The National Wind Energy Skills Assessment & Preparing for the Future Wind Workforce

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Background

A robust workforce is essential to growing domestic wind manufacturing capabilities. The purpose of this research is to better understand today’s domestic wind workforce, projected needs for the future, and how existing and new education and training programs can meet future needs.

Our literature review showed that a U.S. wind workforce assessment has not been performed on a national scale. Our research, report, career map, and other projects contribute to workforce knowledge, including education and training.
For this research, we:

1. Surveyed the current wind-focused education and training programs at American colleges and universities

2. Determined which jobs are in the wind industry today and what type of training employers prefer

3. Estimated the need for new or expanded wind-focused education and training programs to reach future goals.
Two Projects in One

Education and Training Database

Community college outreach
University outreach

• Number of current students
• Number of graduates
• Percentage in the wind industry.

Industry Survey

A survey of more than 400 wind industry companies

• Number of workers
• Categories of jobs
• Employee skills
• Employee training.

National Wind Energy Skills Assessment Analysis and Report
Manufacturing jobs include some from the following categories: trade workers, assembly workers, supply chain management, salespeople, transportation, and some admin/clerical—approximately 25%.
Wind Workforce Projection

- Used primary survey data to assess current employment
  - Anchored O&M jobs to cumulative installed capacity
  - Anchored construction & development jobs to annual installed capacity.
- Built in:
  - Retirement rates
  - Labor efficiency gains.
To meet predicted wind industry growth over the next 20 years, we need to increase the number of *wind energy-specific* education and training programs offered at the community college and university levels.

<table>
<thead>
<tr>
<th>Degree/Certificate</th>
<th>Maximum New Hires Needed with Wind-Specific Degrees/Certificates</th>
<th>Type of Institution Offering</th>
<th>Estimated Percent of Graduates Entering Wind Industry</th>
<th>Number Needed to Graduate in Max Year</th>
<th>Estimated Graduates Per Program Per Year</th>
<th>Number of Programs Needed in US</th>
<th>Number of Programs Available</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-secondary professional certificate</td>
<td>2,750</td>
<td>Community &amp; tech colleges</td>
<td>83%</td>
<td>3,310</td>
<td>21</td>
<td>160</td>
<td>70</td>
<td>90</td>
</tr>
<tr>
<td>(journeyman, trade/technical programs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associate's degree</td>
<td>1,000</td>
<td>Community &amp; tech colleges</td>
<td></td>
<td>1,200</td>
<td></td>
<td>60</td>
<td>90</td>
<td>0</td>
</tr>
<tr>
<td>Bachelor's degree</td>
<td>800</td>
<td>University</td>
<td></td>
<td>1,660</td>
<td></td>
<td>50</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Post-bachelor's professional certification</td>
<td>210</td>
<td>University</td>
<td>48%</td>
<td>440</td>
<td>34</td>
<td>10</td>
<td>NA</td>
<td>0-10</td>
</tr>
<tr>
<td>(e.g., CPA, PE, LEED)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Master's degree, Ph.D., or Law</td>
<td>550</td>
<td>University</td>
<td></td>
<td>1,150</td>
<td></td>
<td>30</td>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>
To meet predicted wind industry growth over the next 20 years, we need to increase the number of wind energy-specific education and training programs offered at the community college and university levels.
In addition to the workforce research, DOE/NREL have wind workforce-related projects.
This wind career map explores an expanding universe of wind energy occupations, describing diverse jobs across the industry, charting possible progression between them, and identifying the high-quality training necessary to do them well.

Wind Jobs

Mouse over the career map at the left to explore wind industry related jobs in Project Development; Component Manufacturing; Construction; Operations; and Education, Training, & Research. Or select a multi-sector career route below.

Selected Cross-Sector Routes

Reset

- Technician >> Training Manager

FAQ
Wind Workforce – Wind Career Map

WIND CAREER MAP

This wind career map explores an expanding universe of wind energy occupations, describing diverse jobs across the industry, charting possible progression between them, and identifying the high-quality training necessary to do them well.

About this Mapping Tool

Wind Technician

Job Description: Wind technicians install, inspect, maintain, operate, and repair wind turbines. Wind technicians are capable of diagnosing and fixing any problem that could cause the turbine to be shut down unexpectedly or fail to operate properly.

Career transitions are related to experience and education. Most wind turbine service technicians learn their trade by attending a technical school. After completing a two-year technical program, employers usually provide on-the-job training, typically lasting over 12 months.

Routes To Advancement:
Technical Trainer/Instructor - This advance may require certification as
Collegiate Wind Competition

Stimulate student interest and industry awareness of a highly qualified next-gen workforce and new wind power education and training programs

2014 Inaugural Competition
- 10 undergraduate university teams
- 3-day event held in conjunction with WINDPOWER 2014

2015 Follow-up Technical Competition
- 3-day event at NREL’s National Wind Technology Center
- Seven undergraduate university teams

- Design, build, and test a wind turbine
- Present on wind energy topics
- Deliver a cohesive business plan.

DOE Wind Program Director with team members from Boise State, winner of the 2015 Technical Wind Competition

Photo by Dennis Schroeder, NREL

Photo by Lee Jay Fingersh, NREL
Wind for Schools

- K-12: Introduce wind energy concepts into our school’s science curricula
- University level: provide juniors and seniors with real-world skills/experience in wind energy applications
- Engage communities to consider wind energy benefits and costs
- Through Wind Application Centers, develop centers for excellence.

Photo from South Dakota Wind Application Center, NREL 18283

Photo from Joe Jacobs, NREL17945
Thank you.