Workforce Readiness in the Unconventional Energy Supply Chain

Webinar:
Jobs & Workforce Development in Ohio's Shale Industry
Consortium for Energy, Environment & the Economy
Ohio University Voinovich School of Leadership and Public Affairs
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Workforce Readiness Study

- Report by *High Road Strategies & IHS Economics*
- For *Energy Equipment & Infrastructure Alliance* (EEIA) representing unconventional energy supply chain sector
  - Equipment manufacturers and distributors; construction contractors; service providers; materials suppliers; labor unions (LiUNA, IUOE)
- Independent assessment of workforce readiness challenge for sector
  - Principal workforce challenges
  - Core and high-demand occupations (HDOs)
  - Public and private sector workforce programs
- Quantitative (IHS proprietary models, BLS data) and qualitative (interviews, survey, literature review) analyses
  - Nation; 3 states with plays (TX, PA, LA); 2 in early development (OH, CO); 1 non-producer (IL)

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Workforce Challenges

- Shortage of qualified local workers
- Technological change
- “Soft skills” and behavioral barriers
- Operator qualifications
- Working conditions and burnout
- Attracting youth to skilled trades
- An aging workforce
- Competition for skilled workers
73 Core Occupations

- Well services, construction subsector project to grow, as wells in operation grow
- Capital goods, materials, logistics, professional services grow at healthy rates
- Other construction subsector (pipelines, facilities) rise and then decline as infrastructure built
- State trends reflect recession, development stages

- Range of skill, education & training, wage & salary levels
- Petroleum & mechanical engineers; skilled trades (welders, OEs, diesel technicians); construction laborers; transport drivers; service unit operators; roustabouts

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24 High-Demand Occupations of the Unconventional Energy Supply Chain

<table>
<thead>
<tr>
<th>Occupational Code</th>
<th>Description</th>
<th>% in Supply Chain Sectors-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-9021</td>
<td>Construction managers</td>
<td>69.5%</td>
</tr>
<tr>
<td>17-2111</td>
<td>Health and safety engineers, except mining safety</td>
<td>51.6%</td>
</tr>
<tr>
<td></td>
<td>engineers and inspectors</td>
<td></td>
</tr>
<tr>
<td>17-2171</td>
<td>Petroleum engineers</td>
<td>53.1%</td>
</tr>
<tr>
<td>17-3023</td>
<td>Electrical and electronic engineering technicians</td>
<td>28.3%</td>
</tr>
<tr>
<td>47-1011</td>
<td>First-line supervisors of construction trades and</td>
<td>42.3%</td>
</tr>
<tr>
<td></td>
<td>extraction workers</td>
<td></td>
</tr>
<tr>
<td>47-2061</td>
<td>Construction laborers</td>
<td>67.4%</td>
</tr>
<tr>
<td>47-2073</td>
<td>Operating engineers and other construction equipment operators</td>
<td>69.4%</td>
</tr>
<tr>
<td>47-2152</td>
<td>Plumbers, pipefitters, and steamfitters</td>
<td>82.5%</td>
</tr>
<tr>
<td>47-5011</td>
<td>Derrick operators, oil and gas</td>
<td>88.3%</td>
</tr>
<tr>
<td>47-5012</td>
<td>Rotary drill operators, oil and gas</td>
<td>80.8%</td>
</tr>
<tr>
<td>47-5013</td>
<td>Service unit operators, oil, gas, and mining</td>
<td>88.0%</td>
</tr>
<tr>
<td>47-5071</td>
<td>Roustabouts, oil and gas</td>
<td>85.0%</td>
</tr>
<tr>
<td>49-3031</td>
<td>Bus, truck and diesel mechanics, except engines</td>
<td>37.1%</td>
</tr>
<tr>
<td>49-9041</td>
<td>Industrial machinery mechanics</td>
<td>39.5%</td>
</tr>
<tr>
<td>51-4012</td>
<td>Computer numerically controlled machine tool</td>
<td>35.8%</td>
</tr>
<tr>
<td></td>
<td>programmers, metal and plastic</td>
<td></td>
</tr>
<tr>
<td>51-4041</td>
<td>Machinists</td>
<td>33.3%</td>
</tr>
<tr>
<td>51-4121</td>
<td>Welders, cutters, solderers, and brazers</td>
<td>40.1%</td>
</tr>
<tr>
<td>51-4122</td>
<td>Welding, soldering, and brazing machine setters,</td>
<td>38.0%</td>
</tr>
<tr>
<td></td>
<td>operators, and tenders</td>
<td></td>
</tr>
<tr>
<td>53-3032</td>
<td>Heavy and tractor-trailer truck drivers</td>
<td>68.8%</td>
</tr>
<tr>
<td>53-7032</td>
<td>Excavating and loading machine and dragline</td>
<td>70.5%</td>
</tr>
<tr>
<td></td>
<td>operators</td>
<td></td>
</tr>
<tr>
<td>53-7071</td>
<td>Gas compressor and gas pumping station operators</td>
<td>56.6%</td>
</tr>
<tr>
<td>53-7073</td>
<td>Wellhead pumps</td>
<td>37.3%</td>
</tr>
<tr>
<td>Total for all high demand occupations</td>
<td>61.2%</td>
<td></td>
</tr>
</tbody>
</table>


**State HDO Employment Trends, 2007-2013**

- TX, PA and LA have higher levels of unconventional energy development in the growth and recovery trends for HDOs
- OH and CO have grown more slowly, representing less developed sectors
- IL an outlier, HDO levels never recover from recession

- High demand for **construction laborers**, **operating engineers**, **petroleum engineers**, **electrical & electronic engineering technicians**, and **oil and gas service workers** only in certain sectors
- HDO employment trends parallel core occupation trends in 6 selected states
- HDO employment dips down less in recession years, grows faster than core employment, and much faster than non-HDOs
- Several factors contribute to trends:
  - Post recession rebound of manufacturing and construction;
  - Unconventional energy activity, especially in major producing states

*Note: numbers reflect all jobs in core sectors, not just in unconventional activities*
HDO Projections, High Growth, 2012-2025

- HDO employment projected to grow by 40%, to 237,000
- HDOs represent 7-9 of top 10 occupations in each sector
- HDO demand reflects demand due to supply sector growth
- High growth: *well service jobs, machinists, heavy-truck drivers, bus & truck mechanics, mobil heavy equipment mechanics*
- Modest growth: *machinery mechanics, mechanical engineers, electronics technicians*
- Rise and then fall: *Construction managers and laborers*
- Steady growth after 2016: *operating engineers*
- Mostly flat through 2020, rise after: *welders*

**Replacement Needs**

- Measure of turnover, as workers change employers or occupations, go back to school, retire, or leave workforce
- Most HDOs likely to have substantial replacement needs
- Supply chain employers may need to fill 118,000 new jobs from economic growth and replacement needs in HDOs by 2025
- Only construction laborer and manager jobs projected to decline

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Workforce Readiness Opportunities

- Projected growth of HDO employment raises questions about nation's education and training system's ability to meet employer needs
- Unconventional oil and gas states challenged to provide workforce programs needed to support locally trained workers in HDOs for the supply chain
- Many workforce initiatives started, expanded and strengthened to increase supply of skilled workers to meet current and expected demand for HDOs
- Several types of efforts, including combination of public and private sector participation, at local, state, multi-state and national levels
  - Community college, technical college and university programs, in partnership with energy-related companies and business trade associations
  - On-the-Job Training (OJT), union apprenticeships, and third party providers,
  - National and state consortia of workforce stakeholders (businesses, universities, community colleges, other education and training providers.

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Ohio Workforce Readiness

- Marcellus Shale and Utica Shale: covers most of state's eastern half and expected to have large impact across state
- Shale gas production over past few years having economic impacts, opening up thousands of new shale-related jobs
- Core and HDO jobs fell during Great Recession, HDO's not as fast, but both had sharper decline than total OH employment; HDOs rise faster in response to sector growth
- Top ten HDOs (89%): heavy and tractor trailer truck drivers, machinists, construction laborers, industrial machinery mechanics, welders, operating engineers, first-line supervisors, plumbers, pipefitters and steamfitters, mechanical engineers, business truck and diesel mechanics

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Ohio Workforce Readiness Initiatives

- Public and private sector efforts to assess and take advantage of workforce opportunities just getting off the ground
- Ohio Department of Jobs and Family Services (JFS) working with workforce investment areas, community colleges, other post-secondary educational institutions and employers
  - Identifying HDOs in unconventional energy sector and establish appropriate training programs
- Ohio Oil and Gas Energy Education Program (OOGEEP)
- Zane State (Zanesville, Cambridge)
- Stark State College (Canton)
- Career & Technology Education Center (C-TEC; Licking County)
- Central Ohio Technical College (Newark, OH)
- Marietta College (Marietta)
- Chevron's Appalachia Partnership Initiative

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More Information

Project description and download report:

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