



Texas Wind Energy Institute

A Partnership between Texas State Technical College and Texas Tech University

Texas Wind Energy Institute: A Partnership of Many Stakeholders for the Good of the State

Presented by:

Texas State Technical College West Texas
Texas Tech University



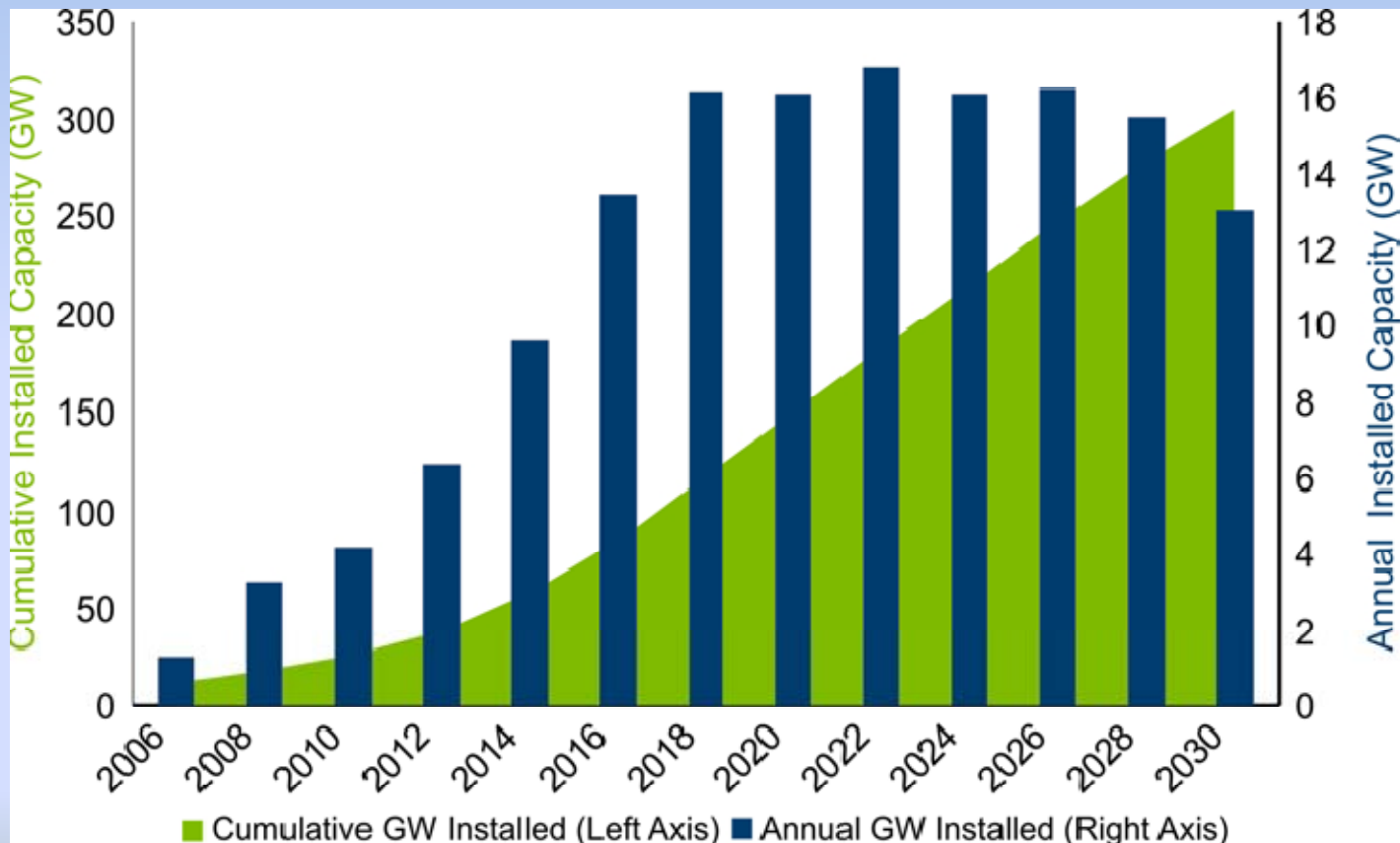


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Growth in Wind Power



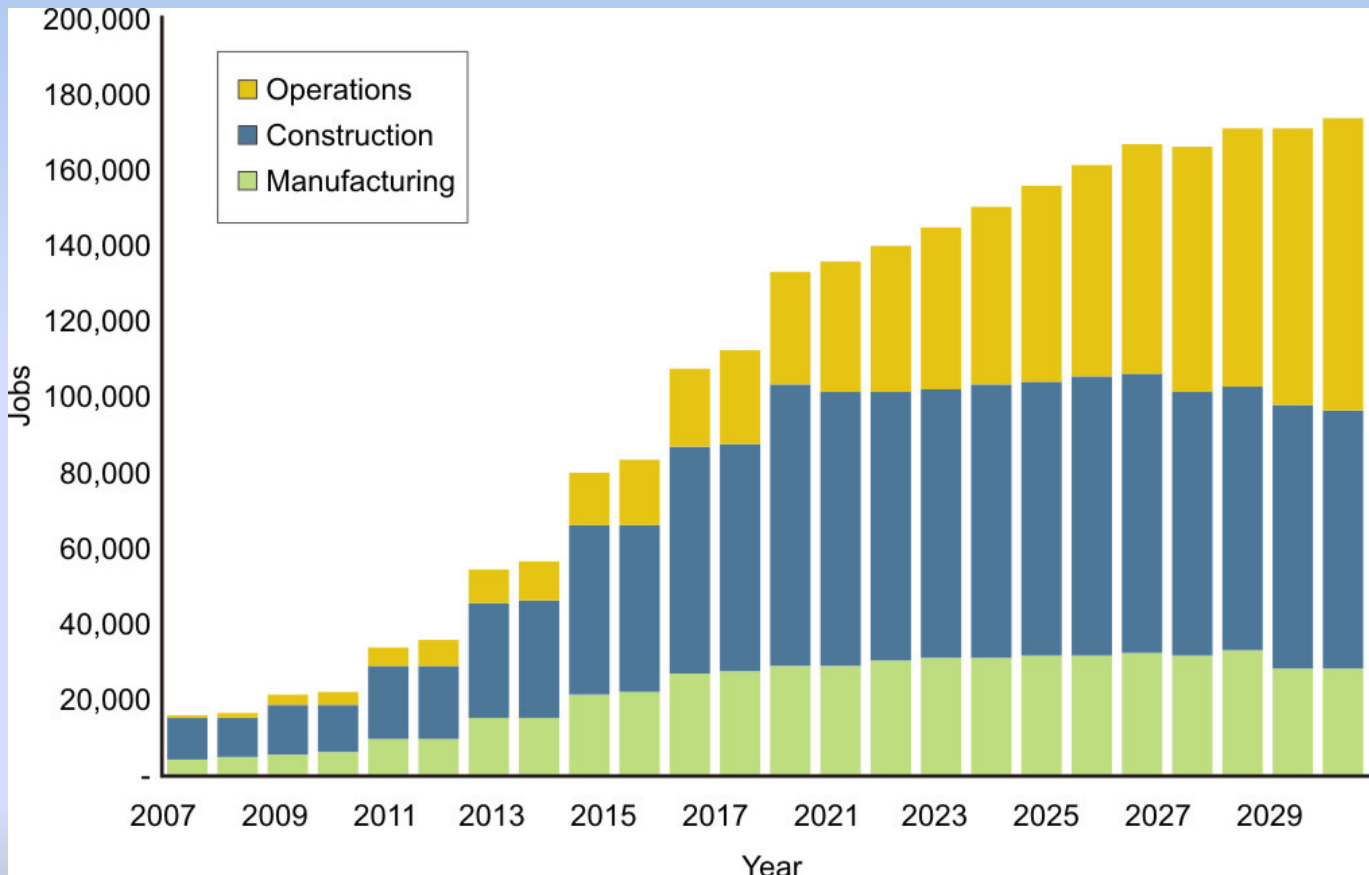
Source: DOE, 20% Wind by 2030 report



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Jobs in Wind Energy



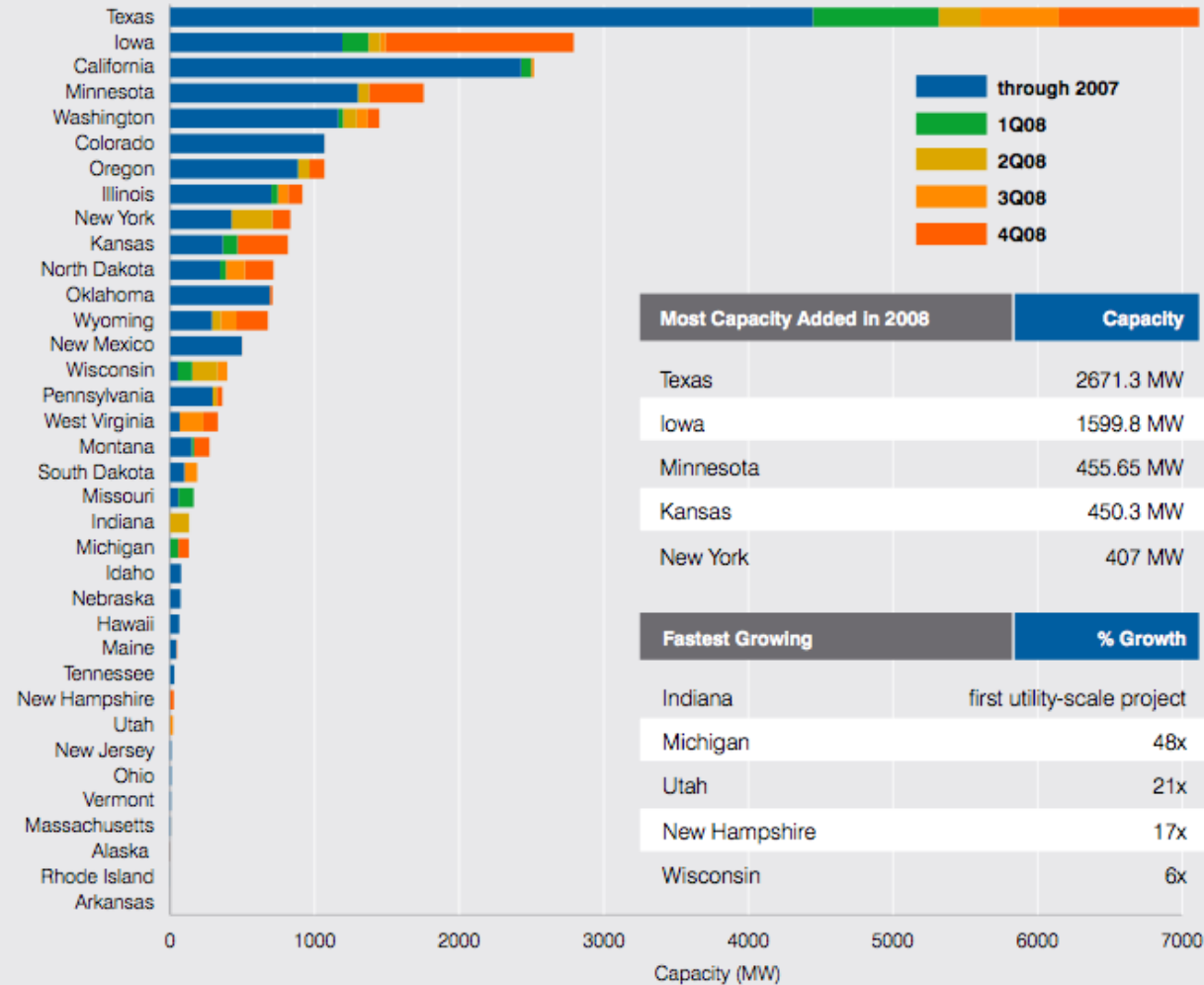
Source: DOE, 20% Wind by 2030 report



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FIGURE 8: WIND POWER CAPACITY INSTALLATIONS BY STATE



Texas
is the
Wind
Leader

Source: AWEA



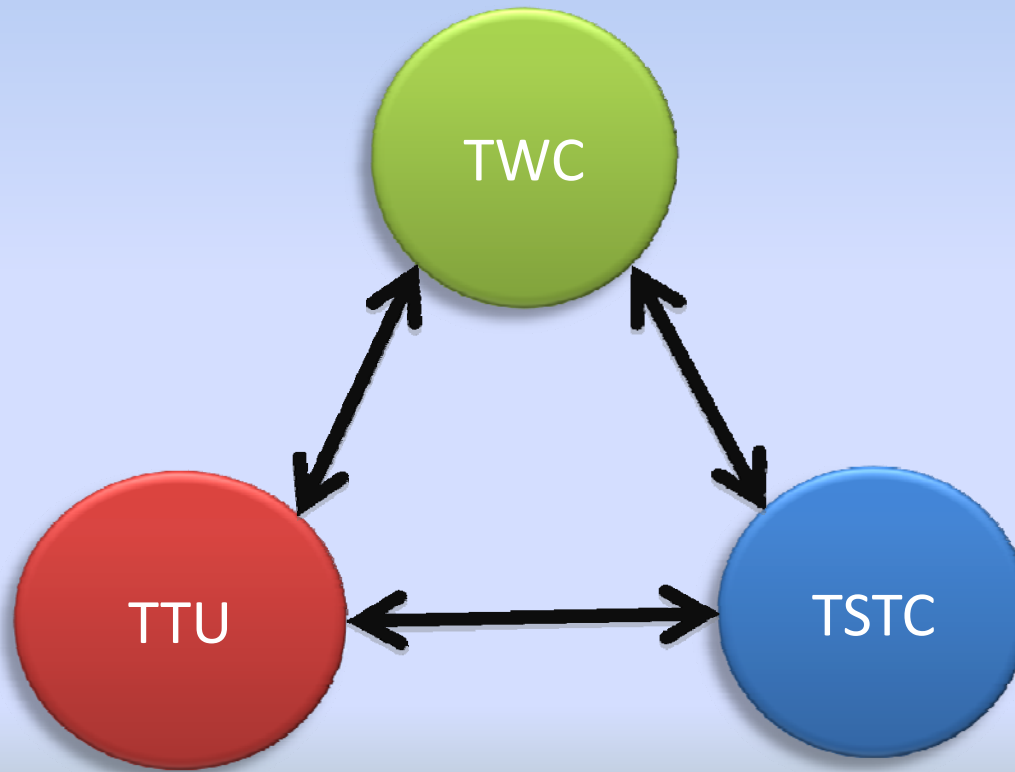
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Purpose of the Texas Wind Energy Institute “TWEI”

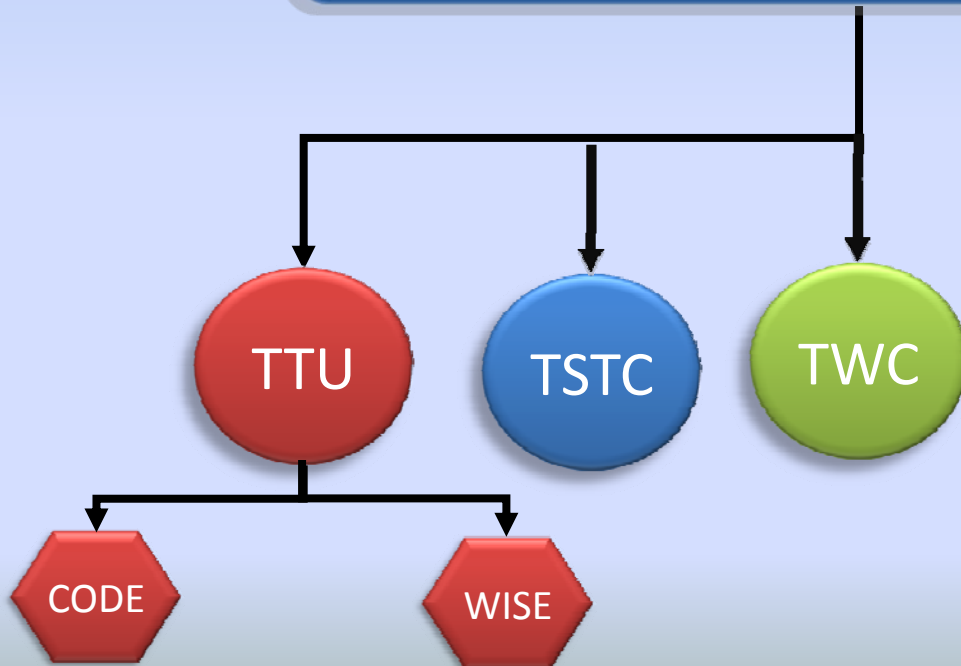
To develop curriculum, courses and programs,
expand capacity, recruit & prepare students to
meet the workforce needs of the wind energy
industry in Texas

TWEI Founding Stakeholders



TWEI Charter Structure

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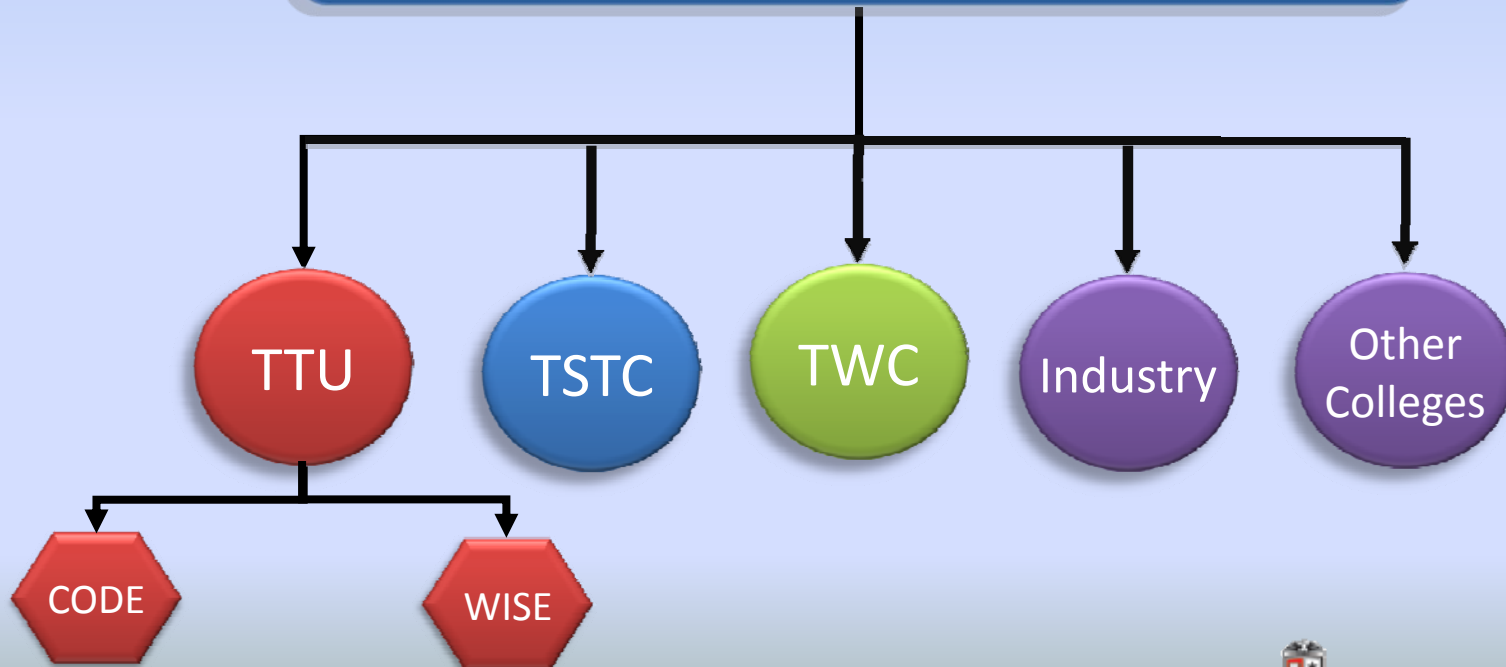


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TWEI Target Structure

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Wind Energy Industry Workforce by Professional Area and Title

Atmospheric Science/Data Analysis

- Resource assessment specialist
- Operational wind and power production data analyst
- Wind power forecaster for power marketing

Construction

- Project manager
- Financial analyst
- Developer
- Safety and environmental health personnel
- Geotechnical testing personnel (GEOL/CE)
- Contract negotiator/manager

Natural Resource Management

- Permit specialist
- Ecological studies and issues specialist
- Land use agronomist
- Visual impacts and assessments specialist
- Ag specialists (erosion and weed control; chemical applications; landowner liaison)



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Wind Energy Industry Workforce by Professional Area and Title

Engineering Specialty Area

- Turbine designer (ME)
- Power system integration and substation designer (EE/ME)
- Interconnection designer/collection system designer (EE)
- Lean manufacturing for components and assembly engineer (IE/ME)
- Tower and foundation designer (CE)
- Road designer (CE)
- Aerodynamics and blade designer (ME)
- Structural and blade design tester (CE/ME)
- Surveyor (CE)
- Site operations manager (ME)
- Predictive maintenance specialist (ME/IE)
- SCADA (Supervisory Control and Data Acquisition) Project engineer (EE/CS)
- Geotechnical engineer (CE)
- Safety engineer (IE)
- Environmental manager



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Wind Energy Industry Workforce by Professional Area and Title

Technical Specialists (non-engineering but requiring knowledge of wind energy and wind operations)

- Sales and marketing personnel
- Project developer
- Utility liaison
- Interconnection agreement developer
- Community liaison
- Regulatory/government liaison
- Operations manager
- O & M supervisor/manager
- Risk and assessment manager
- Supply chain developer
- Manufacturing manager
- Energy analyst/energy auditor
- GIS specialists/mappers

Wind Energy Industry Workforce by Professional Area and Title

Business/Legal

- Wind specific business analyst and planner
- Wind pro-forma financial planner
- Marketing wind power and wind farm specialist
- Financial analyst/tax specialist
- Energy commerce director
- Property or ad valorem tax manager
- Lease agreement specialist
- Legal and regulatory specialist
- Wind business tax specialist
- Tax abatement specialist
- Turbine supply contractor, construction contractor, purchase power agreement specialist

Architecture

- Visual impacts architect
- Integration with communities and regions architectural planner/developer
- Community energy assessment architect

Economics and Social Sciences

- Community integration and acceptance leader
- Impact assessments for small and large projects consultant
- Project and energy system economic advisor
- Community energy assessment advisor



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What does this mean?

- DOE's "20% Wind by 2030" report estimates that 172,000 direct jobs in the industry will be created through achieving the 20% goal
- Preliminary estimate is that 20,000 to 30,000 of these jobs are ones which could benefit by specific university education in wind energy
- 1,000 to 1,500 graduates needed per year
- About 10% of the graduates above would be incumbent employees in the industry who would be excellent candidates for graduate certificate and/or professional education programs to be available via distance education
- Assuming 10 to 20 university wind energy programs nationally, would mean about 50 to 150 graduates per program per year; which translates to enrollments of 200 to 600 students per university.
- Wind turbine technicians are >50% jobs, and a gap already exists



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Addressing the Technician gap

- Refined current curriculum to put additional focus on necessary requirements for wind techs
 - Leveraged Texas Wind Alliance and TWC to address issues not being addressed in current curriculum
- Expanded coursework to put curriculum online
- Established partnerships with other schools to share curriculum to either:
 - Articulate their training with ours, or
 - Help the school get an established program up and running



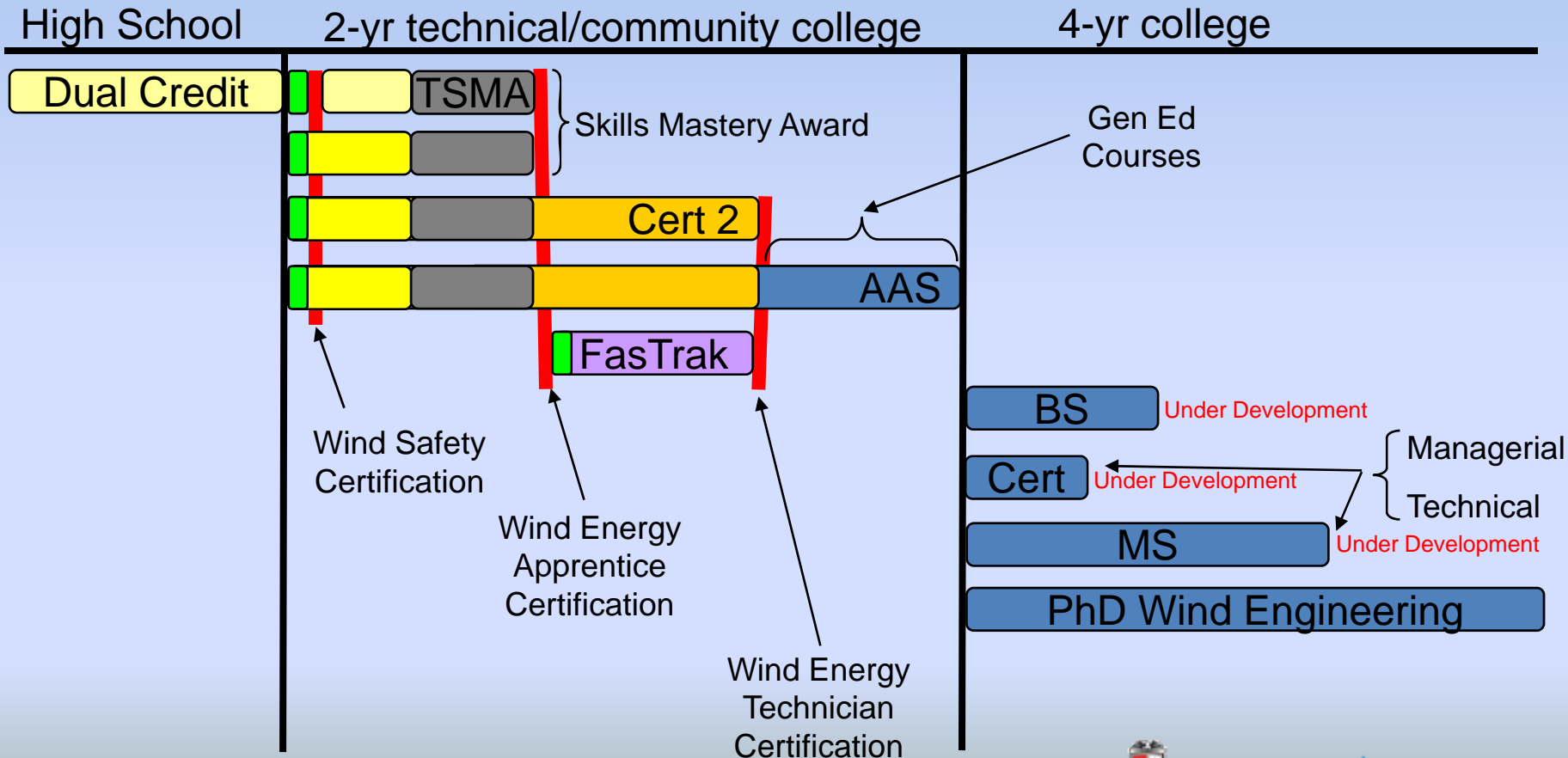
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Addressing the Technician gap (cont.)

- Not concerned with amount of time students in school but more concerned with providing the appropriate training in the appropriate time so student can become employed
- FasTrak program to address the individuals with incumbent knowledge and experience to get the completer into the field faster (ex-military, oil and gas field, etc)
- Establishing certification classes for undergraduate and graduate level courses
- Additional technical and managerial degree tracks

Schematic of Program Offerings





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Strategic Partnerships have large coverage area

Current Colleges w/wind programs

1. Clarendon College
2. South Plains College
3. Frank Phillips College
4. Amarillo College
5. TSTC

Colleges with partnerships in wind

1. Howard College
2. Alamo College District
3. Lamar Institute Technology
4. Richland College
5. Odessa College
6. Western Texas College
7. others...





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Summary

- **Three levels of training/education**
 - **High School**
 - Dual Credit courses offered online
 - **Technical/Community College**
 - MSA/Cert 1-Wind Energy Apprentice
 - Cert 2-Wind Energy Technician
 - AAS-Wind Energy Technician
 - **University**
 - Bachelor of University Studies in Wind Energy
 - Masters of Science in Wind Science and Engineering (focus on Wind Energy)
 - Graduate Certificate in Wind Energy
 - PhD in Wind Science and Engineering
- **Certification of Skills**
- **Collaborations/Strategic Partnerships with other Colleges**



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Questions?

For more information:

<http://www.TWEI.org>

