

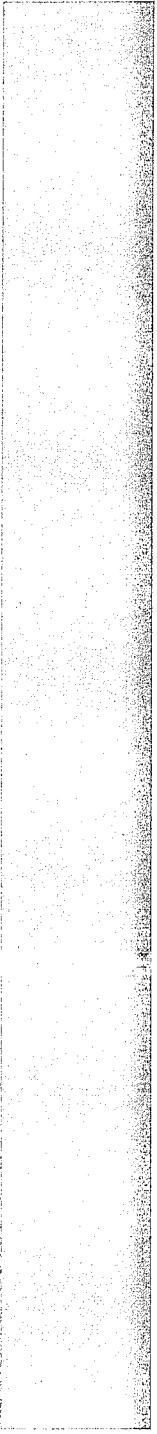
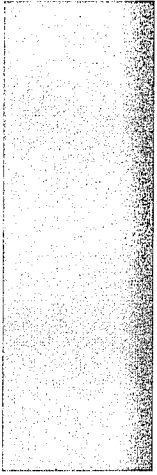


The Wind Coalition

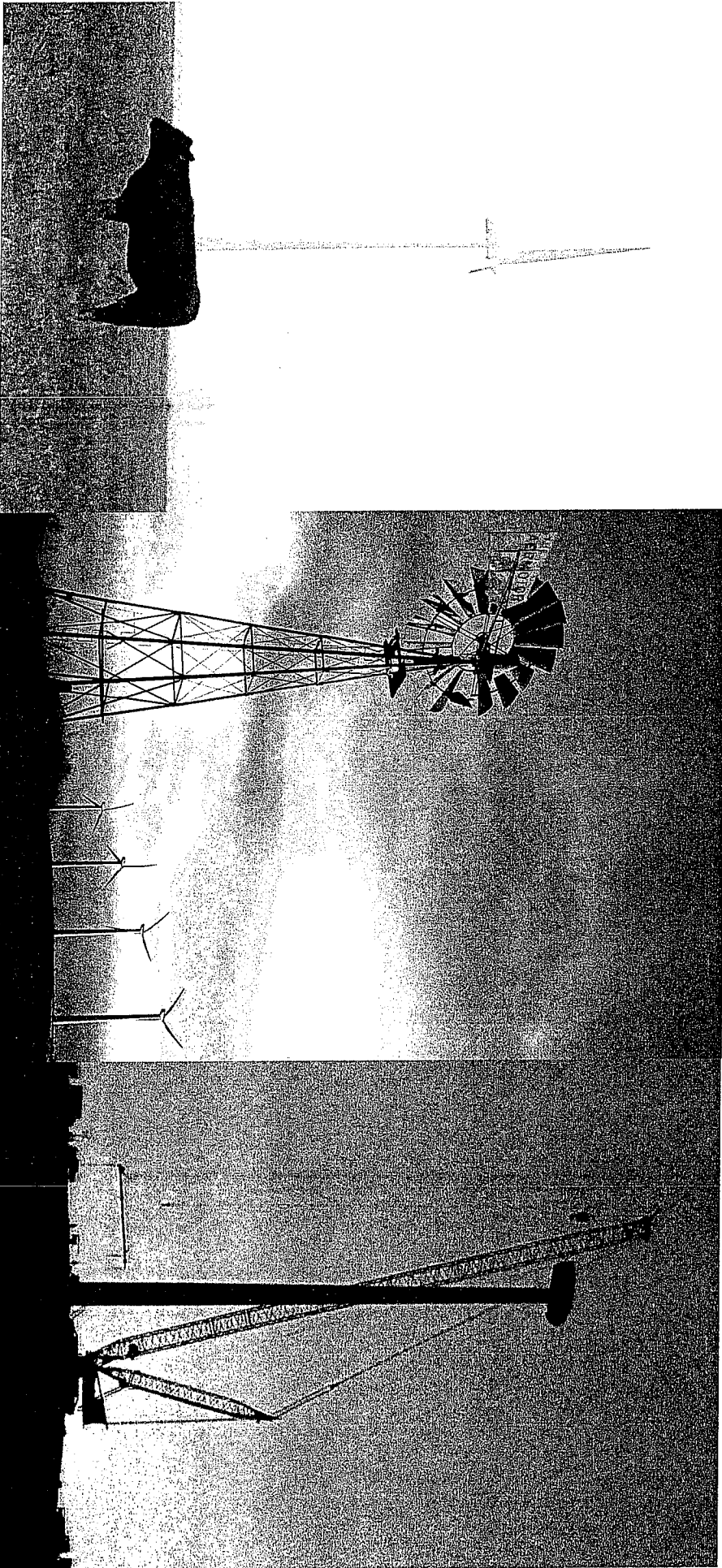


WIND ENERGY IN KANSAS

HOUSE ENERGY & ENVIRONMENT COMMITTEE
KIMBERLY SVATY, THE WIND COALITION
24 JANUARY 2013



What Does Wind Energy Look Like in Kansas?



The Wind Word Cloud

Energy

Operation Procurement Water
Siting Maintenance
Local Agriculture
Power Agreements Turbine
Land Avian Wind Investment PPA
Transmission Landowners Engineering
State Jobs
Environmental
Ownership Capital
Export **Land** Federal
Manufacturing Decommissioning Permitting Capacity



ItOut

Video

“Moving Into Full Construction”

April 2012

Overview of Wind Energy in Kansas

In 2012, Kansas led the nation in wind farm construction

Equates to roughly \$3 billion in capital investment, thousands of construction jobs and several hundred permanent jobs

Kansas has the second best wind resource in the nation
18 operating projects, one preparing for construction
representing nearly \$6B in capital investment

Following statistics will be updated on 1.30.13 but for now:

- Ranked 9th in the nation in operational wind energy
- Percent of Kansas Power by wind in 2010 – 7.1%
- Kansas ranked 5th in the US in 2010 for percentage of electricity delivered from wind



Wind Energy in Kansas

Development

Economics

State & Federal Policy

Wind Projects in Kansas

Jobs & Investment

Wind in Kansas 2.0

Development

Critical Components

Construction

Siting

Land use

County jurisdiction & permitting, DOD, FAA
Guidelines

Tallgrass Heartland & Supreme Court case

Decommissioning & Road Agreements

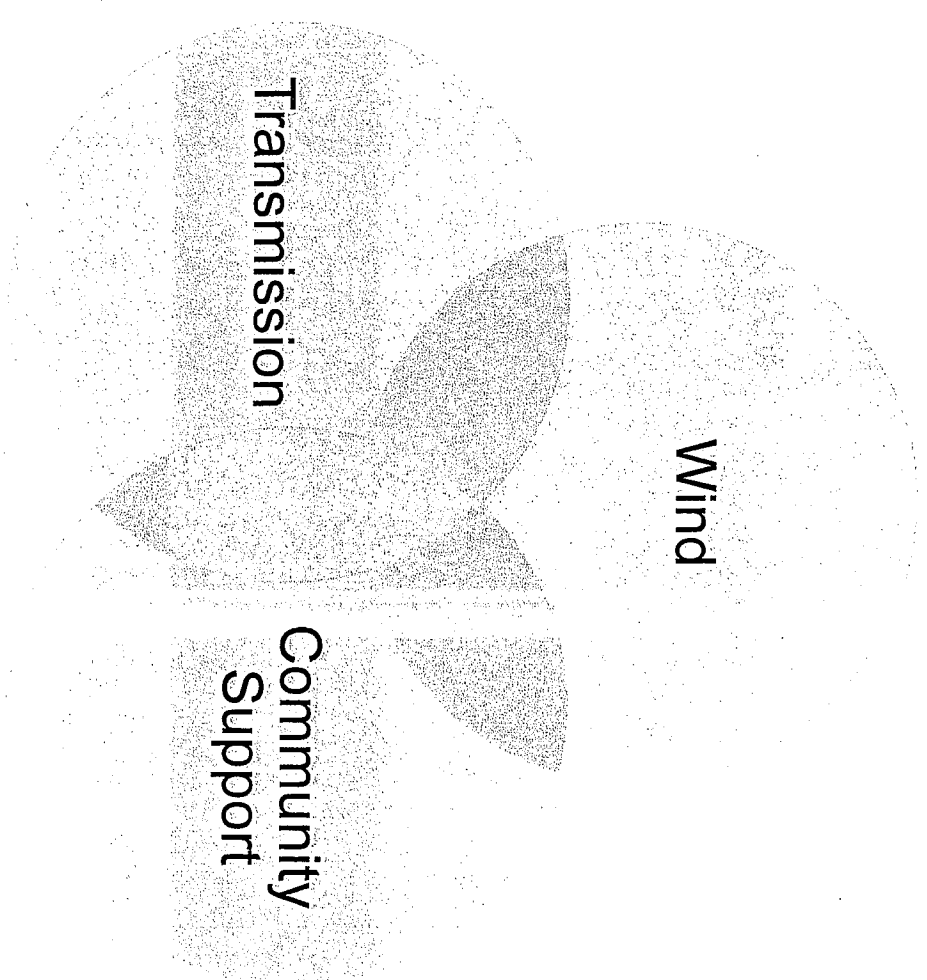
Environmental Considerations

Transmission

Generator Interconnect Agreements, Firm Path, Planning studies

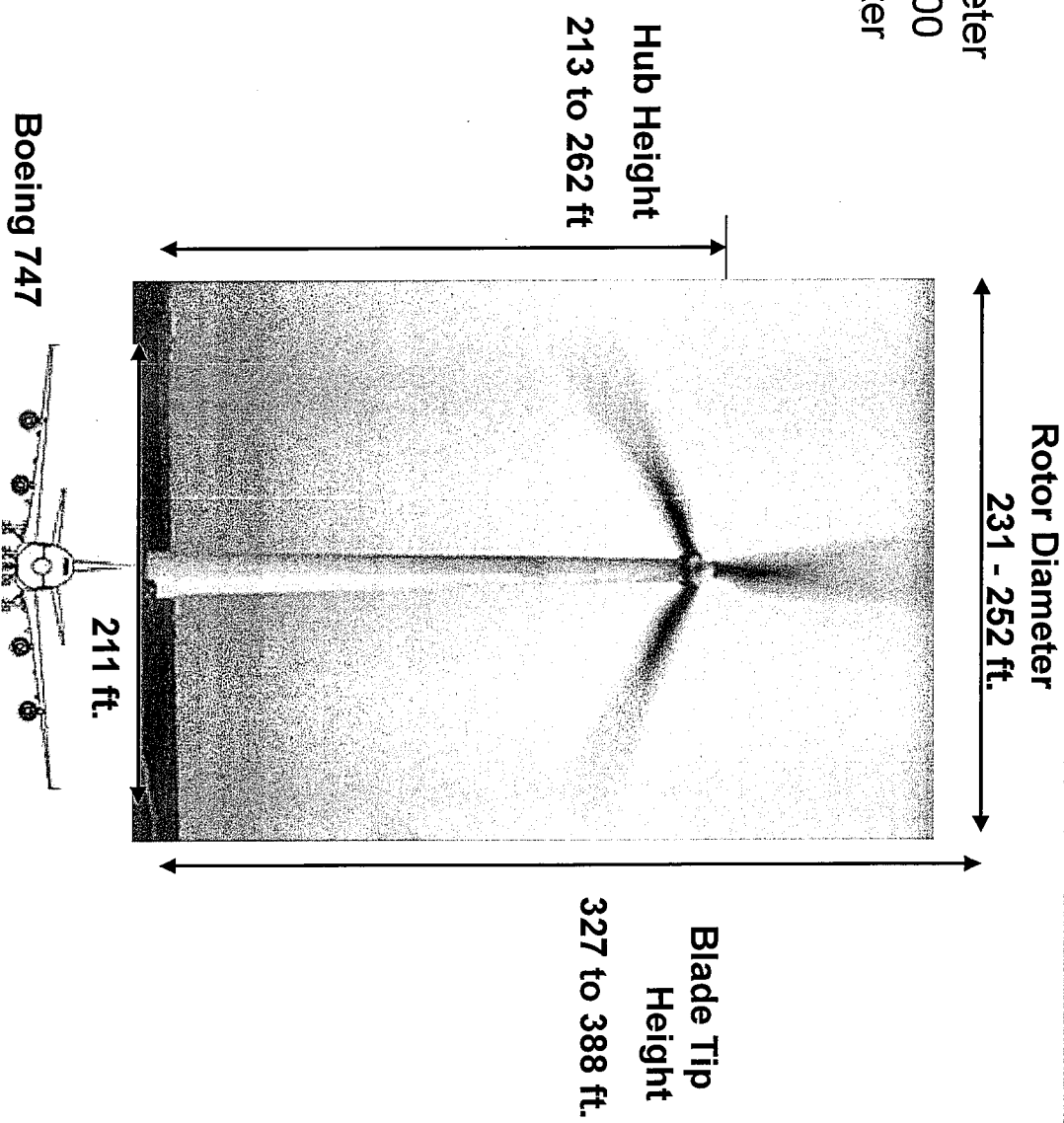
Critical Project Components

Quality Wind Resource	Minimum 7 Meters 24 Years
Community Support	
Minimal Environmental Issues	
Avoid Sensitive Areas	
Conduct rigorous Environmental Studies	
Minimize disturbance to land	
Market Evaluation	
Transmission	
Access/Capacity	
Site Studies	
SRP Interconnection Rights	

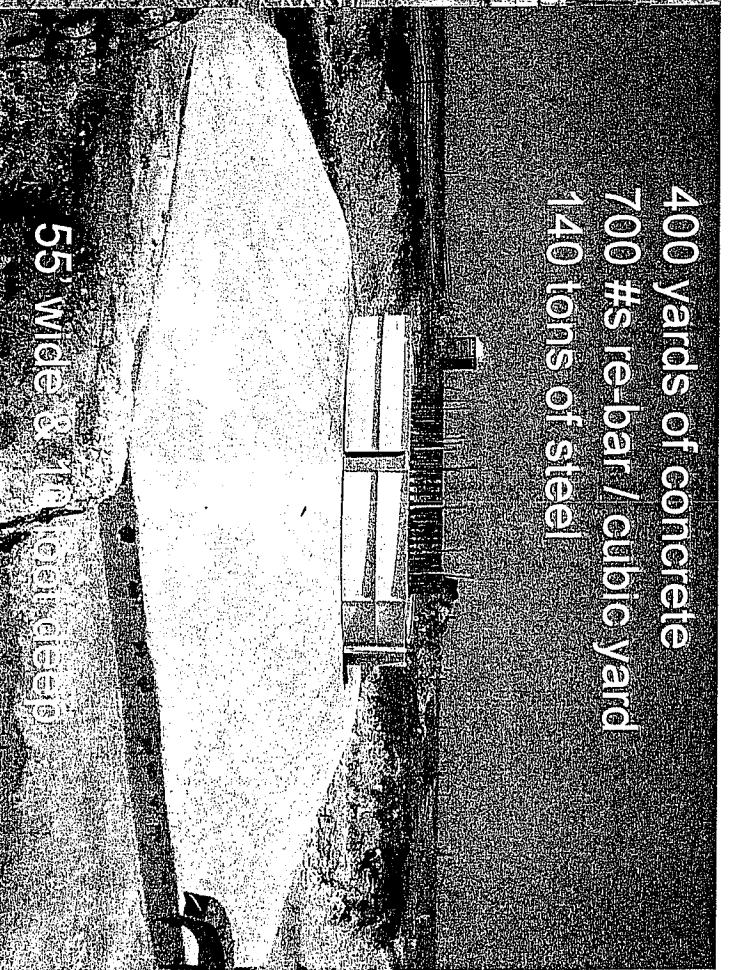
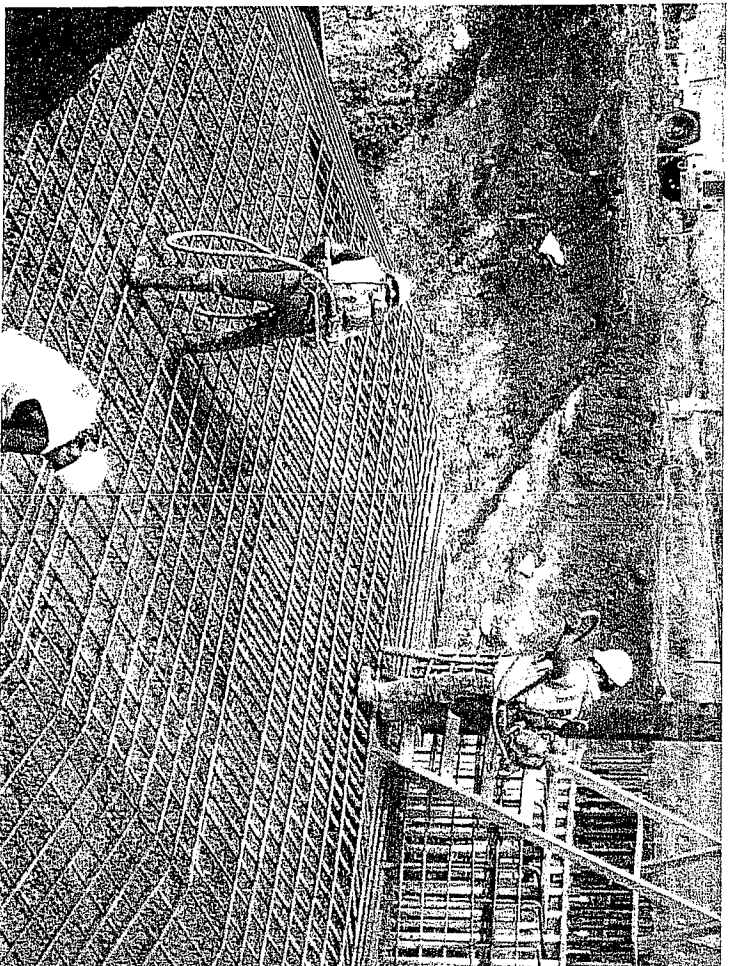


1.5 MW Wind Turbine Scale

Using 80 – 100 meter towers and 77 – 100 meter rotor diameter blades



Excavated Foundation With Spread Footings

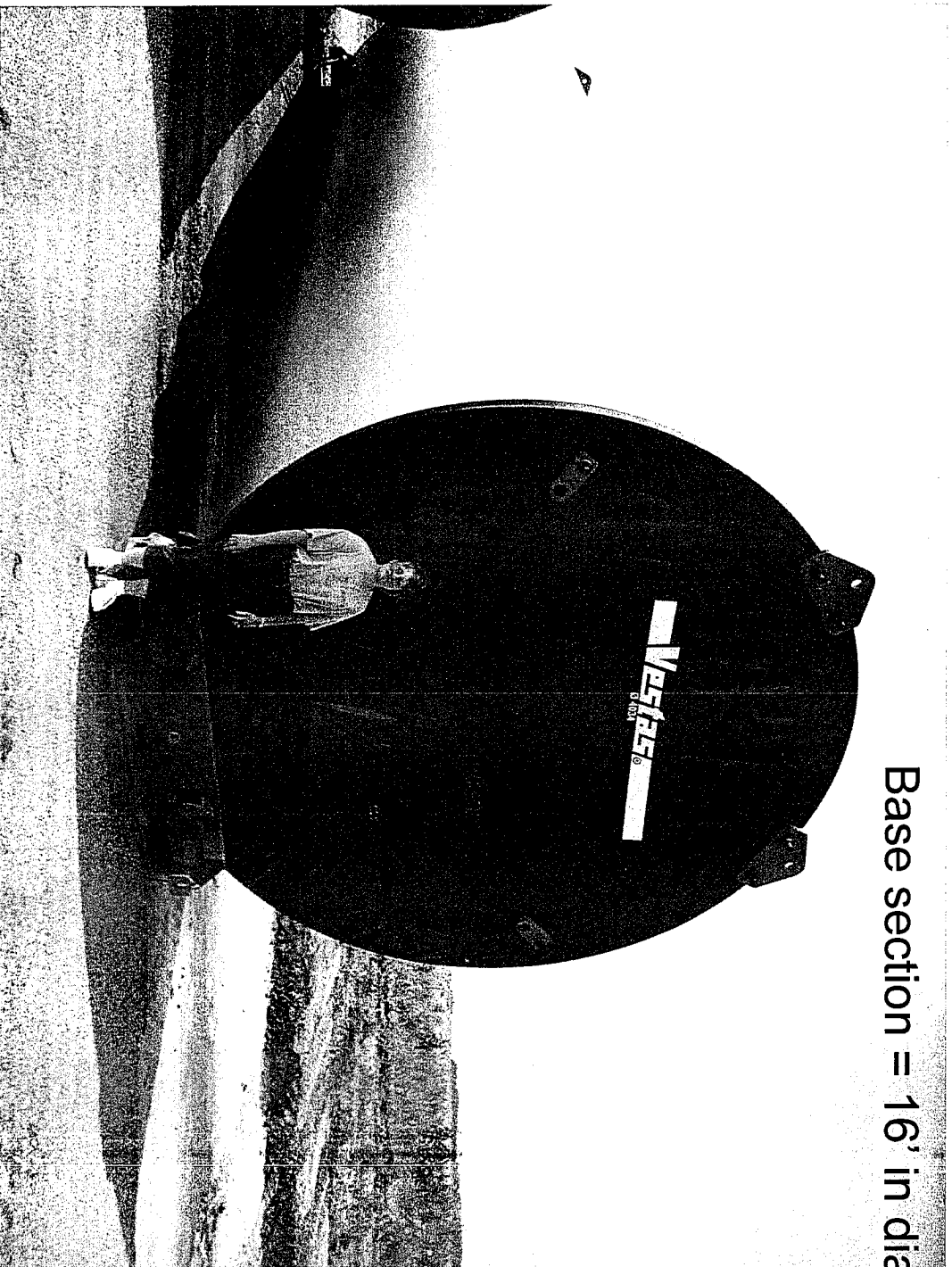


400 yards of concrete
700 #s re-bar / cubic yard
140 tons of steel

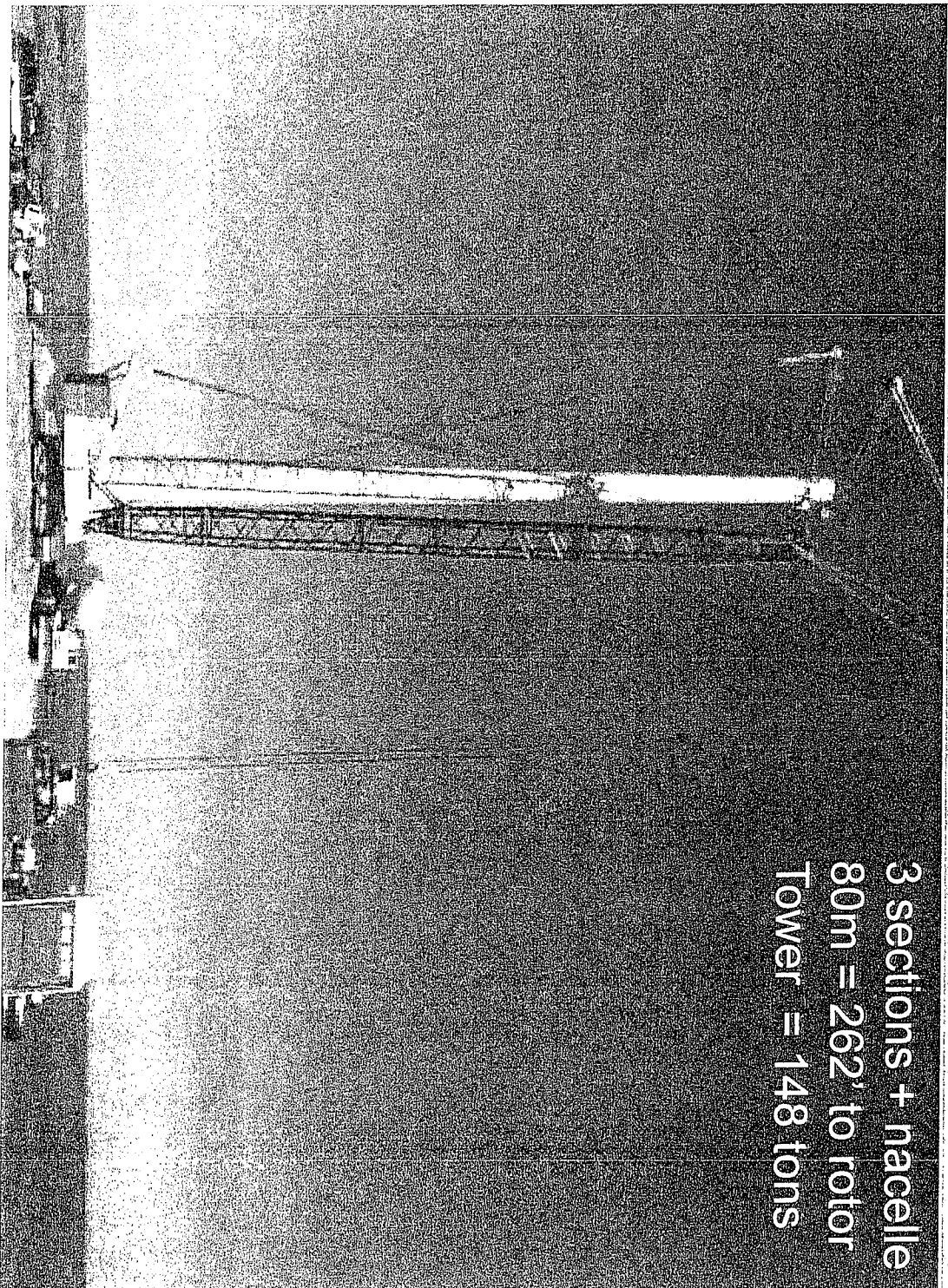
55' wide & 10' high deep

Tower Section

Base section = 16' in diameter

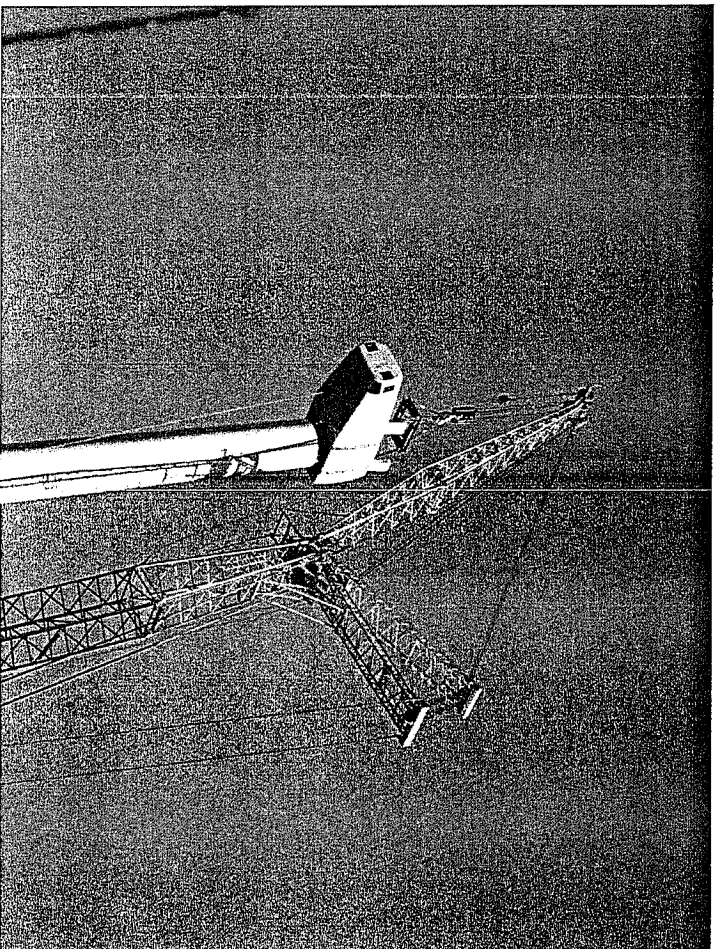
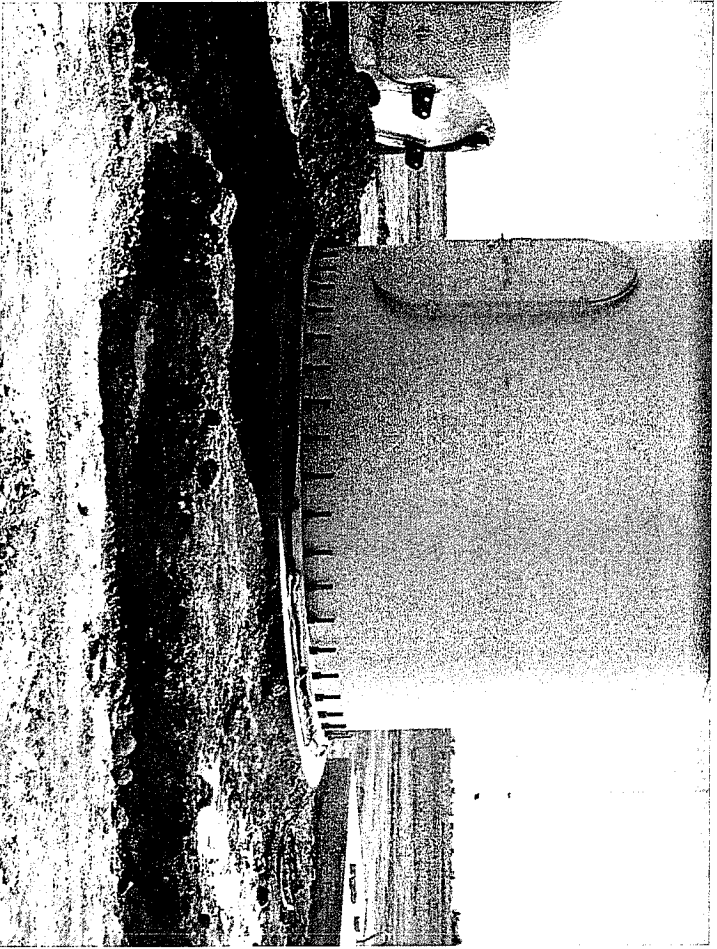


Tower Sections

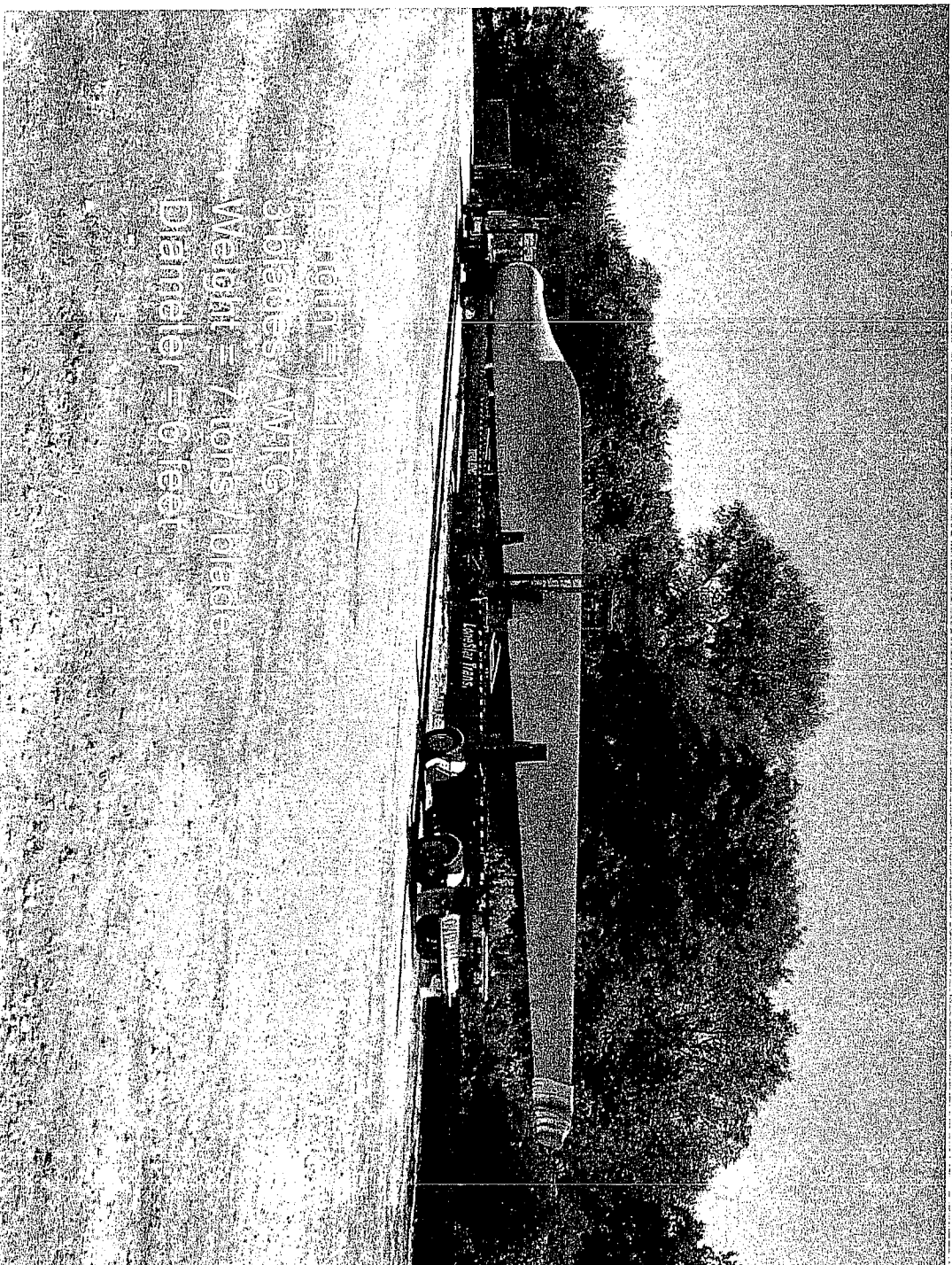


3 sections + nacelle
80m = 262' to rotor
Tower = 148 tons

Tower Installation

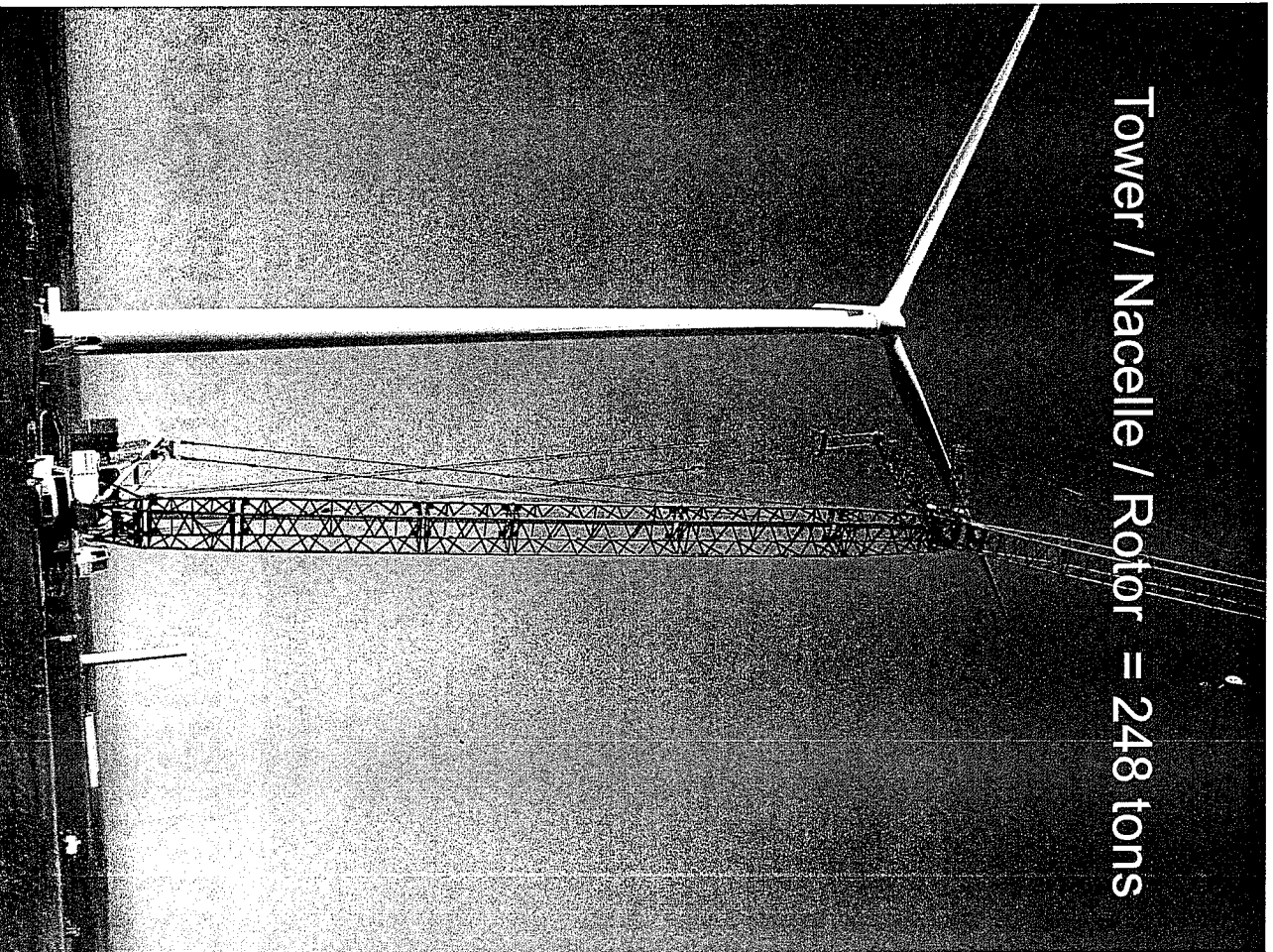


Blade

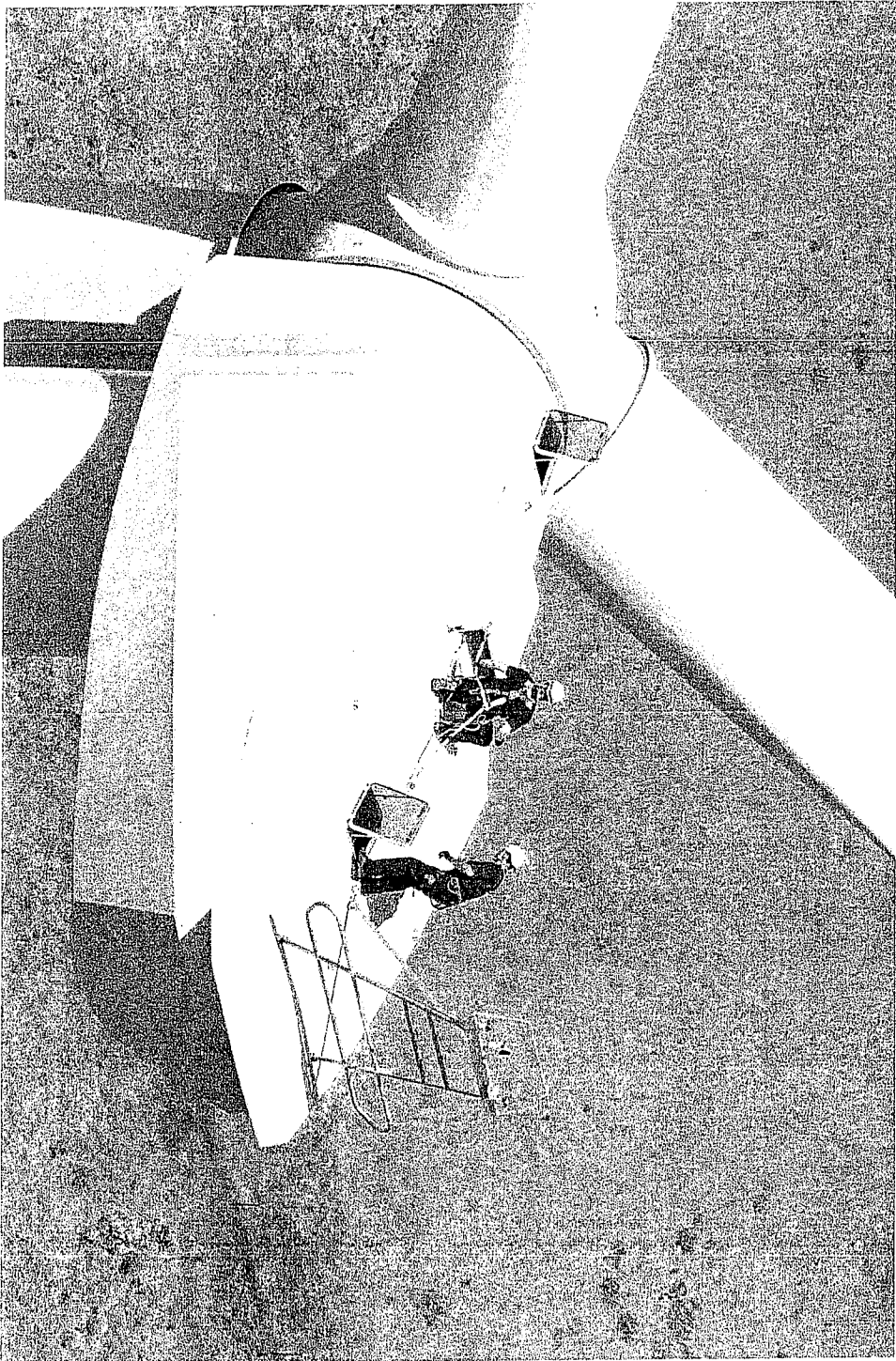


Tower/Nacelle/Rotor

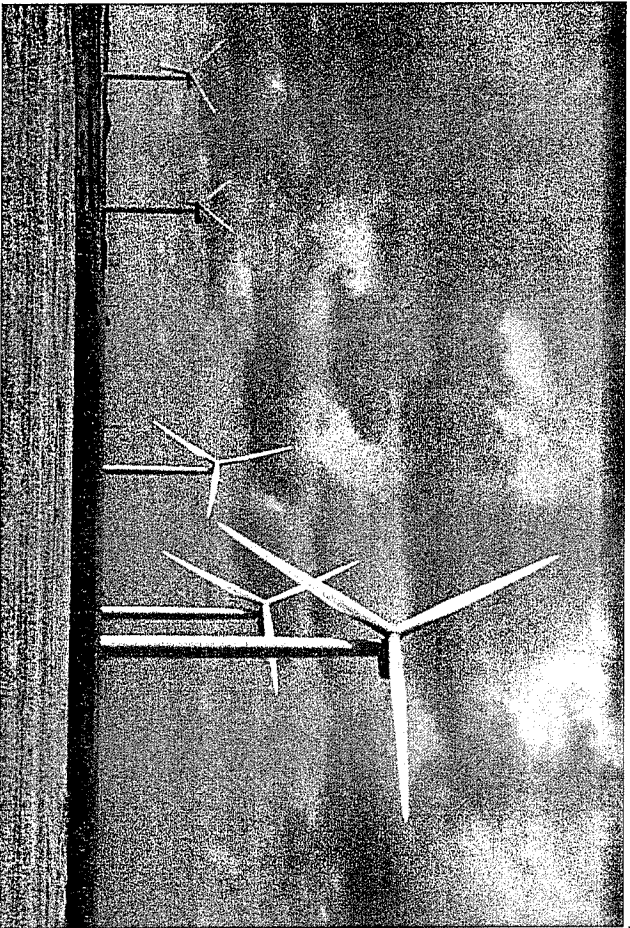
Tower / Nacelle / Rotor = 248 tons



Operation & Maintenance



Completed Arrays



Siting Guidelines

Siting

- ❑ Wind Energy Siting Handbook: Guideline Options for Kansas Cities and Counties – April 2005
- ❑ The Kansas Renewable Energy Working Group has developed guidelines.
- ❑ KDWP&T has a position statement on wind projects.
- ❑ KDWP&T developed an online tool to help guide landscape scale development, such as wind energy facilities. The Kansas Natural Resource Planner is a dynamic, interactive mapping system that includes various GIS layers. Additions and upgrades to the NRP are ongoing.
- ❑ <http://www.kars.ku.edu/maps/naturalresourceplanner/>
- ❑ Nature Conservancy & other stakeholder groups
- ❑ Wind Power Siting, Incentives and Wildlife Guidelines in the United States
 - ❑ US Fish & Wildlife Service along with Association of Fish and Wildlife Agencies
 - ❑ October 2007
 - ❑ Various updates
- ❑ Lesser Prairie Chicken, Native Habitat Conservation Plans, Indiana Bat, Whopping Cranes
 - ❑ FAA
 - ❑ DOD
 - ❑ NEPA

State Level Siting Guidelines

- 2003, the KREWG Environmental and Siting Committee drafted voluntary guidelines for stakeholders considering potential project sites in Kansas.
- Guidelines are meant to minimize various impacts that wind development may have, and focus on the following areas:
 - Land use;
 - noise management,
 - natural & biological resources;
 - visual impact;
 - soil erosion and water quality;
 - safety;
 - cultural, archaeological, paleontological, socioeconomic;
 - public service and infrastructure;
 - public interaction.

State & Regional Filings

- Kansas Corporation Commission
- Kansas Department of Health and Environment
- Kansas Dept. of Wildlife, Parks, and Tourism
- Kansas Department of Transportation
- Kansas State Historical Society
- Kansas Department of Agriculture
- Kansas Siting Guidelines

Wind Projects in Kansas

Operating Wind Projects

End of 2011

- 1276.8 MW of installed wind generation
- 11 operating wind projects
- 1011.8 MW in-state use (79%), 265MW export (21%)

End of 2012

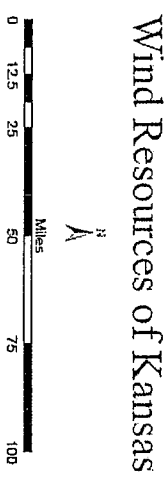
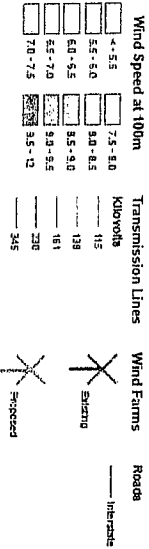
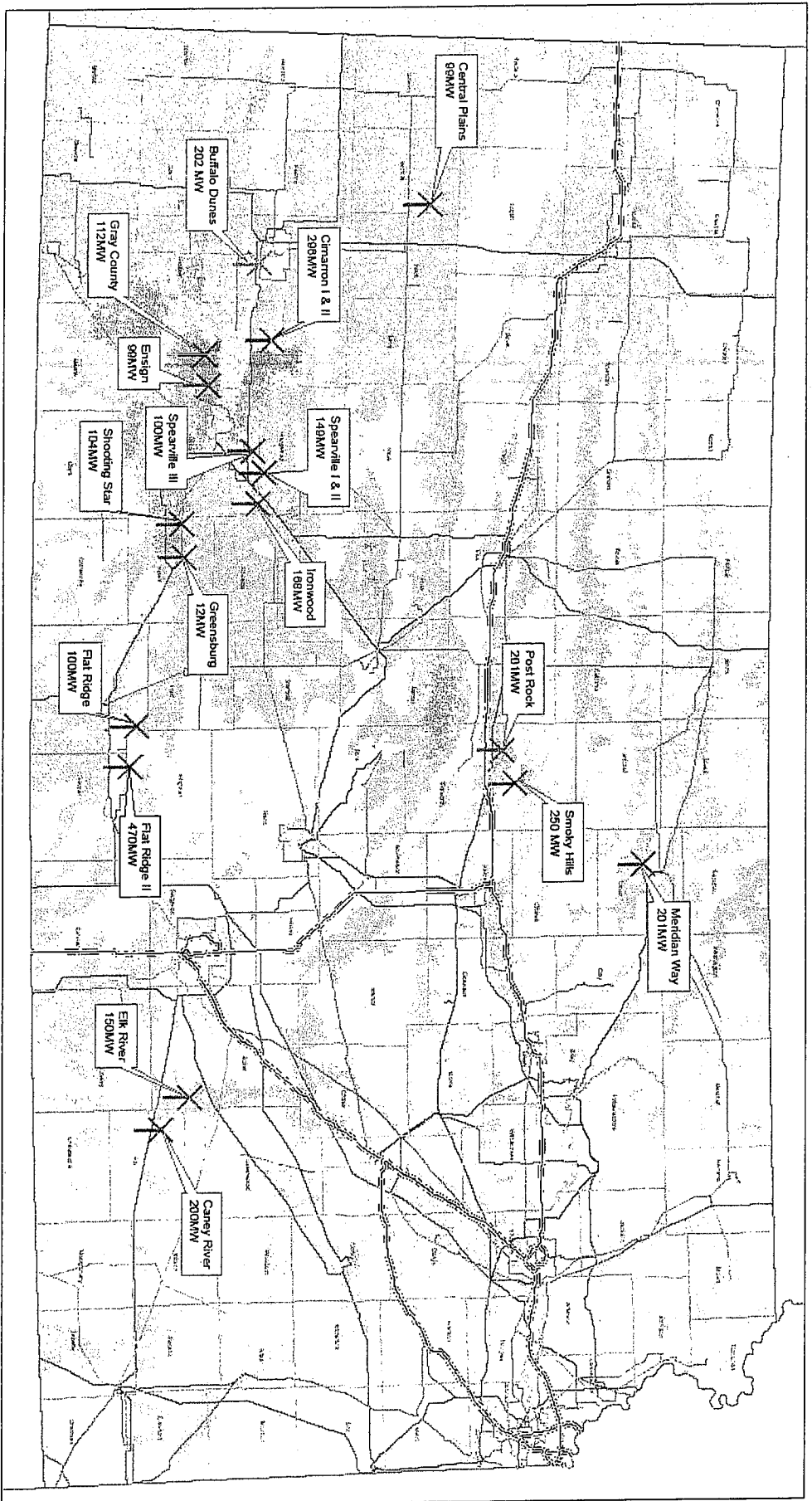
- 1440.2 MW of new installed wind generation
- 8 new operating projects
- More than doubling the state's installed wind generation
- 804.7 MW in-state use (56%), 635.4 MW export (44%)

End of 2013

- 2,819MW of installed power
- At least 1 new project – 202 MWs for export

Kansas Wind Projects 2012 Delivery

- 1440.2 MW to be constructed
- In-service date mid to end 2012
- 8 announced projects
- \$3 billion in new capital investment
- Leading the nation in wind farm development in 2012
- Including largest single-phase wind project in the US
- Several thousand new construction jobs
- More than one hundred permanent jobs



Wind speed at 100 meters data 1978-1998
 created by AWS 701 using the Hershfield
 system and reference weather data
 July 2008

Operating Kansas Wind Projects – End 2012

Project Name	County	Developer	Size (MW)	Power Purchase Agreement	Turbine Type (MW)	Installed Capacity (MW)	Year
Gray County	Gray	NextEra	112	MKEC KCP&L	Vestas 660kW	170	2001
Elk River	Butler	Iberdola	150	Empire	GE 1.5	100	2005
Spearville Spearville II	Ford	enXco	100.4 48	KCP&L	GE 1.5	67 48	2006 2010
Smoky Hills Phase I	Lincoln/ Ellsworth	TradeWind Energy	100.8	Sunflower – 50 KCBPU- 25 Midwest Energy – 24	Vestas 1.8	56	2008
Smoky Hills Phase II	Lincoln/ Ellsworth	TradeWind Energy	150	Sunflower – 24 Midwest – 24 IP&L – 15 Springfield -50	GE 1.5	99	2008
Meridian May	Cloud	Horizon EDP	201	Empire – 105 Westar - 96	Vestas 3.0	67	2008
Flat Ridge	Barber	BP Wind Energy	100	Westar	Clipper 2.5	40	2009
Central Plains	Wichita	RES Americas	99	Westar	Vestas 3.0	33	2009
Greensburg	Kiowa	John Deere/ Exelon	12.5	Kansas Power Pool	Suzlon 1.2	10	2010
Caney River	Elk	TradeWind Energy	200	Tennessee Valley Authority (TVA)	Vestas 1.8	111	2011

Operating Kansas Wind Projects – End 2012

Project Name	Developer	Capacity (MW)	Location	Turbines (Type)	Count	Year
Post Rock	Ellsworth Lincoln	201	Westar	GE 1.5MW	134	2012
Ironwood	Ford Hodgeman	168	Westar	Siemens 2.3MW	73	2012
Cimarron I	Gray	165	Tennessee Valley Authority (TVA)	Siemens 2.3MW	72	2012
Cimarron II	Gray	131	KCP&L	Siemens 2.3MW	57	2012
Shooting Star	Kiowa	105	Mid-Kansas Electric	GE 1.6MW	65	2012
Flat Ridge 2	Barber, Kingman, Harper & Sumner (gen tie line)	470.4	AECL – 310.4 Arkansas Electric -51.2 SWEPCO - 108.8	GE 1.6MW	294	2012
Spearville 3	Ford	100.8	KCP&L	GE 1.6MW	63	2012
Ensign	Gray	99	KCP&L			2012
Buffalo Dunes	Finney, Grant, Haskell	202	Alabama Power	TBD	TBD	2013

Installed Totals

18 operating wind projects

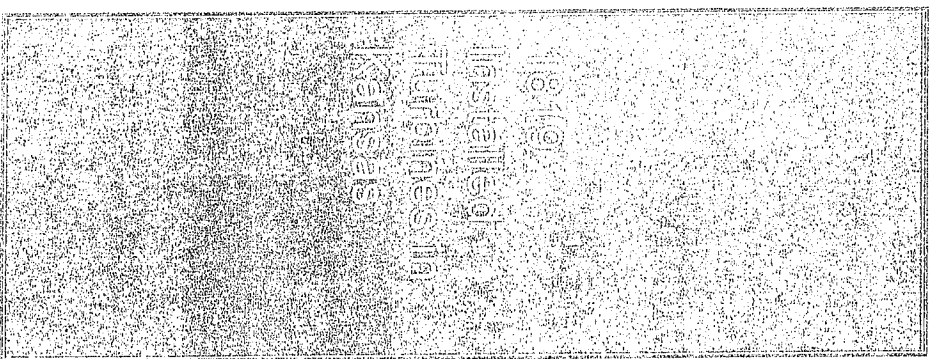
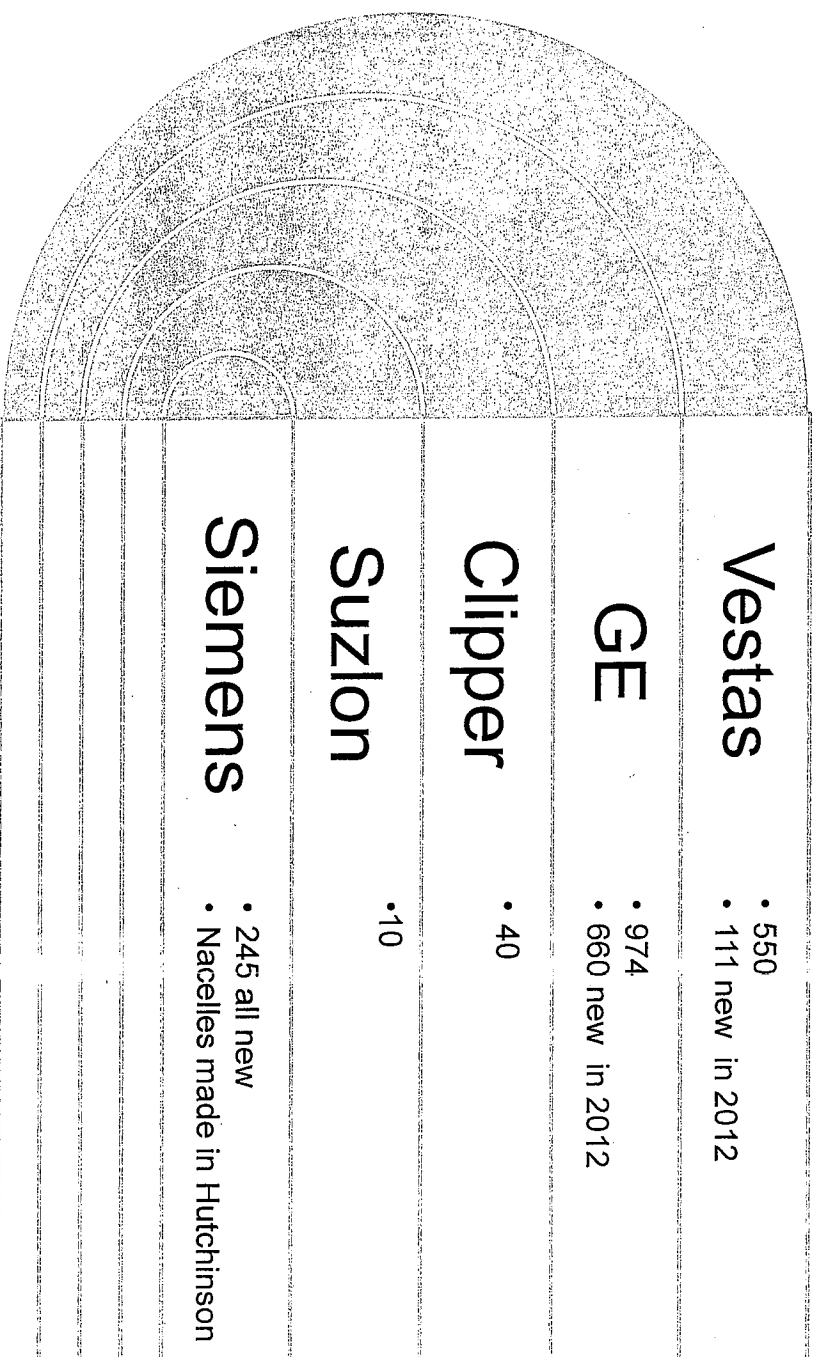
2617 MW of installed wind generation

Approximately \$5 Billion in capital investment

- Investment figure is just project related does not include manufacturing facilities, landowner payments, donation agreements and economic development impacts

Approximately 60% in-state use & 40% export

Turbine Types in Use in Kansas



Why Kansas Leads the Nation

Kansas wind projects produce power on average more than 90% of the time.

The energy that wind projects produce is, on average, close to or above 50% of their nameplate, or maximum, capacity each year, a high utilization rate by industry standards.

Because of this performance, wind developers with projects in Kansas are signing power purchase agreements with in-state and out-of-state utilities with guaranteed pricing for twenty years in the \$0.029 to \$0.033 per kilowatt hour range (with the \$0.02 PTC).

New turbine technologies have deployed in the last two years with taller hub heights further enhancing efficiency and driving down cost. There are now 400 component part facilities in 43 states including Kansas. At least 65% of the value of a wind turbine produced domestically compared to 25% in 2005. Kansas has a stable and attractive policy environment.

State & Federal Policy

Definition of Renewable Energy

RPS Statute

Retail Rate Docket

Property Tax

Federal Production Tax Credit

Definition of Renewable Energy

K.S.A 17-4652

“Renewable” energy as wind, solar, photovoltaic, biomass, hydropower, geothermal, waste incineration, landfill gas resources or technologies

Renewable Portfolio Standard Approach

Senate Substitute for HB 2369 enacted in 2009:

- 10% by 2011, 15% by 2016 and 20% by 2020
- All electric utilities must file an annual report which includes: “the calculated percentage increase in the utility’s revenue requirement and retail utility rates that would be caused by compliance with the act’s portfolio requirement for the year.” Filing by August 1 annually
- Nameplate based – not energy sales
- Allows for owned or purchased generation, some RECs and net metering capacity
- 1% price cap & KCC exemption
- 10% in-state “sweetener” *(not in current version)*
- Allows some RECs purchase for compliance – 2 year use window

RFP'S Compliance

All utilities have met the 10% benchmark

Nearly all utilities have met the 15% benchmark by 2016

KCP&L and Westar need approximately 50-100MW to achieve 15% target

Approximately 550MW will be developed the 20% by 2020 benchmark to be met

Rate Impact of the RPS

2011 and 2012 Hearings before the Joint Committee on Energy & Environmental Policy, the KCC has reported a **0% -- 1.7% rate impact due to compliance with the RPS**

The 1.7% was quoted for a pre-approval filing

Testimony provided by Bob Glass, Chief of Economics and Rates at the KCC to the Joint Committee on Energy & Environmental Policy October 2011 and November 2012

Exported Wind Power

Wind generation that is or will be exported to other states does not count toward the RPS.

It does not affect Kansas utility customer rates, but the construction and operation of these wind farms has a positive economic effects on the citizens of Kansas.

Testimony provided by Bob Glass, Chief of Economics and Rates at the KCC to the Joint Committee on Energy & Environmental Policy 11.20.12

Retail Rate Docket

HB 2526 passed by Legislature in 2012

“The commission shall annually determine the annual statewide retail rate impact resulting from affected utilities meeting the renewable energy requirement.”

KCC Docket: 13-GIME-391-GIE

Docket opened 4Q2012

Report issued to the Governor and respective House & Senate utilities committees annually on March 1

The Production Tax Credit

\$0.02 per kilowatt hour for ten years

Extended in fiscal cliff negotiations

- 1-Year extension – commence construction 1.01.14
- Pending an IRS ruling defining construction – per turbine or project construction basis?

Once the market knows the path forward, the Kansas market will grow

- Project economics remain compelling due to excellent wind resource

Our product is top-shelf

- Strong capacity factors, attractive and stable policy environment, improving transmission grid, access to component parts, transportation system, qualified work force

Role of Wind Energy

Apples to Apples Comparison

Wind as a hedge

Generation Comparisons

Comparisons of new wind generation vs. existing fossil fuel assets can be deceptive

New wind generation compares favorably with new fossil fuel and nuclear generation

Lazard's Levelized Cost of Energy Generation 2011 study

“Comparisons of the LCOE indicate that the cost of wind is less than new coal, new natural gas and new nuclear generation.”

Existing fossil fuel generation is experiencing increasing cost pressures from environmental regulations

LaCygne retrofits - \$1.2B

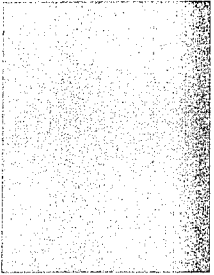
Wind as a Hedge

Wind is not intended to be a substitute for coal or natural gas generation.

Important role in balancing a utility's load demands, offsetting volatile fuel costs.

Introduced known costs into long-term portfolios

Fuel diversity in location and type is key



Jobs & Investment

Project Jobs

Project Investment

Donation Agreements

Manufacturing

Ripple Effect

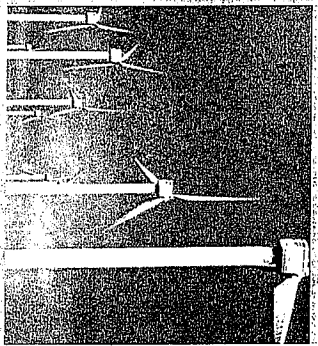
Economic Impacts

- ❑ Capital investment in an average 200MW facility \$400M
- ❑ Donation Agreements vary across project size
 - ❑ Smaller projects \$300,000 annually (\$5.6M for 20 years)
 - ❑ Larger projects between \$750,000 and \$1,000,000 over life of project with an escalator
 - ❑ Counties determine how gifts or donation agreement monies are spent
- ❑ Road Agreements
 - ❑ Restoration to pre-construction conditions
 - ❑ Escrow accounts
 - ❑ Generally several million dollars in improvements
- ❑ Construction Jobs
 - ❑ Peak 250 construction jobs for the average 200MW project
- ❑ Operation & Maintenance Jobs
 - ❑ 10-12 highly-skilled FTEs for every 100MW

Economic Impacts Examples

- Flat Ridge
 - ▣ Donation Agreement for Phase 1 & 2 - \$1.6M
 - ▣ Landowner payments for Phase 1 & 2 - \$2.4M
 - ▣ Operation & Maintenance Jobs for Phase 1 & 2 – 50
 - ▣ Construction Jobs for Phase 1 & 2 – 750
 - ▣ Payroll and Economic Boost
 - ▣ Flat Ridge 1 - \$15M in payroll taxes and \$5M to local contractors and suppliers
 - ▣ Flat Ridge 2 - \$40M in payroll taxes and \$23M to local contractors and suppliers
- Caney River
 - ▣ The project provides \$ 3M annually in lease rent payment to participating landowners and payments in lieu of taxes to Elk County. These payments represent a 50% increase in annual county revenues.

Wind Component Manufacturing



September 2011 – Wurth Supply Service – logistics & distribution center in Wichita to provide component parts – created 10 new jobs

July 2011 – New Millennium Wind Energy announced the company's first 200,000 square foot manufacturing facility in Newton to produce 20KW and 60KW composite turbines to be sold to office buildings, casinos, stadiums & retailers – created 70-350 new jobs

January 2011 – Schuff Steele announced a new 200,000 square foot manufacturing facility in Ottawa to produce wind towers. Once complete, 200-250 new jobs will be created. The facility was originally planned for North Dakota.

December 2010 – Physiam Group, the largest cable manufacturer globally and the main cable supplier to Siemens, announced a new distribution facility in Lenexa to supply component parts to wind turbines and tower manufacturers.

April 2010 – Denmark-based Jupiter Group announced a \$2.4M capital investment in Junction City that will create 120 new jobs. The company manufactures composite nacelle covers and spinners as well as wooden kit structures used in blades.

2009 – Tindall Corporation announced a wind tower base production facility in Newton, creating 400 new jobs and \$66 million in capital investment. Siemens announced a nacelle production facility in Hutchinson creating 400 new jobs and a \$35 million capital investment. At least 2 wind projects being constructed in Kansas will use nacelles from the Hutchinson plant.

Wind Manufacturing in the US

400 component parts manufacturing facilities
43 states

At least 65% of the value of a wind turbine produced
domestically

- Compared to 25% prior to 2005

Wind industry was American born, utility scale in
Europe and exported back to US
Nuclear & Solar panel examples

Wind Manufacturing in the US

- 400 component parts manufacturing facilities
- 43 states
- At least 60% of the value of a wind turbine produced domestically
 - ▣ Compared to 25% prior to 2005
- Encourage manufacturing in Kansas
 - ▣ Solar panels – China
 - ▣ Nuclear - Japan

Why Kansas Leads the Nation

“Flat Ridge 2 wind power could lower SWEPCO customer bills in 2013 by roughly \$.05 per monthly bill for customers using 1,000 kilowatt hours and \$.11 per monthly bill in 2014.” – SWEPCO

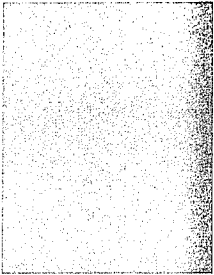
Alabama Power, a subsidiary of Southern Company, is “absolutely looking for more wind power” to import from Midwestern states. Noting that Alabama does not have good wind resource. “Wind energy is cost-effective for the utility’s customers and helps diversify its fuel mix.”

– Michael Schneiderman of Alabama Power

Wind in Kansas 2.0

Infinity acquired two Kansas projects under development in Ford, Gray, and Finney counties from local developer Zephyr Wind Power, based in Cimarron, KS and purchased the Pioneer Wind Project in Ford County, KS from Clipper Windpower Development.

The two acquisitions combined have the potential to produce over 1,500 megawatts (MW) of wind energy once fully operational. The wind projects in Finney, Ford, Gray and Hodgeman Counties are scheduled to start construction by 2016 to ensure that they will be operational in 2018 when the energy is able to flow to those new markets by way of CleanLine's Grain Belt Express.



Questions?