



TEXAS TECH UNIVERSITY™

Ports-to-Plains Energy Summit

# OPTIMIZATION BARRIERS IN WIND ENERGY

Presented by:

**David Miller, JD, MBA**

Vice Chancellor

Commercialization & Economic Development



# The Goal



## Department of Energy Goal:

20% Wind Scenario: *Wind Energy Provides 20% of U.S. Electricity Needs by 2030*

## Barriers to Achievement:

- Cost of wind energy compared to other sources
- Transmission & Storage
- Standards & workforce development

Figure 1

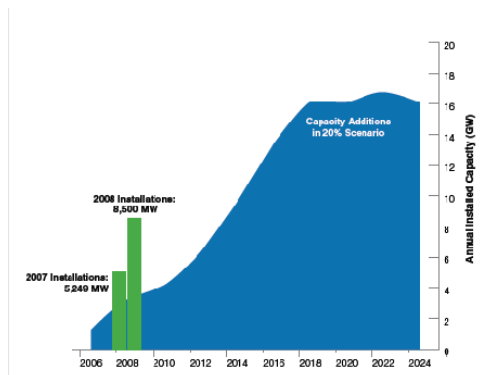


Figure 2

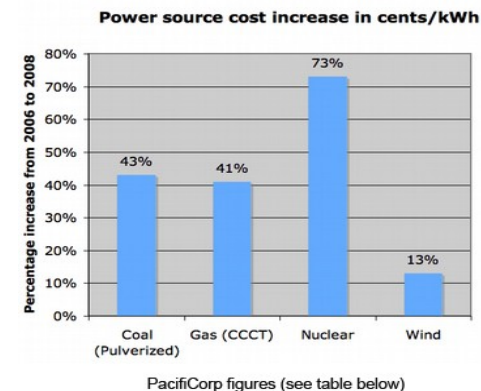


Figure 3

	2006 (¢/kWh)			2008 (¢/kWh)			Percent Difference		
	Fixed	Variable	Total	Fixed	Variable	Total	Fixed	Variable	Total
Coal (Pulverized)	2.7	2.5	5.2	4.1	3.3	7.4	54%	32%	43%
Gas (CCCT)	1.7	5.8	7.5	2.8	7.8	10.6	68%	34%	41%
Nuclear	4.4	0.7	5.1	8.0	0.8	8.8	82%	14%	73%
Wind	7.3	0	7.3	8.2	0	8.2	13%	--	13%

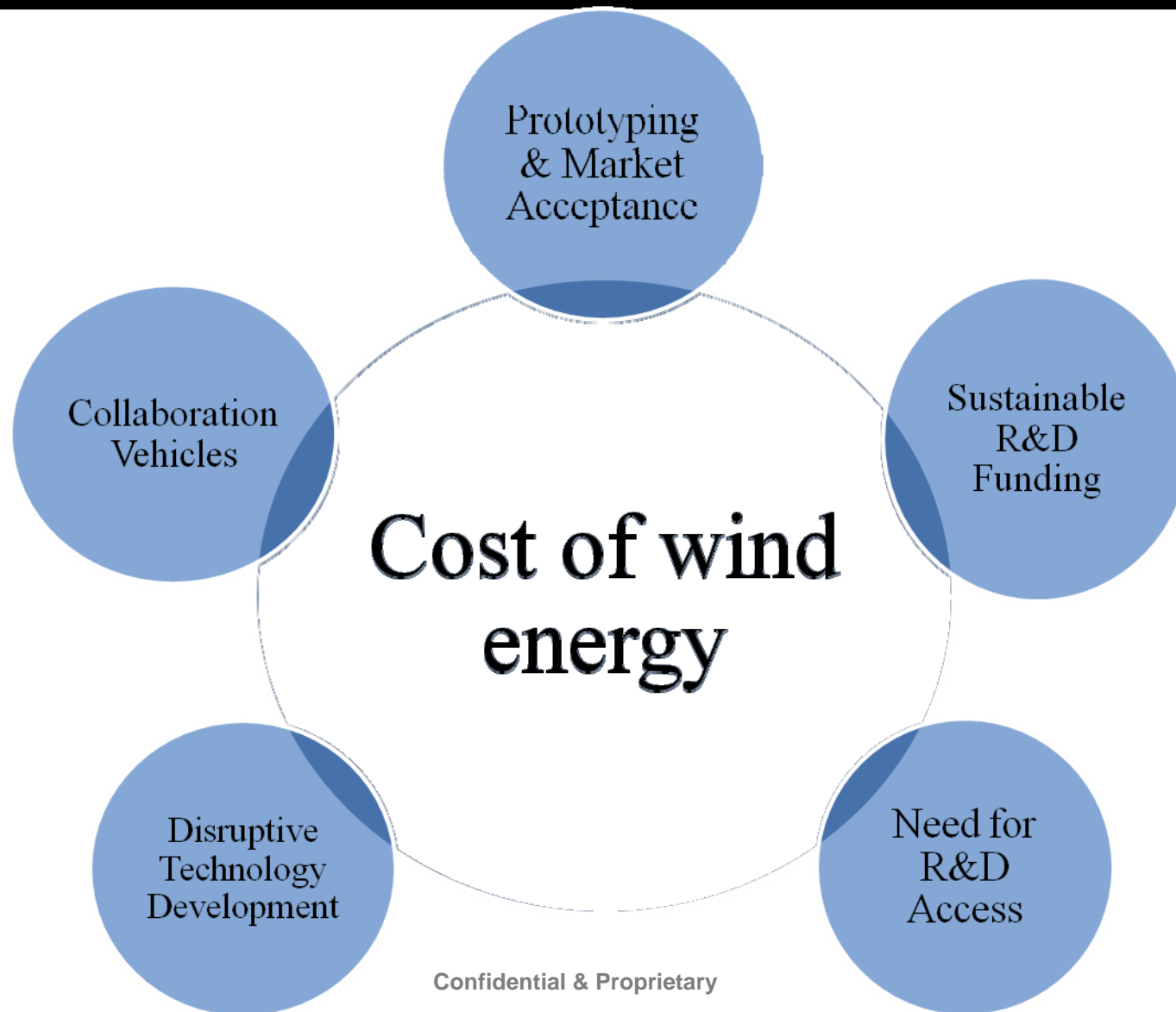
Figure 1: AWEA 2009 Report Card, Figures 2 & 3 from Montana Environmental Information Center [www.meic.org](http://www.meic.org)



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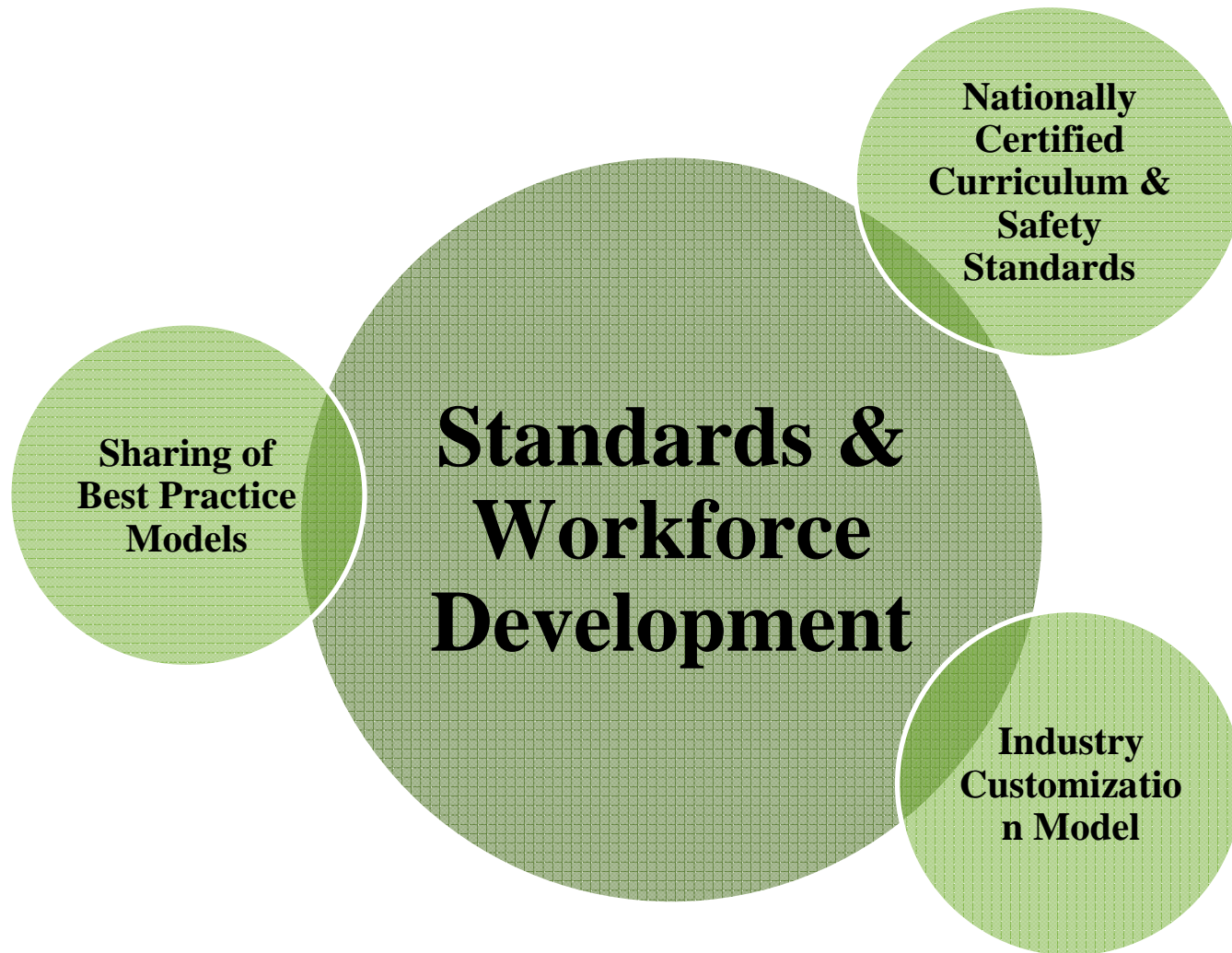
# Key Barriers to Attaining the National Goals: Cost



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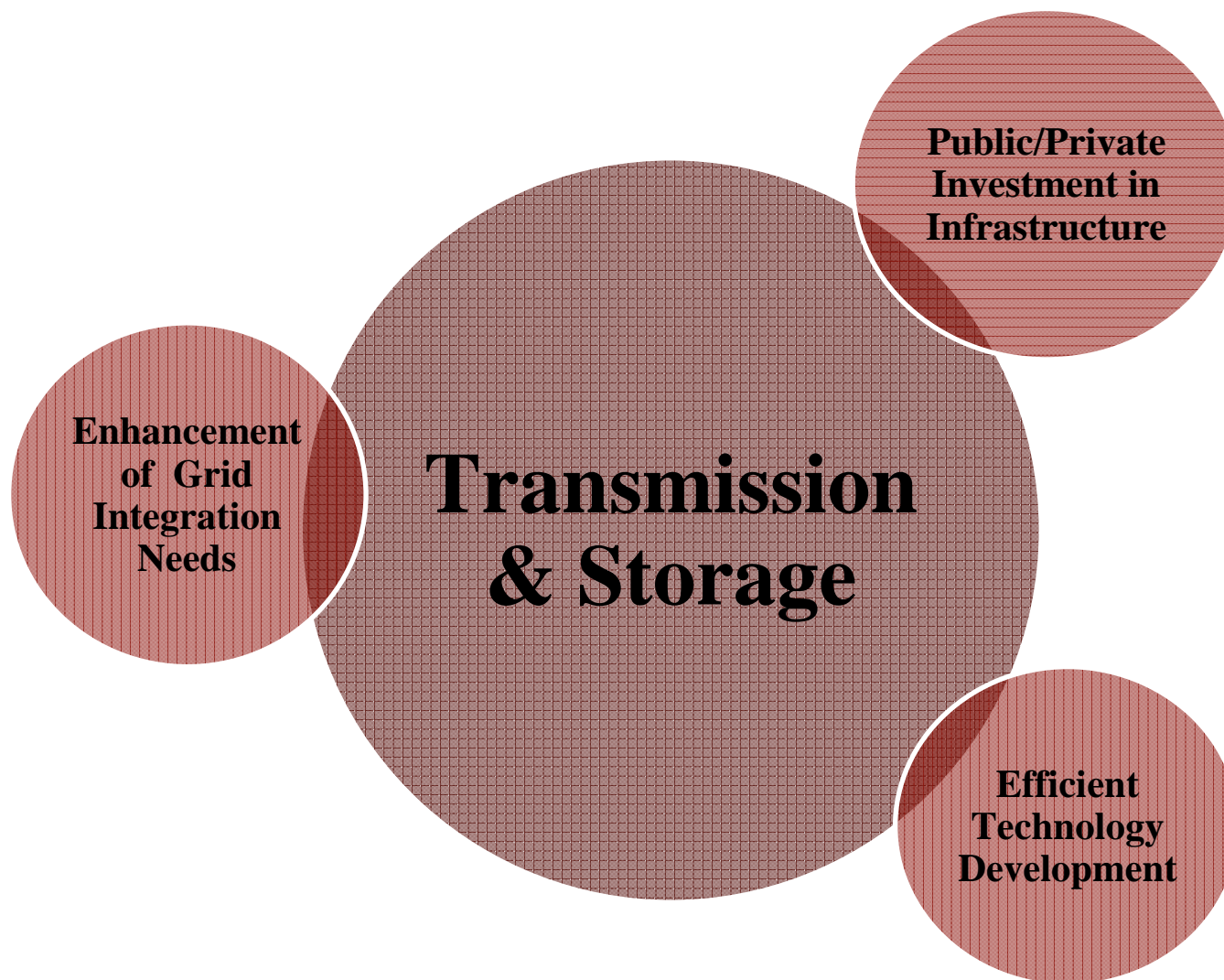
# Key Barriers to Attaining the National Goals: Standards & Workforce Development



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# Key Barriers to Attaining the National Goals: Transmission & Storage



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# Project Description



*We have created the NATIONAL INSTITUTE FOR RENEWABLE ENERGY (NIRE) and NATIONAL WIND RESOURCE CENTER (NWRC) to resolve the key scientific and technology issues facing the wind power industry*

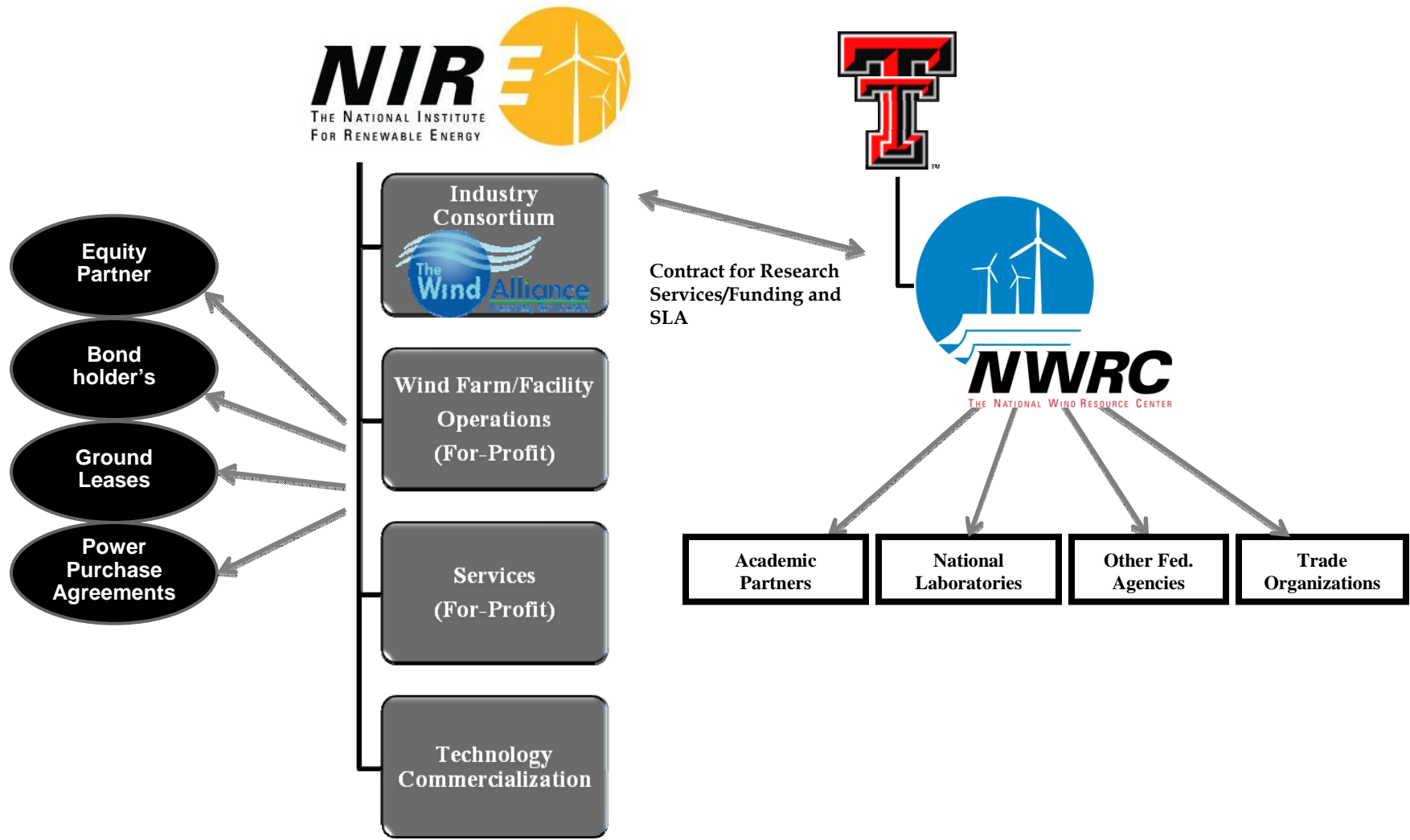
- We will lead the industry and nation to achieve 20% wind energy integration by 2030
- We have created an organizational model and structure which is *self-sustainable*; facilitates collaboration with national laboratories, industry partners and academic institutions and will evolve into a long-term and meaningful federal R&D partnership
- We will recruit additional world-class and commercialization focused researchers with expertise in the wind sector
- We will expedite phased construction of research wind farms and research facilities (A regional living laboratory)
- We will create incremental jobs and build on existing workforce development initiatives
- We will facilitate implementation of a cohesive strategy to leverage other wind research facilities and resources in Texas and the nation



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# Organizational Structure



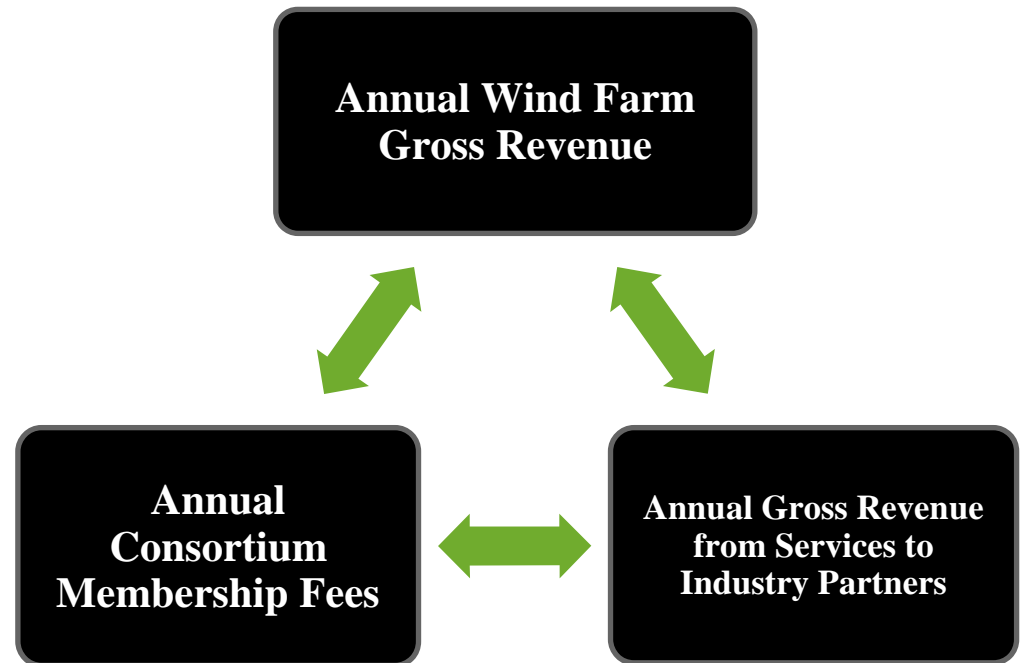
NIRE by-laws provide for an independent Board and likely include members from organizations such as Innovate Texas Foundation, The Wind Alliance and AWEA. (Members are pre-competitive) NWRC formed under TX law and in compliance with GASB 14  
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# Funding & Sustainability Plan



## Initial Funding Vehicles

- Texas Emerging Technology Fund (ETF): \$30MM
- Texas Tech University: \$10MM
- Industry: \$10MM
- Private Development: \$496MM






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# Initiative Supporters and Partners



Government & Trade	Academia	Industry
		

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# The National Institute for Renewable Energy



[www.thenire.org](http://www.thenire.org)

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THE NATIONAL INSTITUTE  
FOR RENEWABLE ENERGY

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**ABOUT NIRE**  
NIRE is a public-private partnership for renewable energy research, development and research facility construction.  
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## VISION

Our vision is to resolve the key scientific and technology issues facing the renewable energy industry and to create standards in technology and prognostic meteorology to maximize wind power efficiency. [Learn More >>](#)

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NIRE is supported by these organizations:

**AMARILLO**  
The Amarillo Economic Development Corporation  
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# The National Wind Resource Center



[www.windcenter.com](http://www.windcenter.com)



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#### ABOUT NWRC

NWRC is a nonprofit organization focused on research and education related to wind energy.

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