

# How do you put wind turbines in Lake Erie?

Lorry Wagner, Ph.D.  
President  
LEEDCo

# Organize

**NorTech**  
Energy Enterprise

**Cuyahoga**

•

**Lorain**

•

**Cleveland**

•

**Lake**

•

**Ashtabula**

**DMV** **KEMA**

**freshwaterwind**

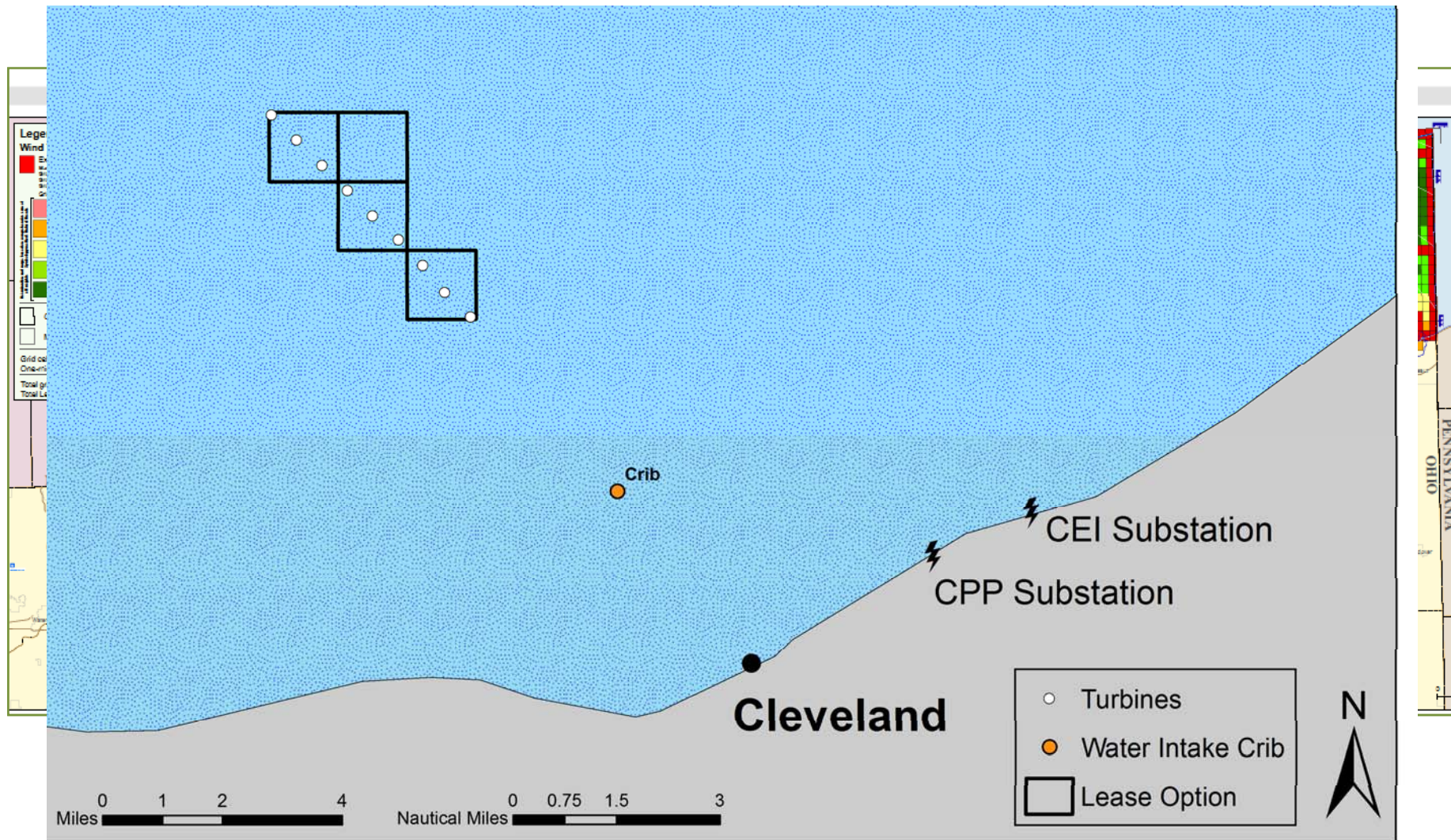
**SIEMENS**

**CLEVELAND**  
Foundation

**LEEDCo**  
Lake Erie Energy Development Corporation

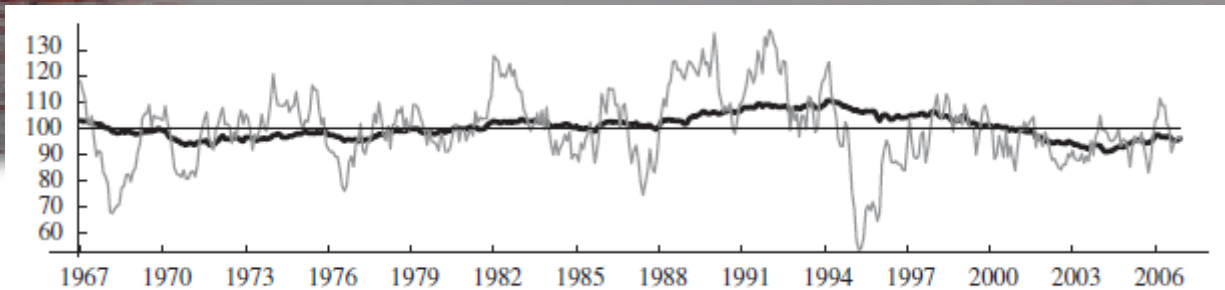
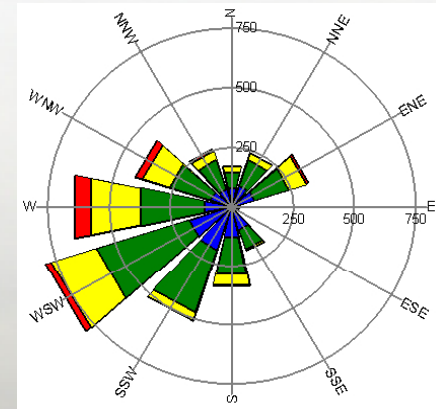
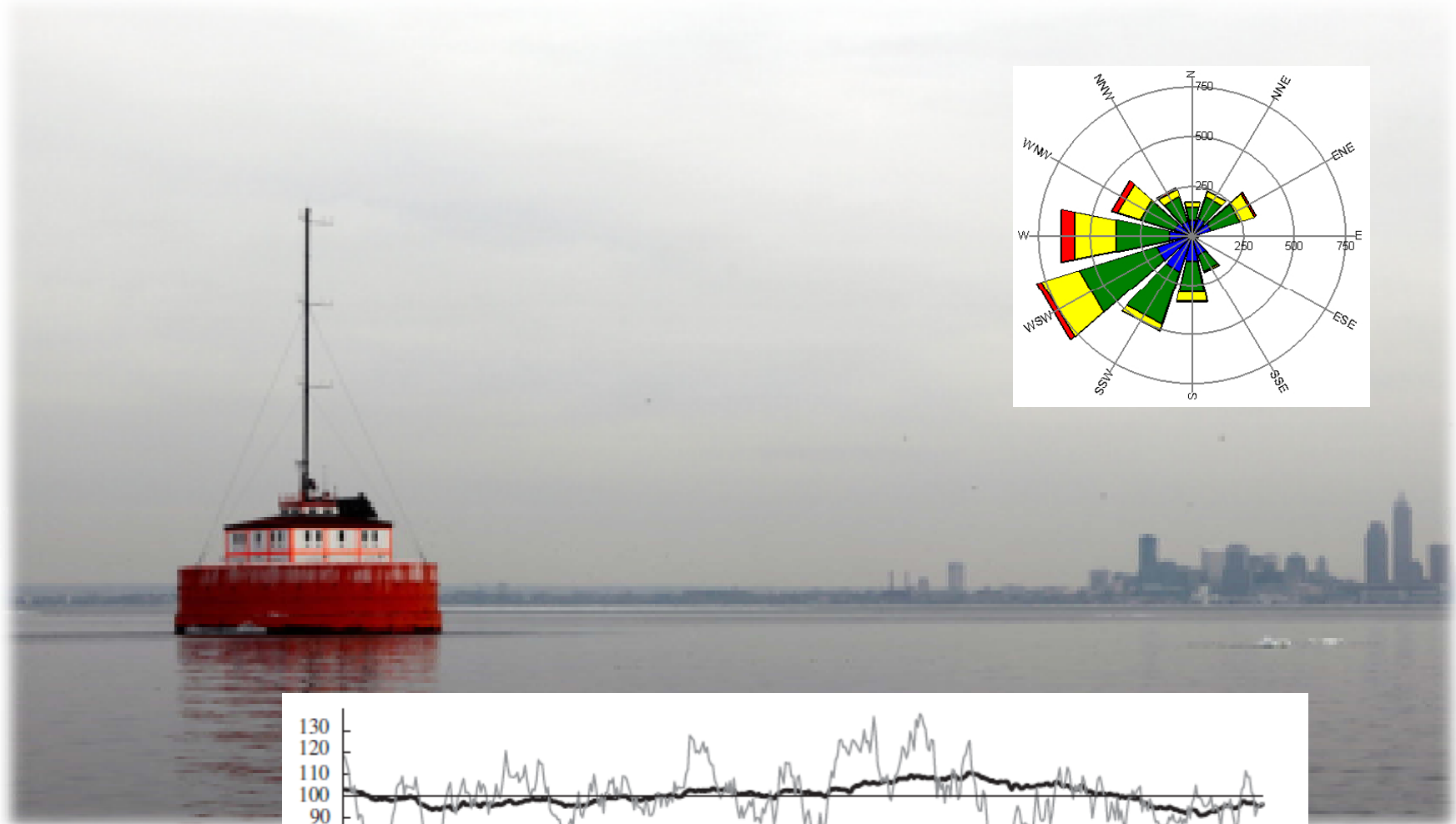
**icebreaker**  
wind·watts·work

# Site



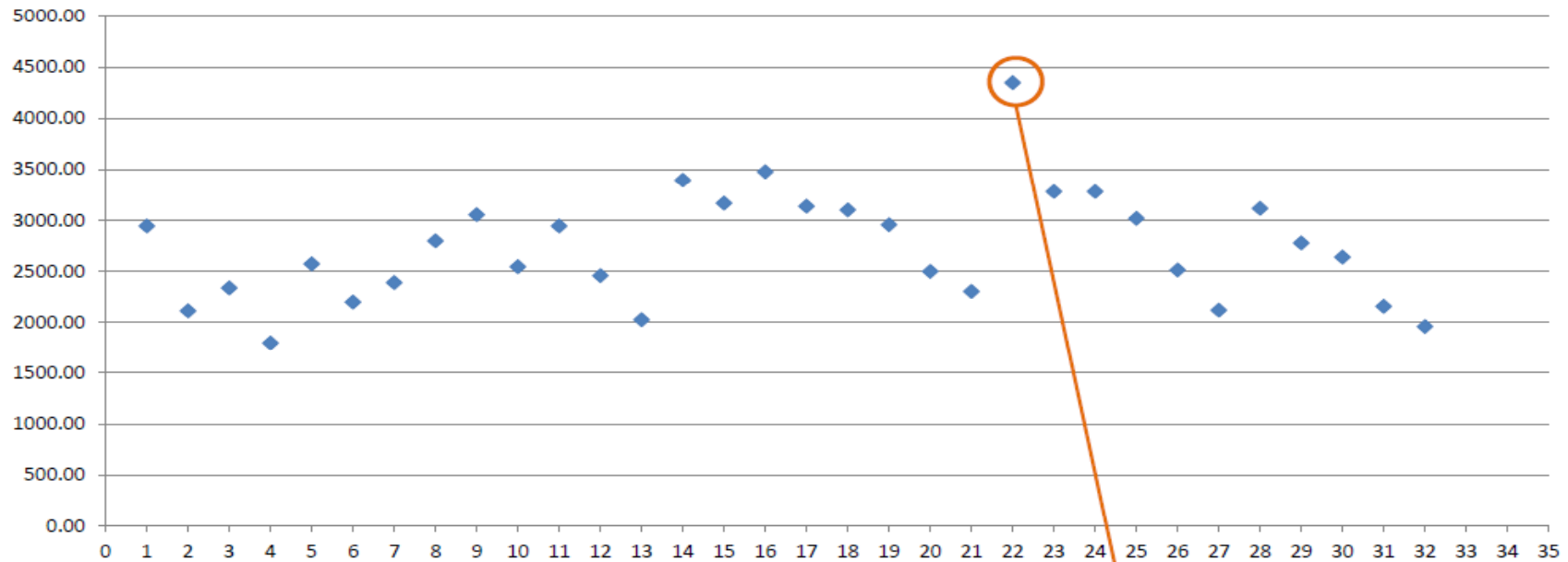


# Measure

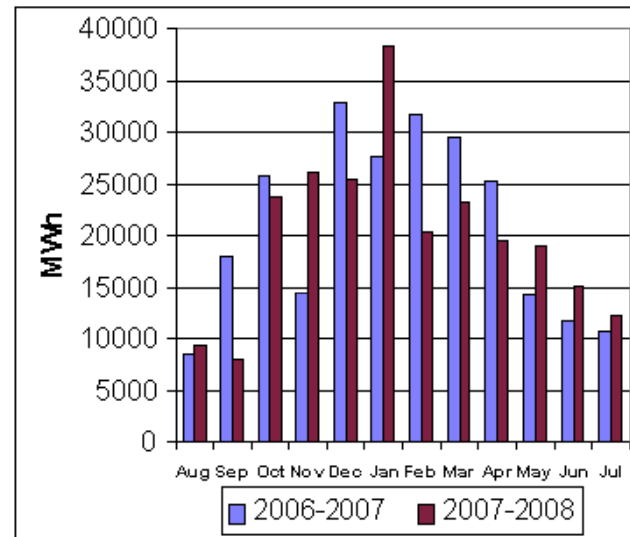


# Optimize

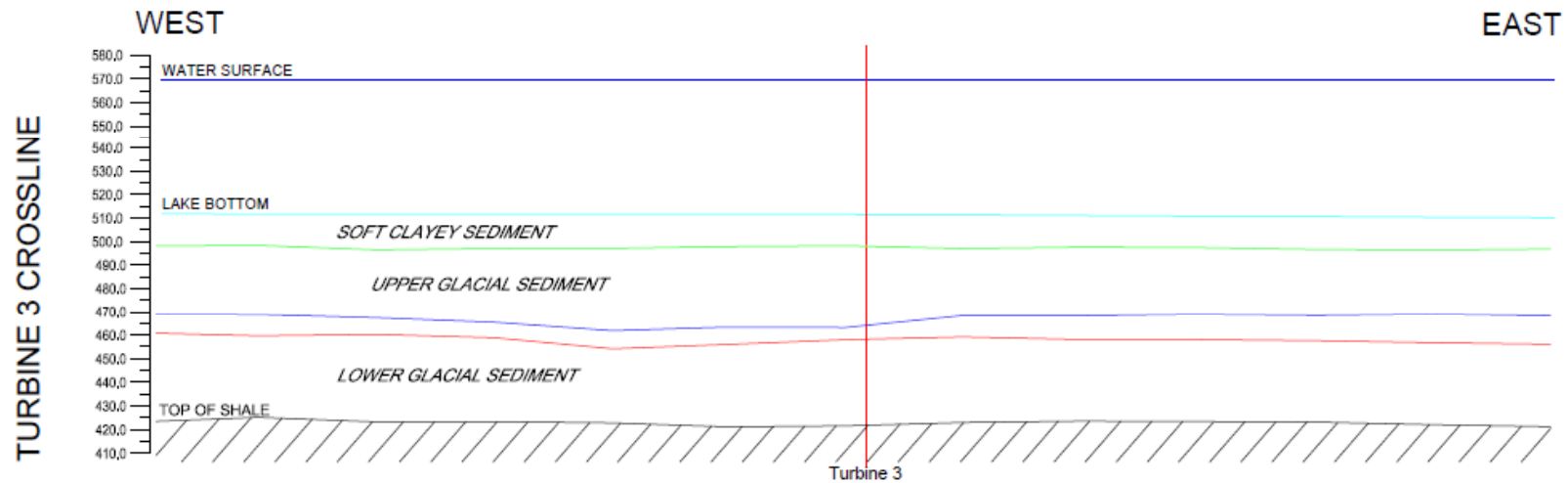
Ratio of Area to MW



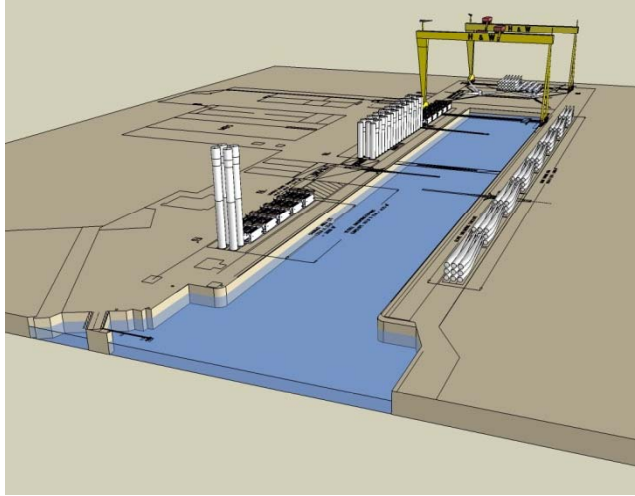
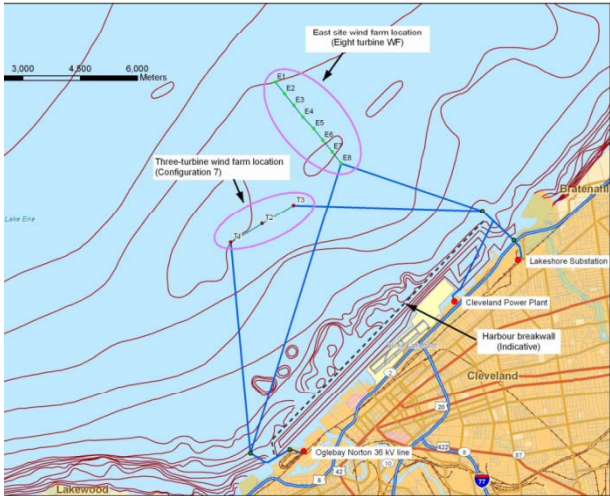
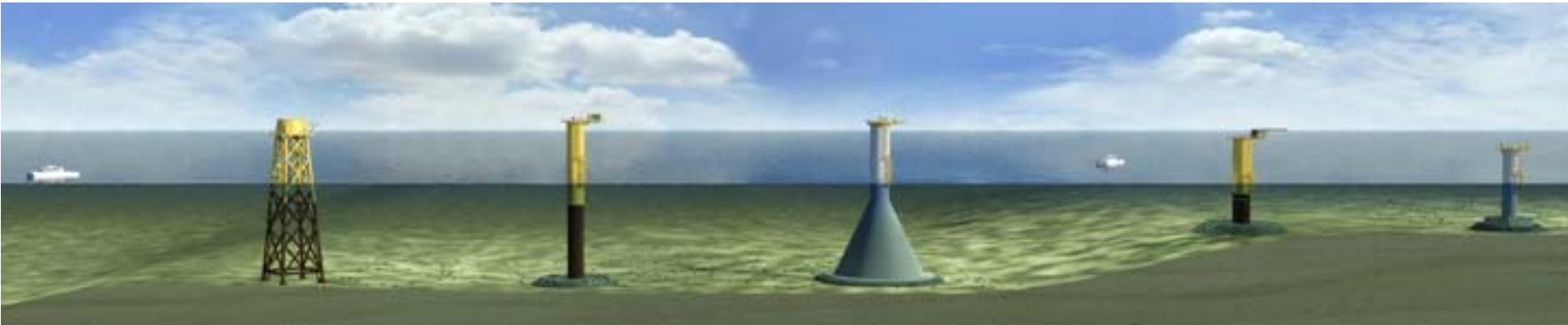
Loss Source	Percentage Losses
Turbine Availability	5.4 %
Balance of Plant Downtime	0.5%
Electrical Line Losses	2.5%
Blade Soiling	0.5%
Weather (including icing)	2.0 %
Turbulence and Controls	1.0 %
Blade Degradation	0.4 %
Power Curve	0.3 %
<b>Total</b>	<b>12%</b>



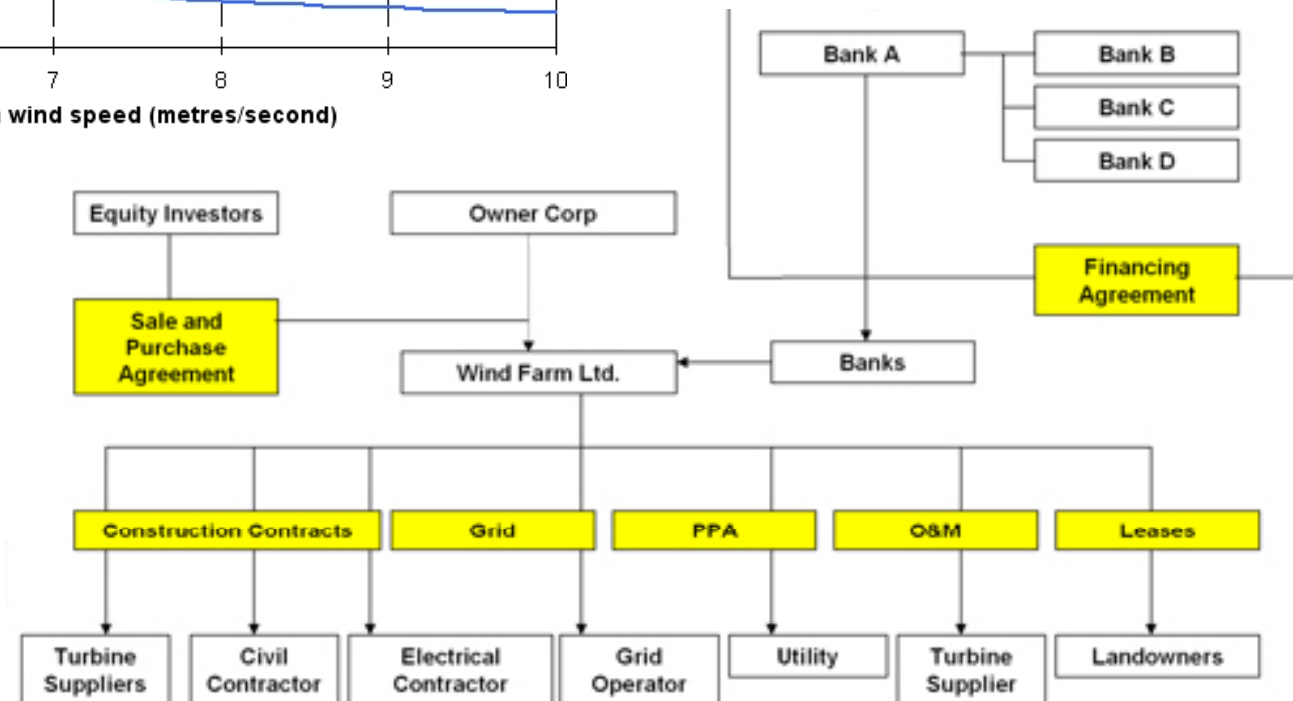
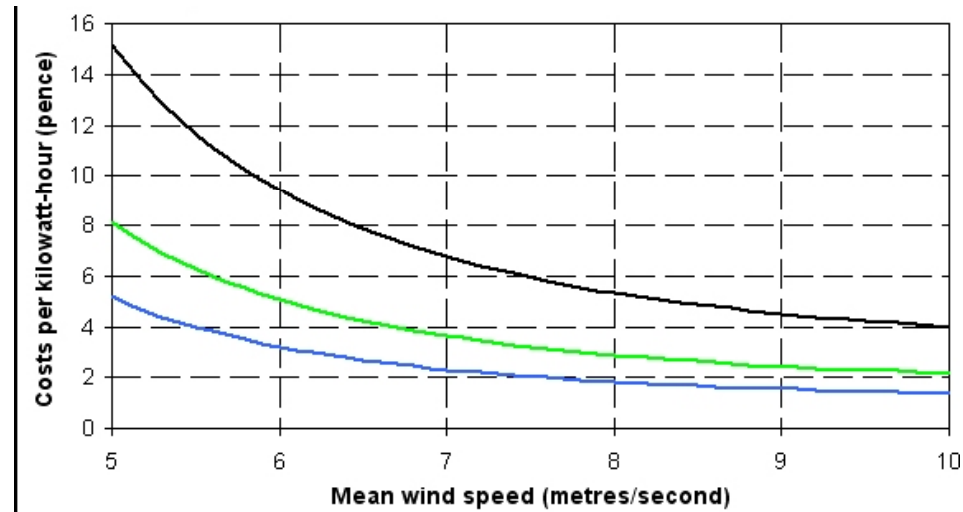
# Investigate



# Engineer



# Finance





# Build



# Operate

