 2015 have had at least some college coursework, compared with 56% of Gen-Xers at a corresponding age and 45% of Baby Boomers.

• Less likely to be in the labor force—Among Millennials age 18-24, only 65% are in the labor force compared to 73% of Gen-Xers and 74% of Baby Boomers when they were the same ages. Millennial women who are not in the labor force are much more likely than women of previous generations to be in school. In contrast, Millennial men who are not in the labor force are no more likely to be students than the previous generations.

• More likely to be in professional, technical, and service occupations—Nearly 50% of working Millennials are employed in professional, technical, and service occupations compared to 33% of Gen-Xers and 30% of Baby Boomers at the same age. Millennials have shifted away from employment in blue collar occupations: Only 20% of working Millennials are employed in blue collar occupations compared to 26% of Gen-Xers and 34% of Baby Boomers at corresponding ages.
MILLENNIALS IN THE OIL & NATURAL GAS AND PETROCHEMICAL INDUSTRIES

- There were 475 thousand Millennials employed in the oil & natural gas and petrochemical industries in 2015, accounting for 34% of total industry employment.
  
  » About 94,000 Millennials employed in these industries in 2015 (or 20%) were Hispanic; approximately 27,000 were African American.

- As they complete their educations and move fully into the workforce, Millennials will account for most of the rising replacement requirements in the oil & natural gas and petrochemical industries. Their share of employment in these industries will rise to 41% in 2025 and remain near that level over the next decade.

- Though Millennials in general are shifting away from blue collar jobs, within the oil & natural gas and petrochemical industries Millennials’ shares of employment are highest in blue collar occupations. Millennials’ account for 46% of all industry employment in unskilled blue collar occupations and 42% in semi-skilled blue collar occupations.

- As the Millennial generation ages and the average educational attainment rises, their share of employment in managerial, business and financial occupations and in professional and related occupations will increase from 27% in 2015 to 32% in 2025.

THE NEARLY 1.9 MILLION DIRECT JOB OPPORTUNITIES PROJECTED THROUGH 2035 IN THE OIL & NATURAL GAS AND PETROCHEMICAL INDUSTRIES SPEAK TO THE CONTINUING IMPORTANCE OF THESE INDUSTRIES IN THE U.S. ECONOMY AS A WHOLE AND TO INDIVIDUALS AND FAMILIES LOOKING FOR WELL-PAYING CAREER OPPORTUNITIES.

IN FACT, BASED ON AVERAGE ANNUAL WAGE DATA FROM THE BUREAU OF LABOR STATISTICS, THE AVERAGE ANNUAL PAY IN THE OIL AND NATURAL GAS INDUSTRY IS OVER $100,000, NEARLY $50,000 HIGHER THAN THE 2014 U.S. AVERAGE.