

*Kansas Wind & Renewable Energy
Conference 2008*



September 24, 2008

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TradeWind An Experienced Power Team



- Founded 2001
- Lenexa, Kansas Based
- Senior managers have 60+ years Utility and IPP experience
- Directly managed - 5,300 MWs valued at over \$5 Billion
- 7,000 MWs of wind development in central USA
- Owned by local investors and Enel S.p.A.
- TradeWind corporate offices in Lenexa, Kansas
- LEED certified building in Lenexa, includes wind turbines, recycled and low VOC building materials, and energy efficient design components



TWE/Enel- Leaders in Renewable Power Development



- TWE Form's Strategic Alliance with Enel - 2006
- Enel S.p.A. is Italy's Largest Electric Utility
- \$65 billion market capitalization
- \$51+ billion revenue
- Over 53,000+ MW's of electric generation worldwide
- 19,000 + MW's of renewable electric generation
- Enel will invest \$ 6 billion in renewable energy worldwide



Smoky Hills Energy Supply Customers



...hundreds of thousands of customers will benefit from Smoky Hills renewable energy.

Phase I Power Purchasers Include:

Sunflower Electric – Hays, KS (50 MW)

Board of Public Utilities – Kansas City, KS (25 MW)

Midwest Energy – Hays, KS (25 MW)

Phase II Power Purchasers Include:

Sunflower Electric – Hays, KS (24 MW)

Midwest Energy – Hays, KS (24 MW)

Independence Power & Light – Independence, MO (15 MW)

Other – Press Release Pending (50 MW)

Project Timeline



- Prospecting 2002
- 1st Met towers June 2003
- Land leasing 2003-2005
- Power contracting 2006-2008
- Turbine selection Q3 '06 & Q3 '07
- BOP selection Q3 '06
- Start of construction Q2 '07 & Q1 '08
- Phase I COD Q4 '07
- Phase II COD Q4 '08

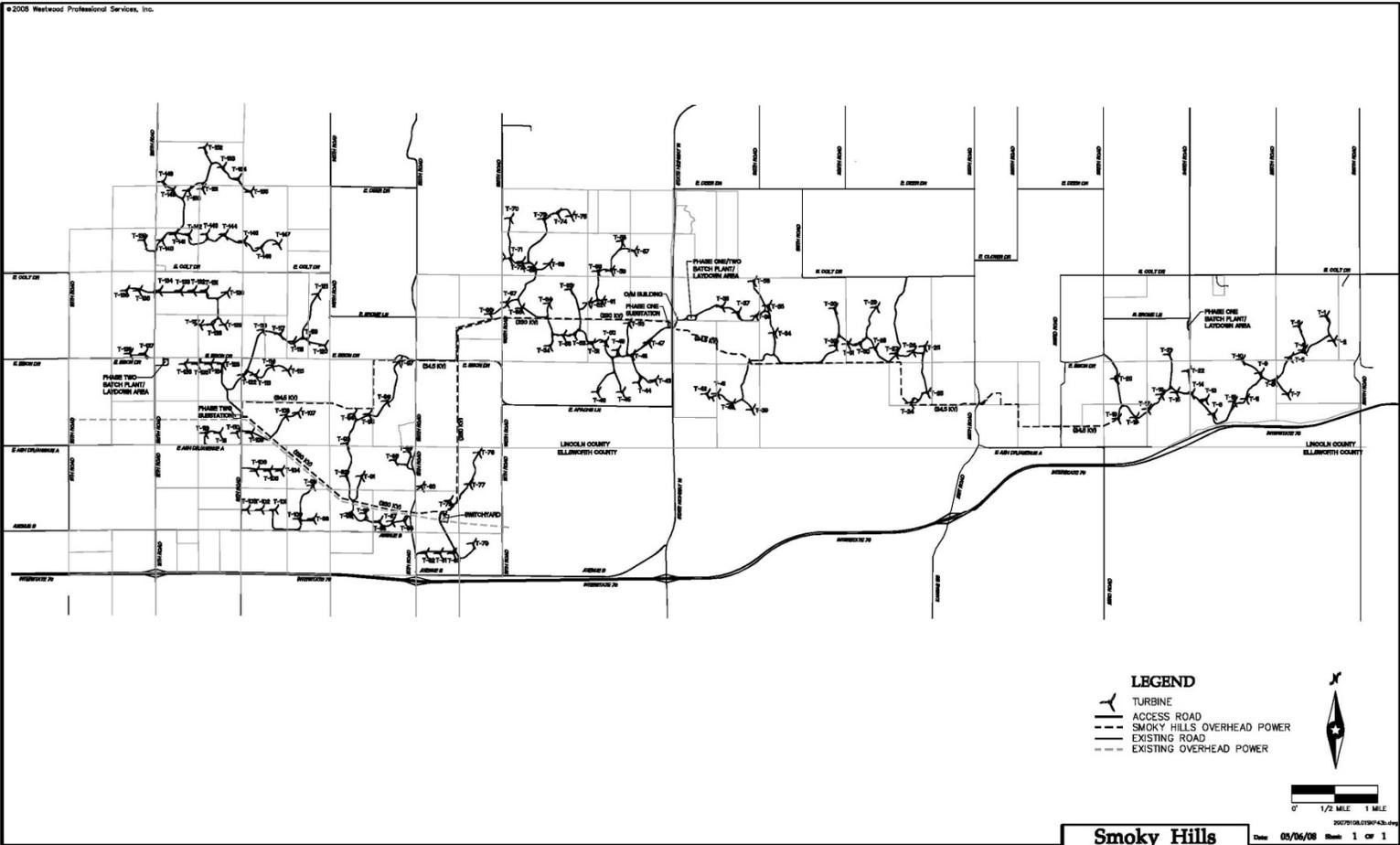


Year						
2002	2003	2004	2005	2006	2007	2008
Site Selection						
	Development				Construction I	COD
					Construction II	COD

Smoky Hills - Centrally Located



Smoky Hills Site



- 250 MW site
- Phased construction
- 230 kV system
- 22,000+ acres
- More than 50 leases
- I-70 good access for construction

LEGEND

- TURBINE
- ACCESS ROAD
- SMOKY HILLS OVERHEAD POWER
- EXISTING ROAD
- EXISTING OVERHEAD POWER



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Prepared for
Tradewind Energy, LLC
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**Smoky Hills
 Wind Farm
 Phase I & II**
 Lincoln & Illinois Counties, KS

Date: 03/06/08 Sheet: 1 OF 1

Equipment



- Phase I - 56 Vestas V 80 1.8 MW Turbines

- Tower – ~80 m / 13.5 ft d
- Blade – 80 m
- Tower – 197 tons
- Nacelle & rotor – 104 tons
- Turbine erection by Vestas



- Phase II – 99 General Electric SLE 1.5 MW Turbines

- Tower 80 m
- Blade 77 m
- Turbines erected by M.A. Mortenson



M.A. Mortenson - Balance of Plant



- MAM a leader in USA wind power construction
- Phase I
 - Access Roads – 22 miles
 - Underground cable – 22.5 miles
 - Overhead line - 4.9 miles 230 kV / 6.5 miles 34.5 kV
- Phase II
 - Access Roads – 30 miles
 - Underground cable – 43 miles
 - Overhead line - 2.8 miles 230 kV / 4.2 miles 34.5 kV



Meteorological Towers



50-80 meters tall

Speed, direction and temp

Tilt up

Shear

Average Speed

Climate Suitability

Surveying/Micro-siting



Geotechnical Investigation



- Terracon
- 30-40 feet deep
- Each WTG site
- Thermal Conductivity
- Soils Resistivity
- ReMi



Start of Construction - Staging Area



Roads



- Fabric
- Local Aggregate
- Wind Row Top Soil
- 15 ft wide
- 52 miles

Roads Cont...



APEC – Salina Crew

Compacted Shoulder

Construction Yard



- Batch Plant
- O&M Building
- Construction Trailers
 - 10 acres
- Lay down Yard
 - Temporary

Foundation Excavation



Foundation Excavation



- ❑ 8-10 feet deep
- ❑ 4,000 psf bearing capacity
- ❑ Limestone

Batch Plant



- ❑ 47,000 cubic yards
- ❑ Chilled water
- ❑ 1-2 foundations/day

Mud Mat



Rebar & Tower Bolt - 60+ Tons



Foundation Pour - 490 cubic yards



Foundation w/Pedestal Form



Backfill of Foundations



Interconnection Switchyard



Kannapolis Rail Yard



Lay Down & Staging Yard - Vestas



A Leading Developer of Wind Energy in Kansas

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Tower Delivery



- 125,000 lbs
- 150 ft turning radius
- Turbine components
 - Blades
 - 3-4 section towers
 - Nacelle
 - Hub
- Base ~15-16 ft tall
- 20,000 lbs/axel

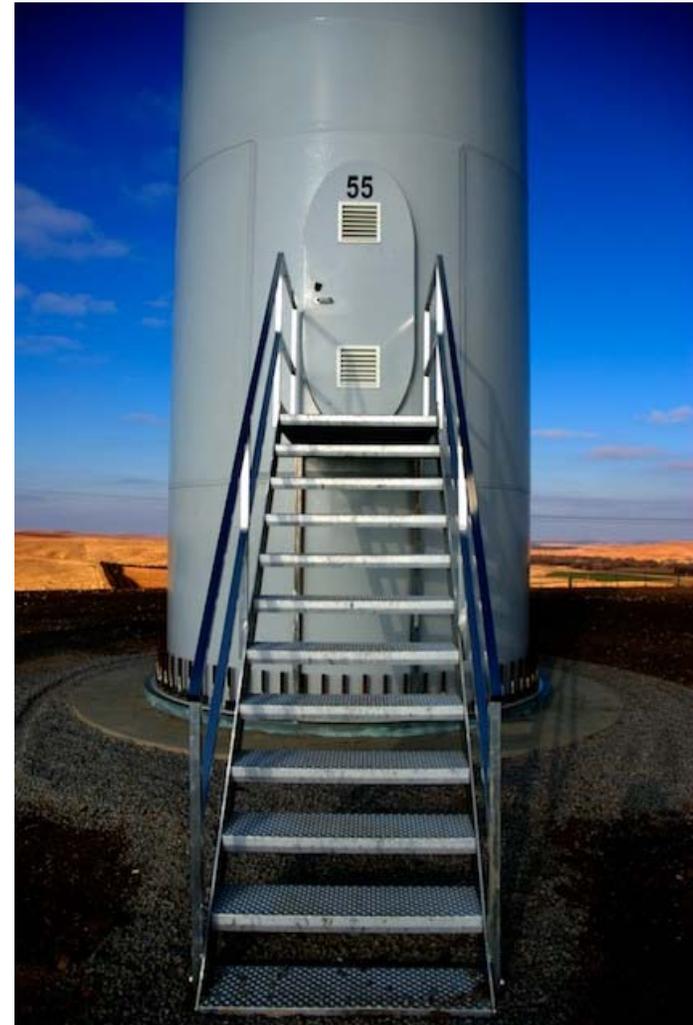
Deliveries - GE



Setting Tower Base Section



Setting Second Tower Section



Nacelle Delivery



Main Erection Crane



- ❑ Manitowoc
- ❑ 18000 & 2250
- ❑ 600 Ton
- ❑ 300 foot reach
- ❑ 35 feet wide
- ❑ 30 – 50 trucks

Setting 1st Nacelle - Q3 2007



Blade Delivery



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Single Blade Installation - Vestas



Work When You Can!



Rotor Install - GE



Rotor Install - GE



Both Cranes from County Road



Project Top Out - July 24, 2008



Smoky Hills Aerial



- Transformer in Abilene
- All WTGs Pre Commissioned
- Energize Circuits Within 2 Weeks
- COD November '08

More Information

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More Information



We want to hear from you!

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