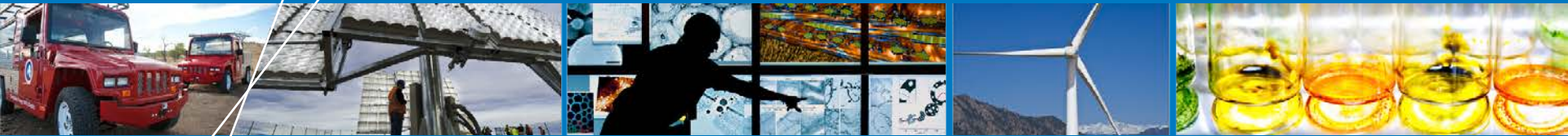


DOE Collegiate Wind Competition



Julie Jones

**DOE Stakeholder Engagement
and Outreach Webinar**

January 15, 2014

NREL/PR-5000-61156

Expanded Need for Workers in Wind Energy

AWEA and DOE work has demonstrated the need for trained workers to support expanded industry growth:

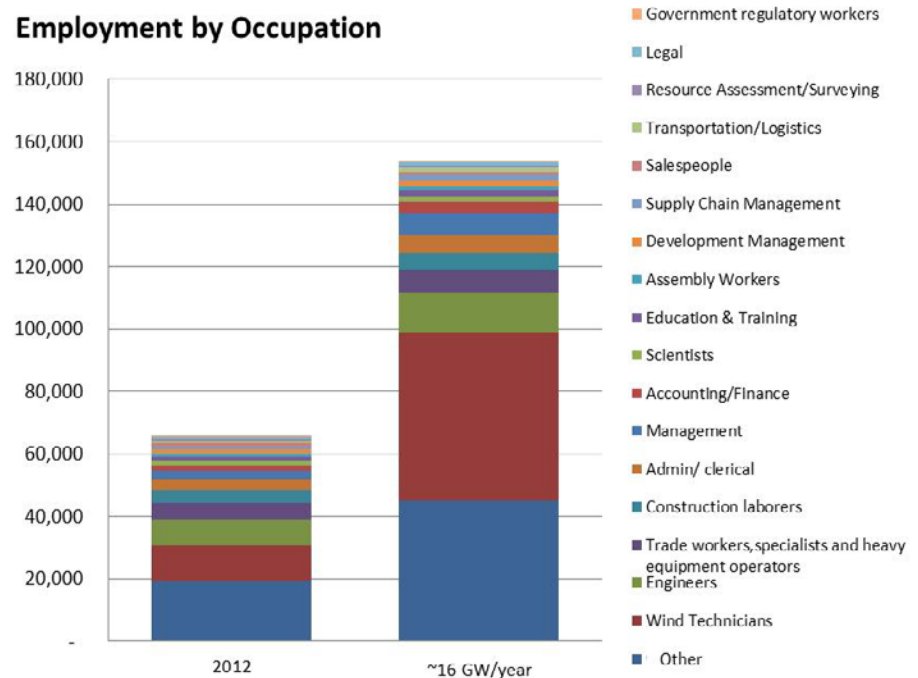
- Scientists, educators
- Design and research engineers
- Technical workers: technicians, trade workers
- Project managers.

DOE industry survey findings:

- Current shortages are in these sectors.
- Many of these key sectors require advanced degrees, but there are limited program offerings in these areas in the United States.
- Although studies show that in many cases wind-specific, advanced degrees are not required, wind experience is highly important in these fields.

Demonstrates need to focus on advanced degrees: both formal wind-focused programs and activities that expand cross-sector wind experience

Employment by Occupation



Current and expected future employment by occupation

| | Some Difficulty | Great Difficulty | Some or Great Difficulty |
|--|-----------------|------------------|--------------------------|
| 22 Professors, teachers, or educators | 41% | 43% | 84% |
| 12 Engineers and product designers | 40% | 35% | 75% |
| 15.34 Trade workers and specialists and heavy equipment operators (including cranes) | 40% | 31% | 71% |
| 27 Salespeople | 33% | 31% | 64% |
| 32 Technicians | 50% | 29% | 79% |
| 24 Project managers | 44% | 28% | 72% |
| 21 Professional trainers | 50% | 27% | 77% |
| 31 Technical specialists | 47% | 26% | 74% |

Wind industry positions that are difficult to fill

The DOE Collegiate Wind Competition

Purpose

To stimulate student interest, industry awareness of an elite next-generation workforce, and new institutions launching wind training programs.



When

Spring 2014

wind.energy.gov/windcompetition/

BUILD AND TEST A WIND TURBINE

Each team's prototype wind turbine will be tested in a wind tunnel under specific conditions and scored for performance, operational safety, component durability and system reliability.

PRESENT ON WIND ENERGY TOPICS

Teams will make public presentations on current wind market drivers and deployment acceleration opportunities. They will be judged on the strength of their arguments and the depth, logic, and style of their deliveries.

DELIVER A BUSINESS PLAN

Each team's business plan will be evaluated against criteria including market deployment feasibility, creativity, and quality of financial reporting.

Guiding Principles of the Competition

1. Provide real-world experience for future wind industry leaders
2. Recognize the innovative collegiate educational programs and forward-thinking professors that incorporate renewable energy technologies, helping foster the growth of the future wind energy industry and workforce in the areas where it is needed most
3. Provide a safe and fair competition
4. Create a positive experience that will carry into future competitions
5. Create opportunities for industry (prospective employees) to engage with the competitors
6. Provide a high-quality competitive environment
7. Engage K-12 students in the competition to increase future entrance into higher academia.



Colorado School of Mines team of diverse majors: engineers, business, and marketing

Photo from Colorado School of Mines, NREL 28944

Inaugural DOE Collegiate Wind Competition

Theme

Design, build, and test a lightweight, transportable wind turbine to power small electronic devices according to a customized, market data-derived business plan.

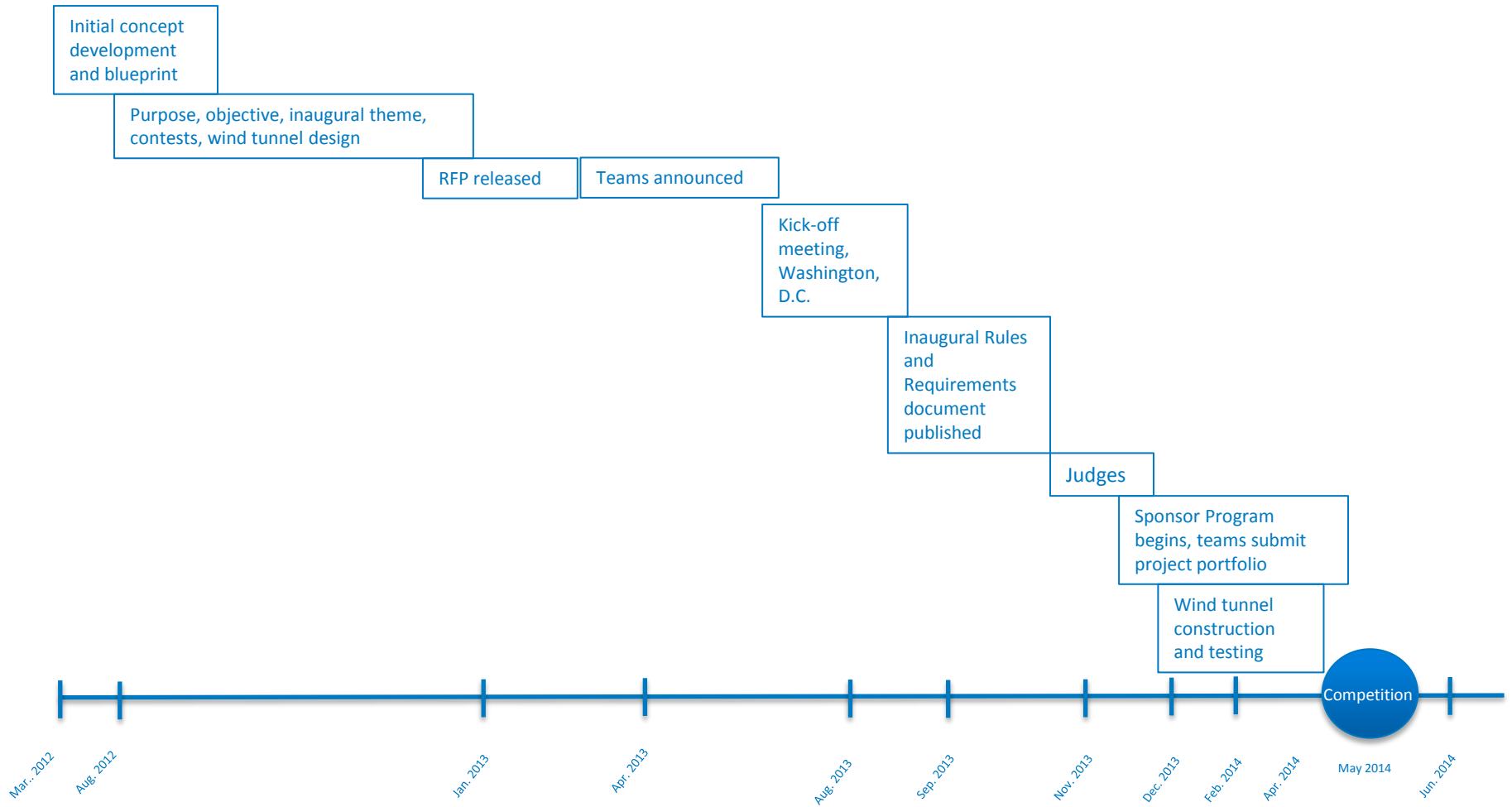


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2014 Collegiate Teams

- Boise State University
- California Maritime Academy
- Colorado School of Mines
- James Madison University (VA)
- Kansas State University
- Northern Arizona University
- Pennsylvania State University
- University of Alaska Fairbanks
- University of Kansas
- University of Massachusetts Lowell.

Competition Project Timeline



Competition Event Schedule

| Day 0 | | | | | | | | | | |
|-----------------|---------|----------|----------|----------|---------|---------|---------|---------|---------|-------------------|
| 8:00 AM | 9:00 AM | 10:00 AM | 11:00 AM | 12:00 PM | 1:00 PM | 2:00 PM | 3:00 PM | 4:00 PM | 5:00 PM | 6:00 PM |
| Tunnel Practice | | | | | | | | | | Welcome Reception |

| Day 1 | | | | | | | | | | | |
|---------------------------------|---------------|---------|--|----------|----------|---------|---------|----------------------------------|---------|---------|-----------------------|
| 7:30 AM | 8:00 AM | 9:00 AM | 10:00 AM | 11:00 AM | 12:00 PM | 1:00 PM | 2:00 PM | 3:00 PM | 4:00 PM | 5:00 PM | 6:00 PM |
| Breakfast/ Day 1 Overview | Time Reserved | | Turbine Performance Testing (30 minutes-power curve verification, cut in wind speed, control at maximum power, durability and safety) | | | | | Turbine Testing Makeup as Needed | | | Wrap Up & Photo Op |
| | | | Engineering Design Review Judging Sessions (10 minute presentation, 10 minutes Q&A judges panel) | | | | | | | | |

| Day 2 | | | | | | | | | | |
|---------------------------------|---|----------|--|---|---------|---|---------|--|--------------------------------|--------------------|
| 8:00 AM | 9:00 AM | 10:00 AM | 11:00 AM | 12:00 PM | 1:00 PM | 2:00 PM | 3:00 PM | 4:00 PM | 5:00 PM | 6:00 PM |
| Breakfast/ Day 2 Overview | Public Business Plan Presentations (8:30-10:45 am), (8-10 minutes) | | Market Issues & Business Plan Overview | Market Issues Present ations | Lunch | Market Issues Presentations Continued (7 minute presentation, 3 minute Q&A judges panel) | | Market Issues/Testing & Engineering Judges Confer | | Awards Ceremony |
| | | | | Business Plan Judging Sessions (10 minute presentation, 10 minutes Q&A judges panel) | | | | | Business Plan Judges Confer | |

Wind Tunnel

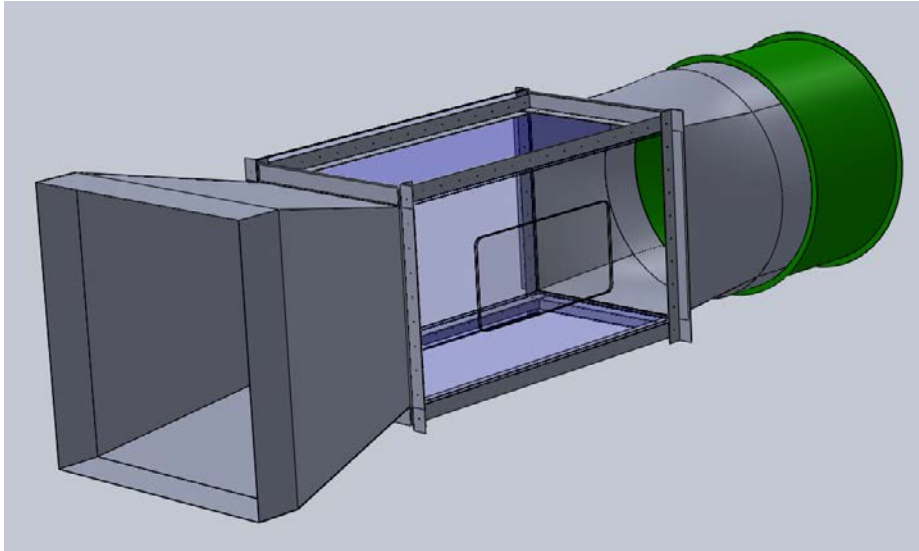


Diagram of the wind tunnel configuration. Test chamber will be 4' x 4' x 8'. The inlet is the square component on the left; the fan outlet is on the right.

Wind tunnel inlet turned 90 degrees to sit on the floor until the wind tunnel is assembled.

Image by Zachary Parker, NREL 29187



Julie Jones stands next to one of the test chamber walls.

Photo from Julie Jones, NREL 29185

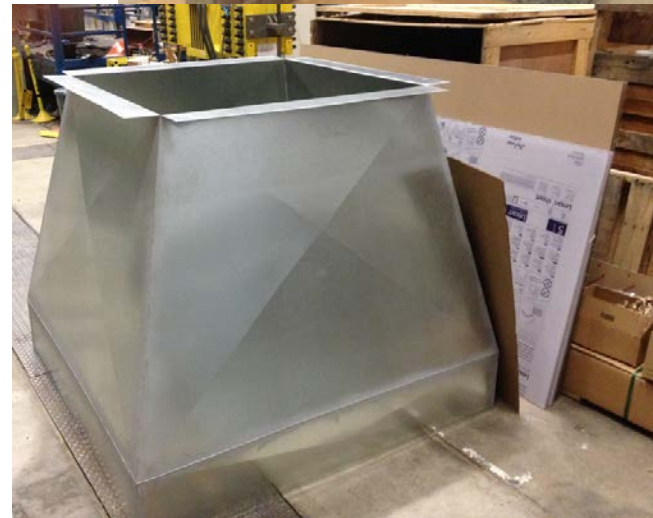


Photo by Zachary Parker, NREL 29183

How to Get Involved

- **Partner with an individual school by:**
 - Offering expert consultation in areas of turbine design, business plan technical assistance, and/or sharing knowledge on current market issues
 - Giving students access to machine shops and/or materials
 - Providing monetary contributions.
- **During the competition, collaborate by:**
 - Participating as an onsite logistics volunteer
 - Sponsoring food and/or useful materials during the competition through the sponsorship program
 - Participating as a judge.

Contact

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