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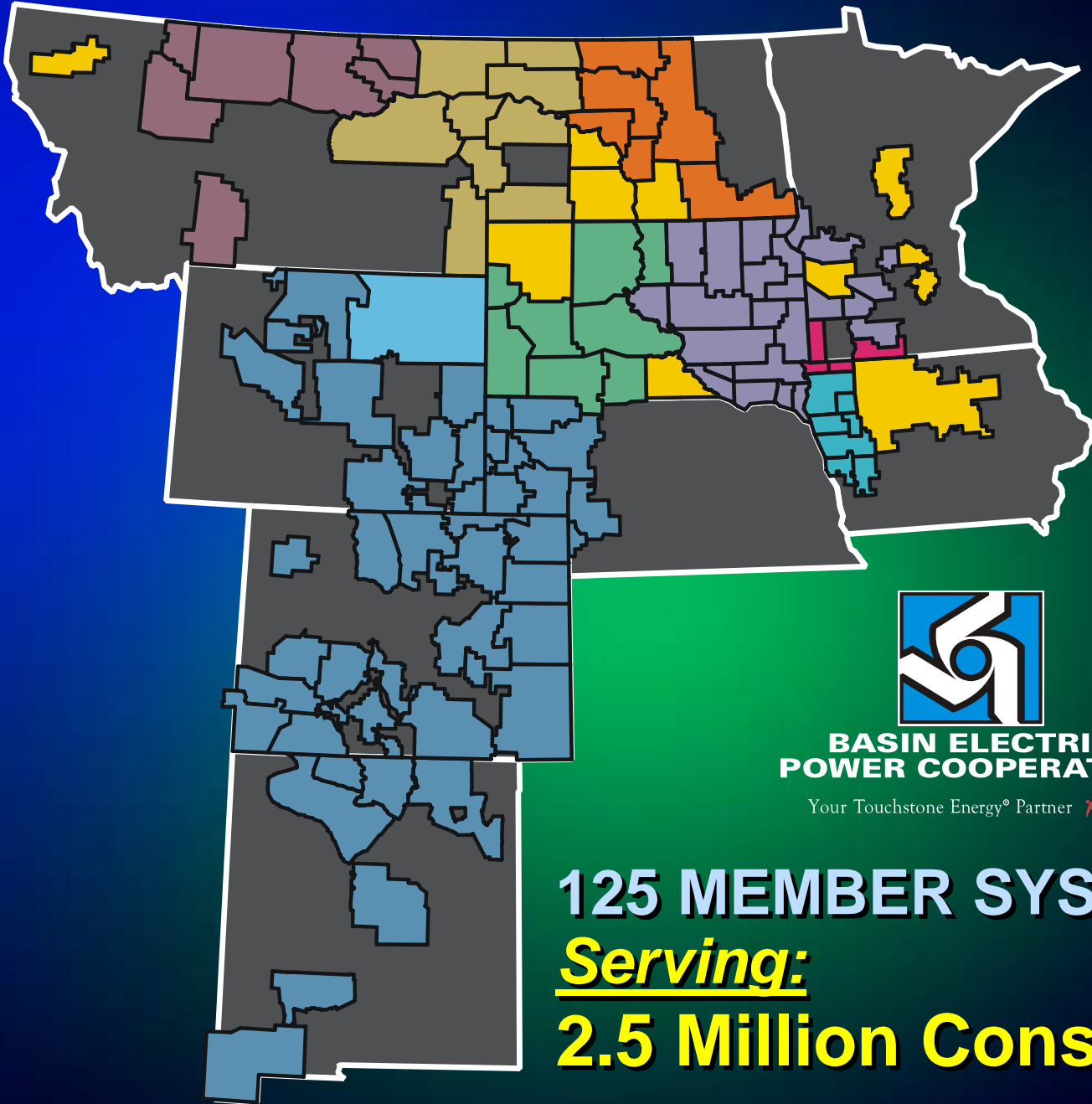
**BASIN ELECTRIC
POWER COOPERATIVE**

Your Touchstone Energy® Partner 

***USDA Ag
Outlook Forum***

February 22, 2008

Ron Rebenitsch, PE

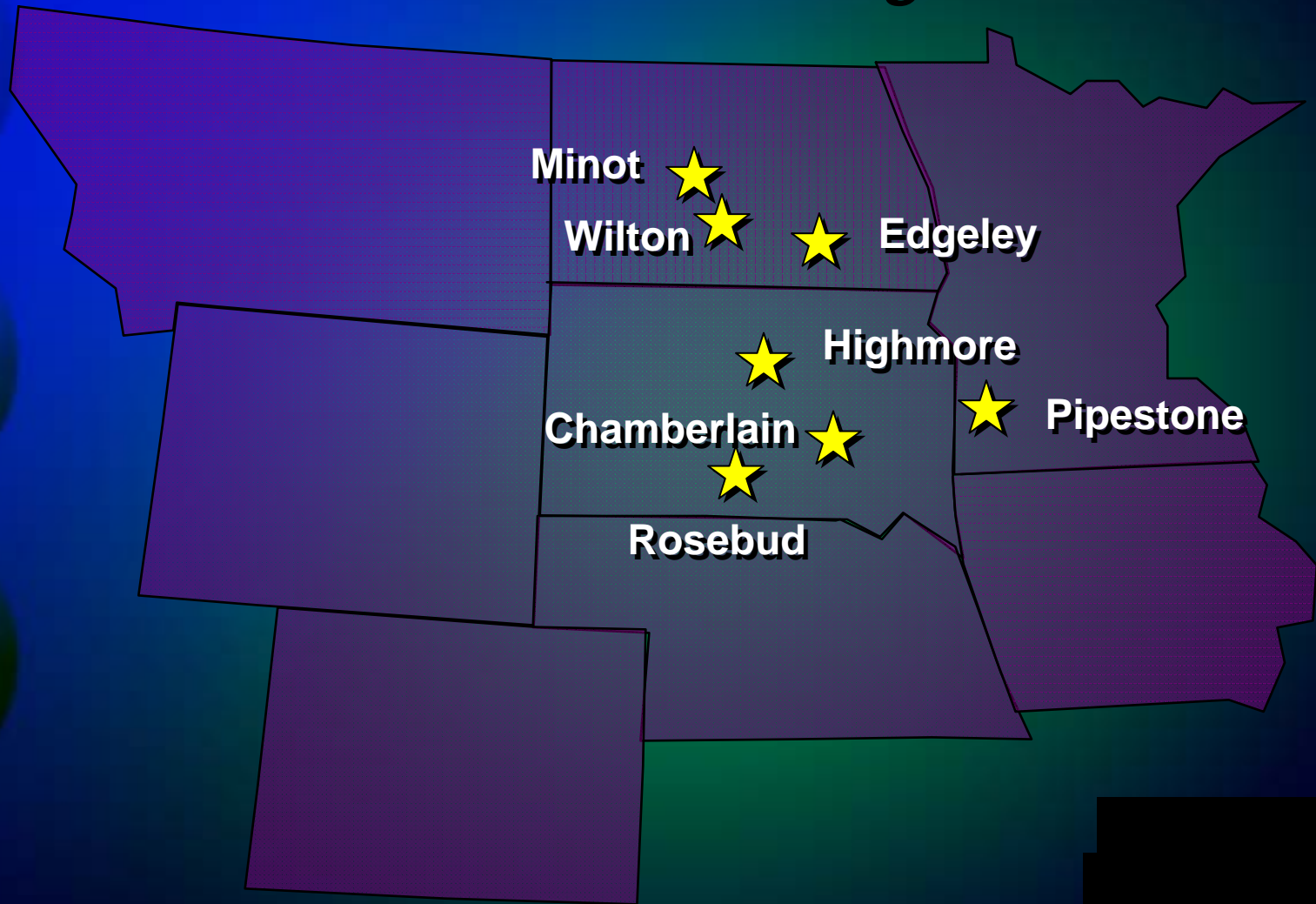


**BASIN ELECTRIC
POWER COOPERATIVE**

Your Touchstone Energy® Partner 

125 MEMBER SYSTEMS
Serving:
2.5 Million Consumers

Basin Electric's Wind *136 MW Existing*



Basin Electric is Planning for the Future...

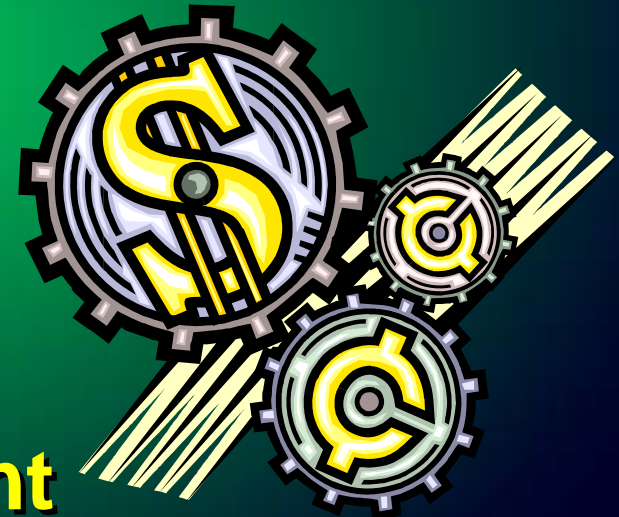
Developing 300 MW of Wind

***Additional green generation
Including waste heat...***

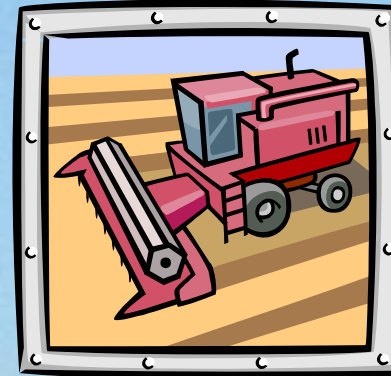
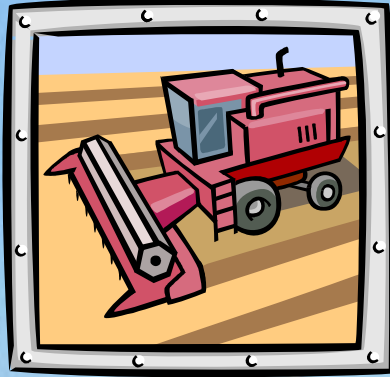
Strong support by RUS

Enabling Factors for Wind...

- **Excellent Wind Regime**
- **High cost of conventional resources**
- **Environmental Issues**
- **Load Growth**
- **Tax Appetite**
- **Economic Development**



Harvesting the wind is feasible, but...

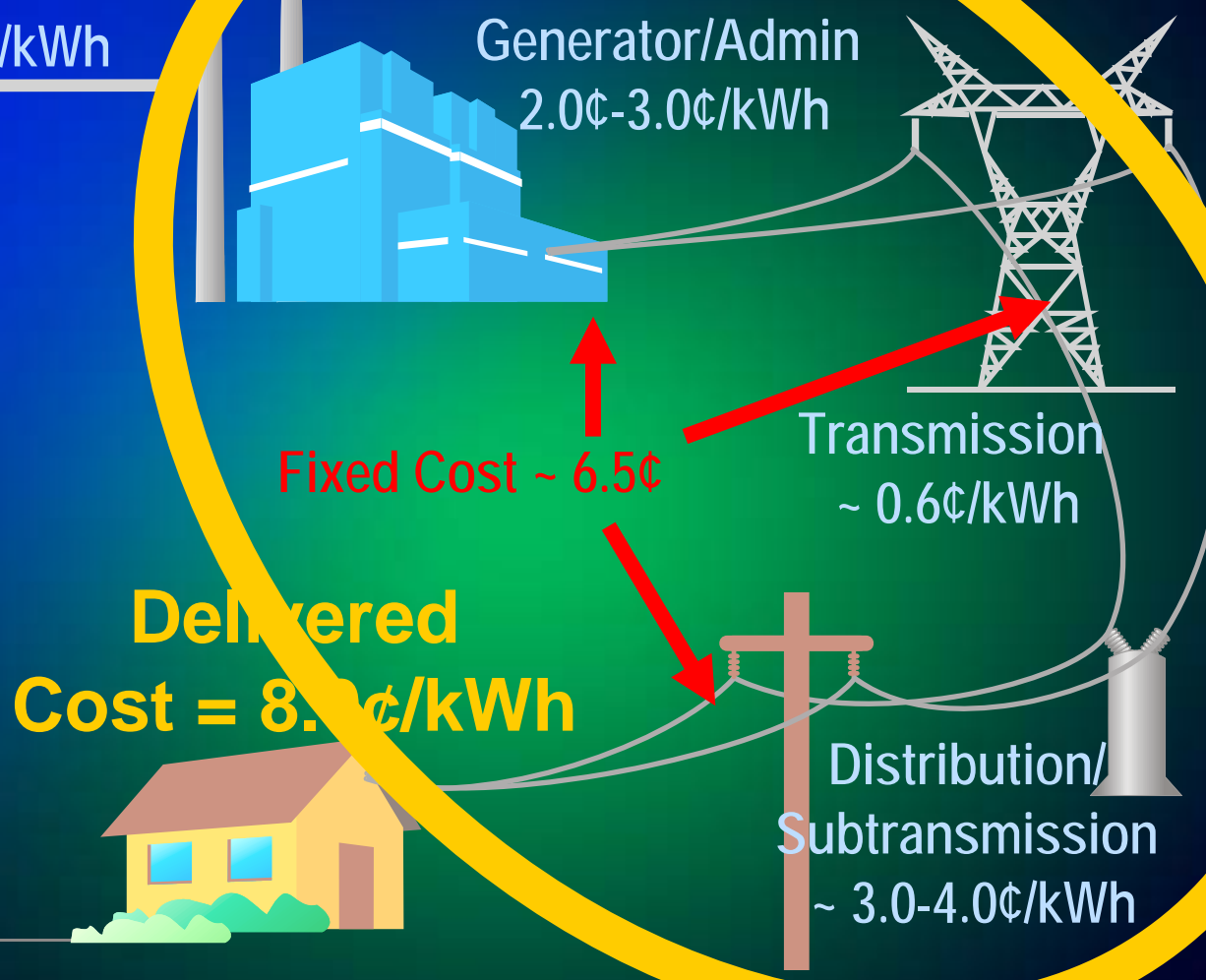


Economics drives decisions!



Co-op Power Supply Cost Chain

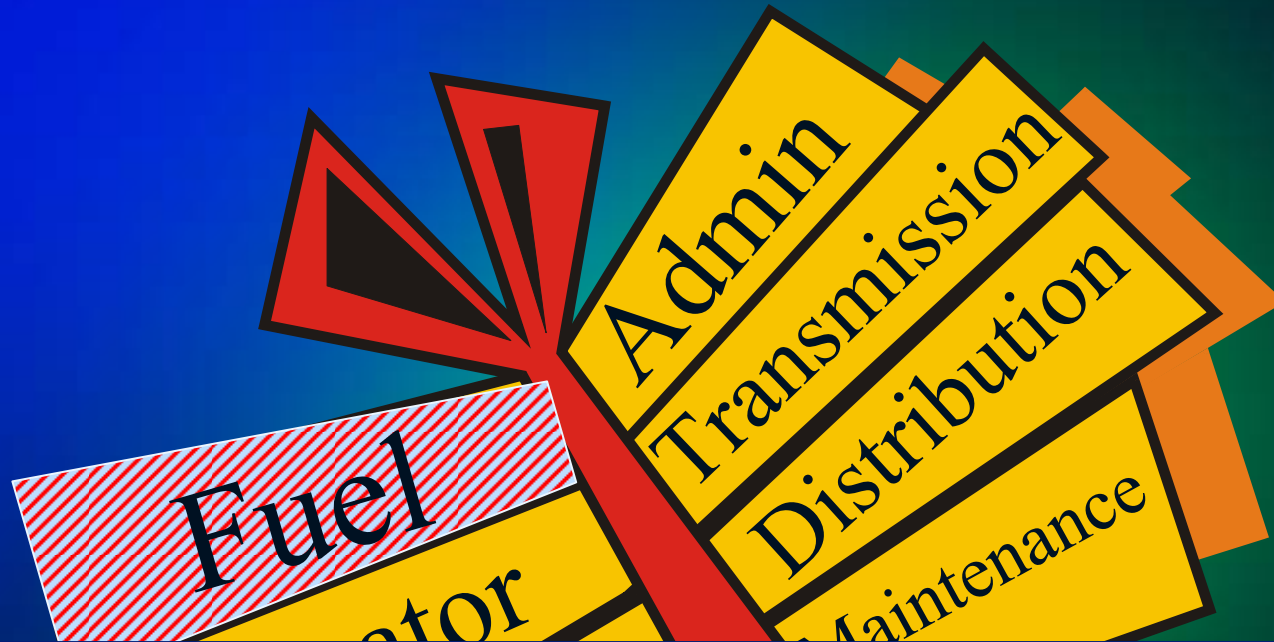
Fuel/O&M (1.27¢) + Local Losses (0.2¢) = 1.5¢ /kWh



Intermittent
Power

Delivered
Cost = 8.3¢/kWh

Net Metering Concern: Rates are "*Bundled*"

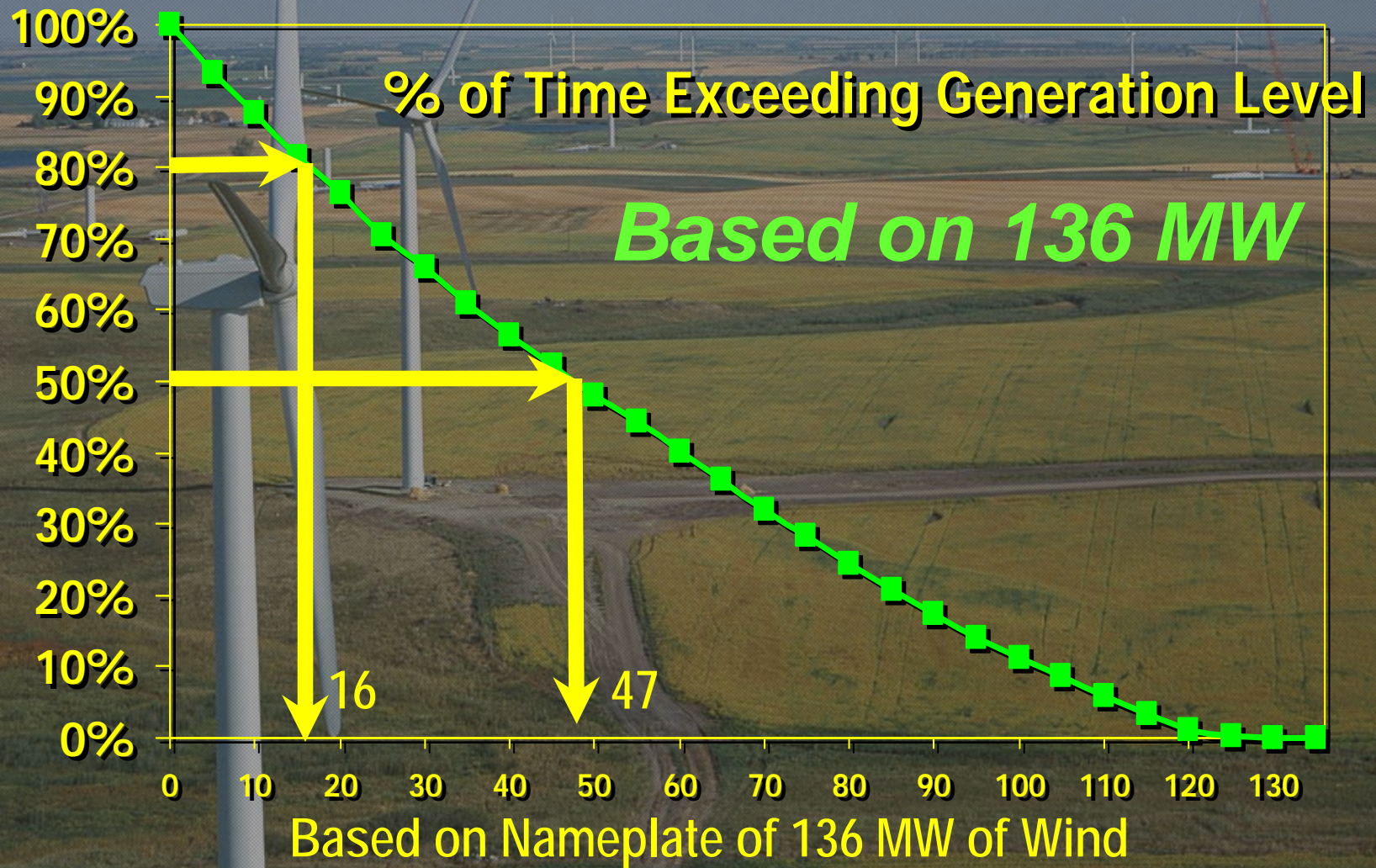


Over ½ the cost of power supply is "wires"...

Not electricity

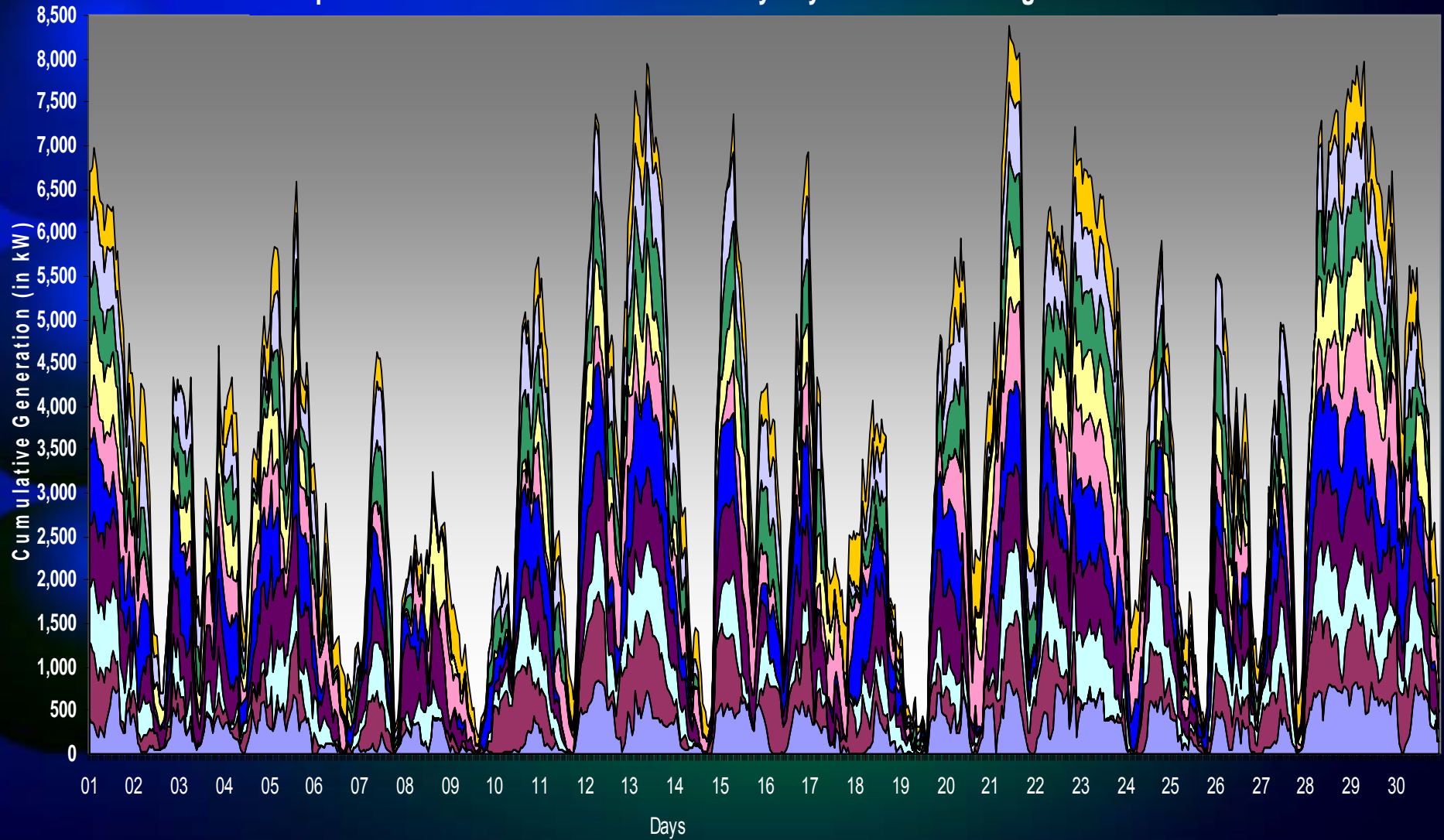


Wind Availability: 2006

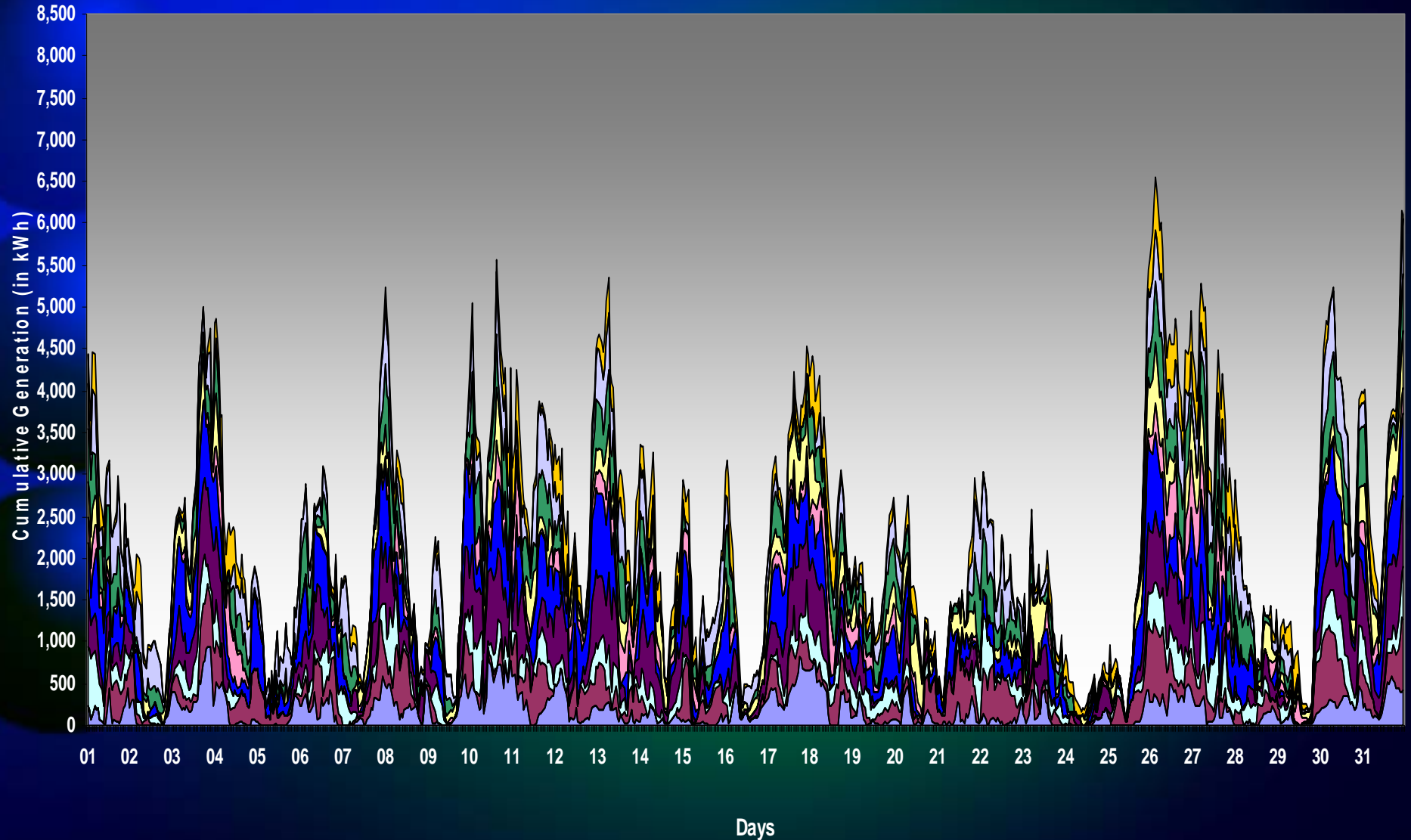


Wind Generation - Sept. 2007 (Each Site Normed to 1 MW)

Chamberlain Minot Edgeley Hyde Wilton
Pipestone Rosebud Valley City Petersburg MRES

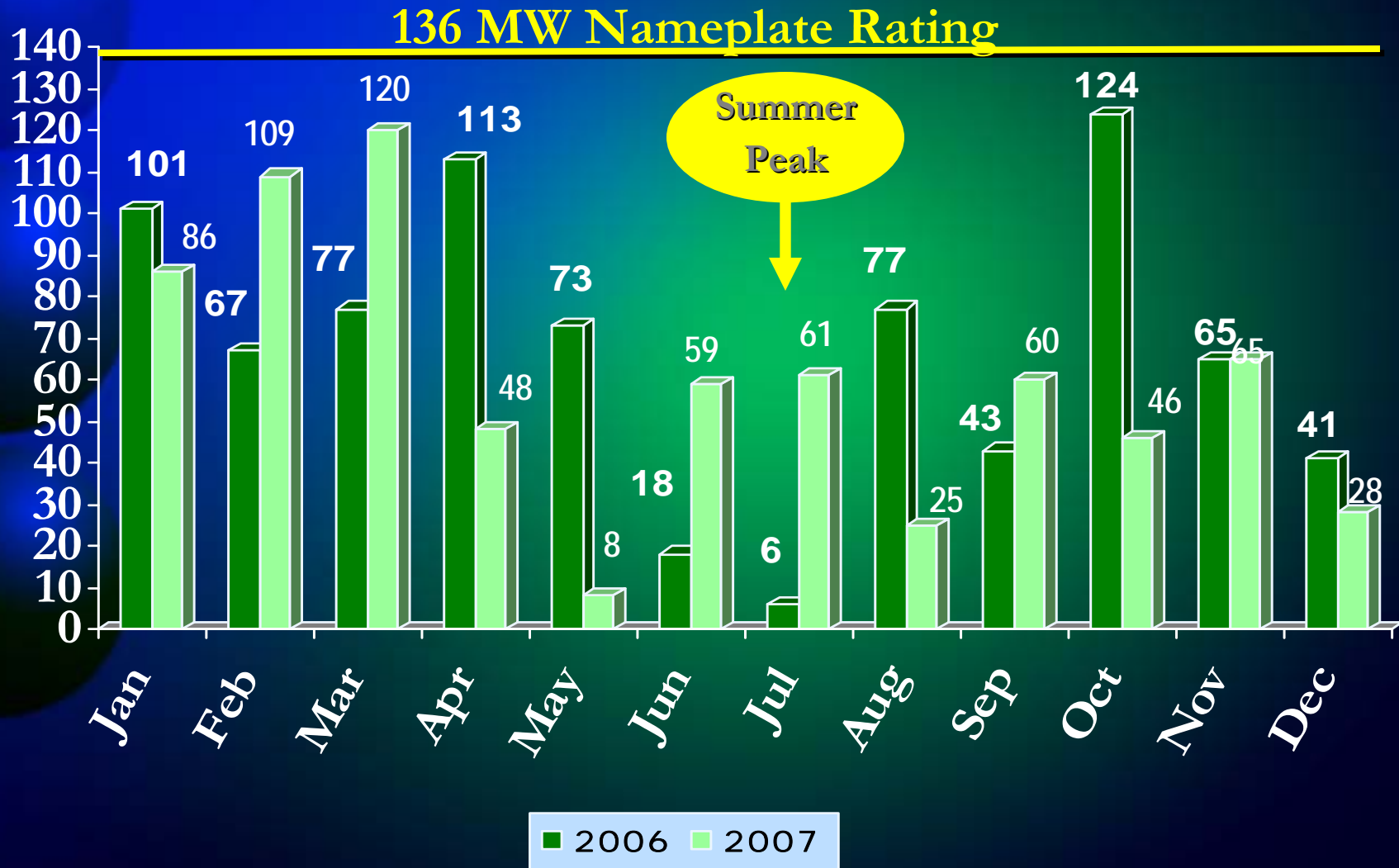


Wind Generation - August 2007 (Each site normed to 1 MW)



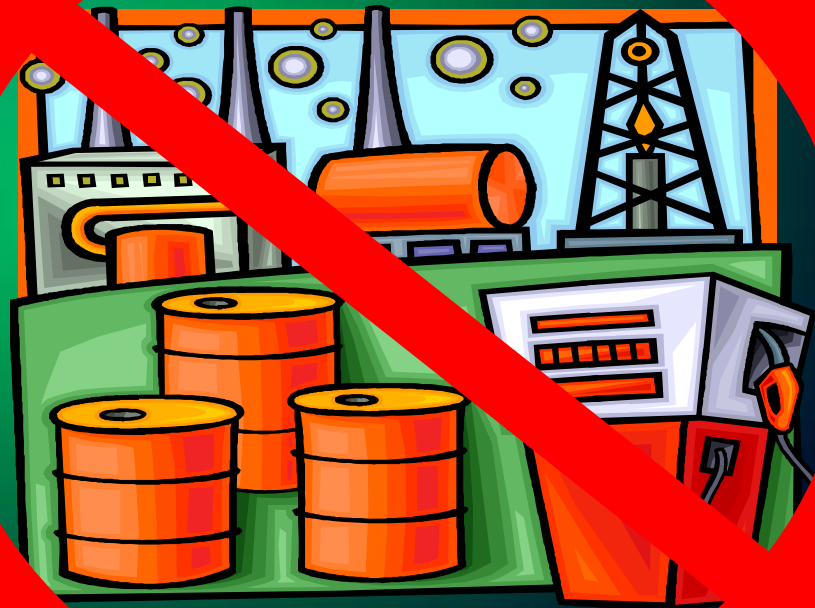
2006 & 2007 Generation During Monthly Peak HR

MW



**Wind is non-dispatchable.
Its primary value is based on....**

**Fuel
Displacement**



What Kind of Fuel Is Wind Displacing???

**Coal: \$10.00/Ton
(~\$0.60/mmbtu)**

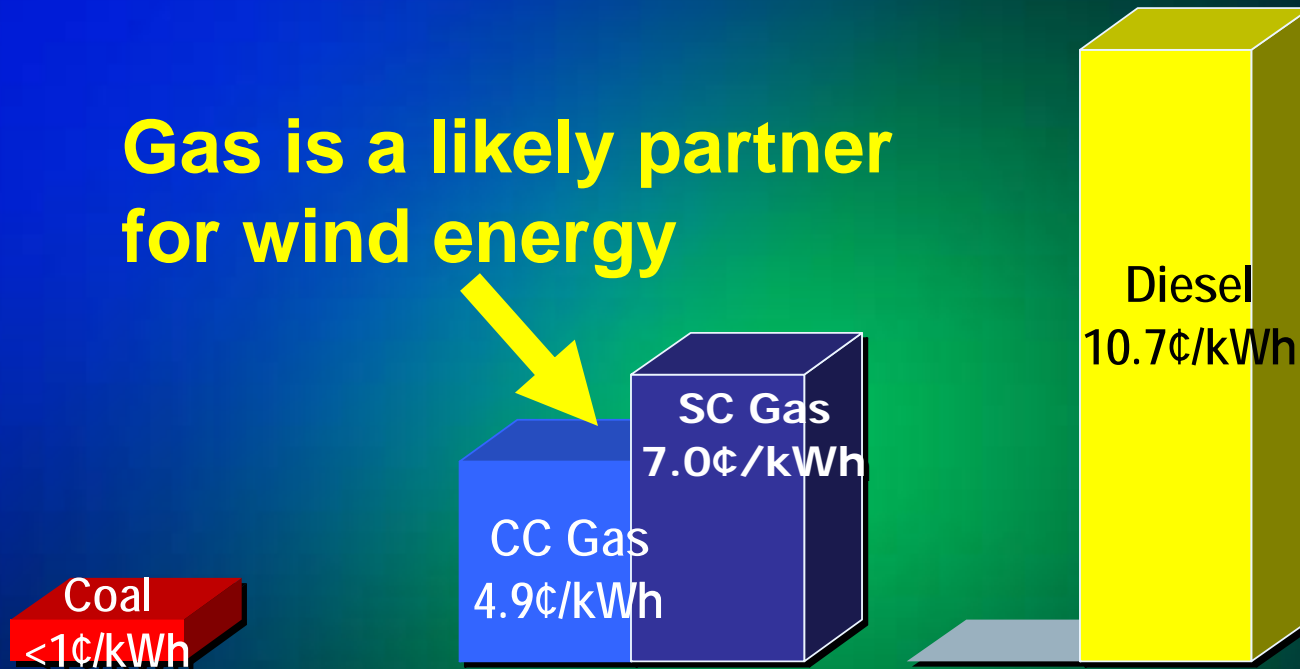
← 1 ton of Wyo. Coal will
produce over 1500 kWhs

Gas: \$7.00/mmbtu

**Diesel: \$2.05/gal
(\$15.00/mmbtu)**

Wind will displace the system's highest cost fuel

Gas is a likely partner for wind energy



Fuel Cost of Electricity...

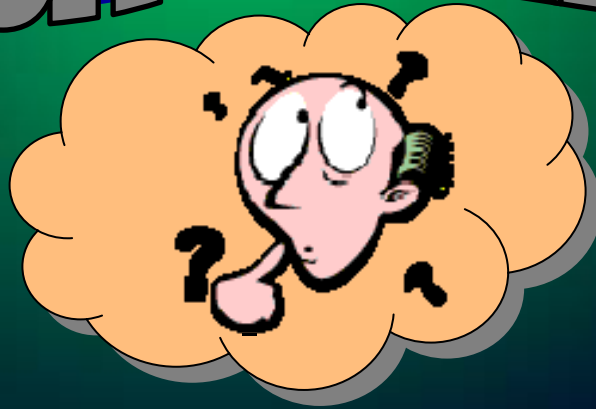
“Wind + Gas” is a viable option, with one concern



Gas Price Risk

Current US Utility Planning?

In Carbon Paralysis



What's needed for a 100 MW Wind Project

\$200-\$210 Million

Transmission

Wind (2-3 years of data)

Plus Permits, Turbines, Market, etc

Some "Back-of-the-Envelope" Numbers

Costs @39% Capacity Factor: \$/MWH

- Capital Cost (\$2,000, 5.25%, 20 yrs): \$50/MWH
 - Land Lease: \$1/MWH
 - O & M: \$10/MWH
 - Property Taxes: \$3/MWH
-

Total Costs: \$64/MWH

Less Offsets...

- Production Tax Credit of \$20/MWH
- Accelerated Depreciation
- Green Tag Sales

For Large Projects...



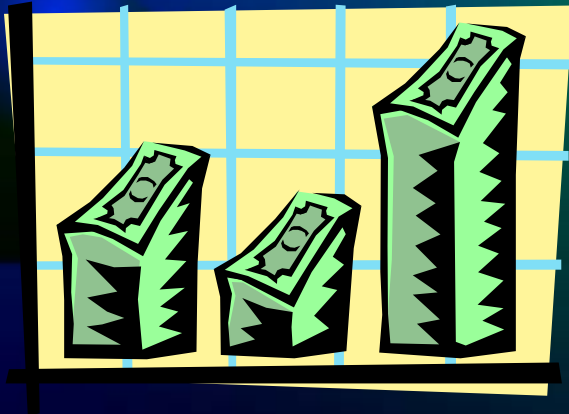
*Great Plains region
can produce wind
power around
3-5¢/kWh*

(After Tax Benefits)

Taxes are main driver for Wind
*Over 1/2 of a Wind Project's
cash flow is tax-related*

**Prod Tax Credit
>\$60,000/MW-yr**

**5 yr Accel. Depr.
~ \$1 Million/MW
(First 18 Months)**



**The developer needs
a large “tax appetite”**

Real Value of \$20/MWH Production Tax Credit

Pre-Tax Income: **\$31**

Income Taxes @35.5% Tax Rate: **(\$11)**

Net Income after Tax **\$20**

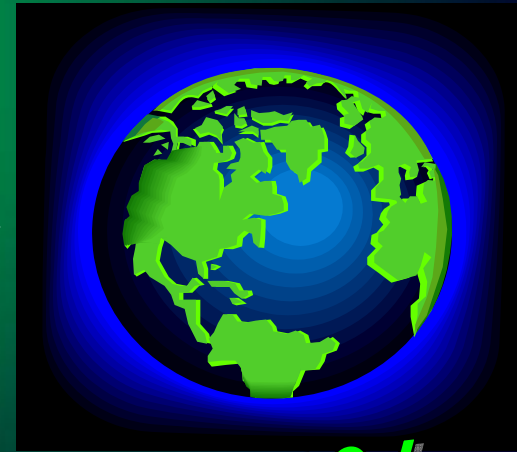
Value of PTC After Tax = **\$20**

Assumption: *Other Taxable
Income to be Sheltered*

Wind Turbine Supply Situation...

Most Turbine manufacturers are sold out through 2009

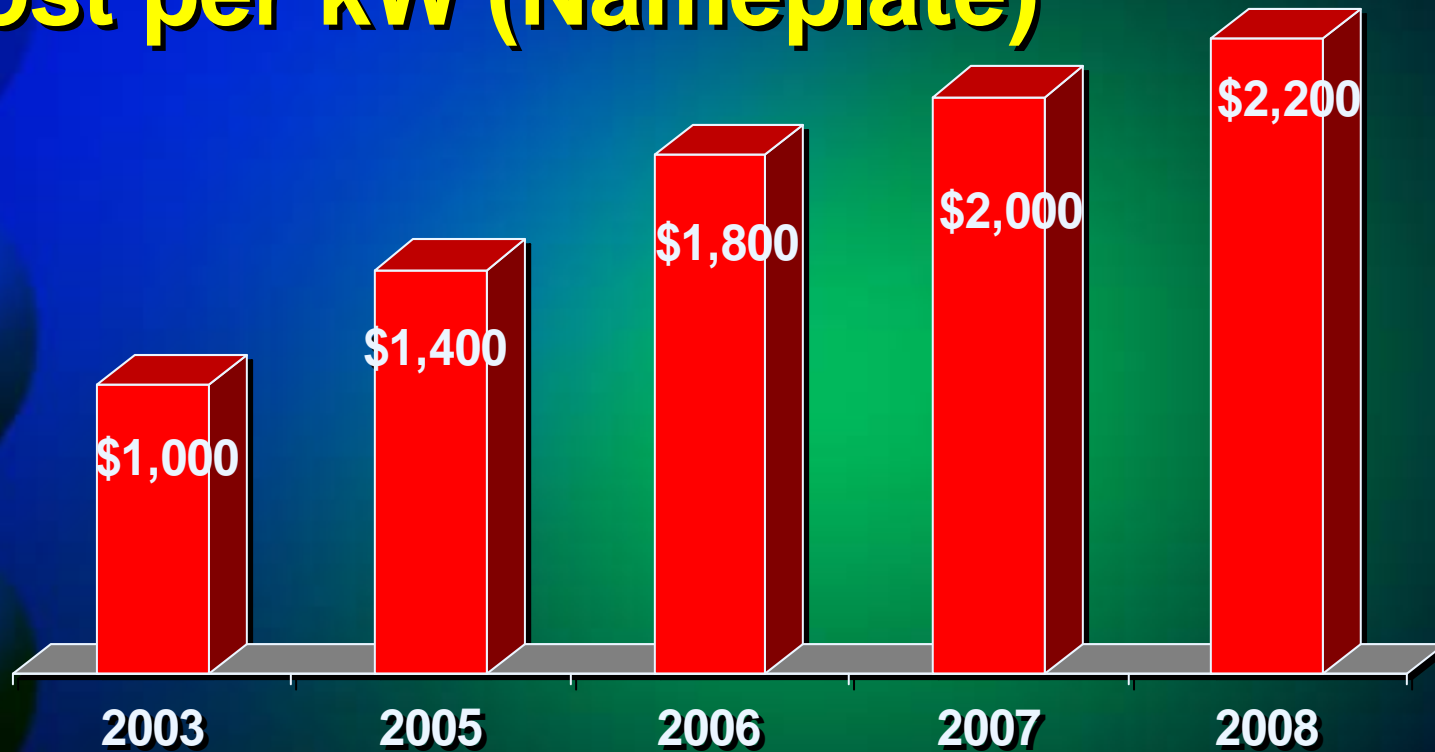
Strong Global Demand for Turbines



US 2008 Growth was 45%

Wind Project Costs Are Rising!

Cost per kW (Nameplate)



US Wind Capacity: 16,800 MW

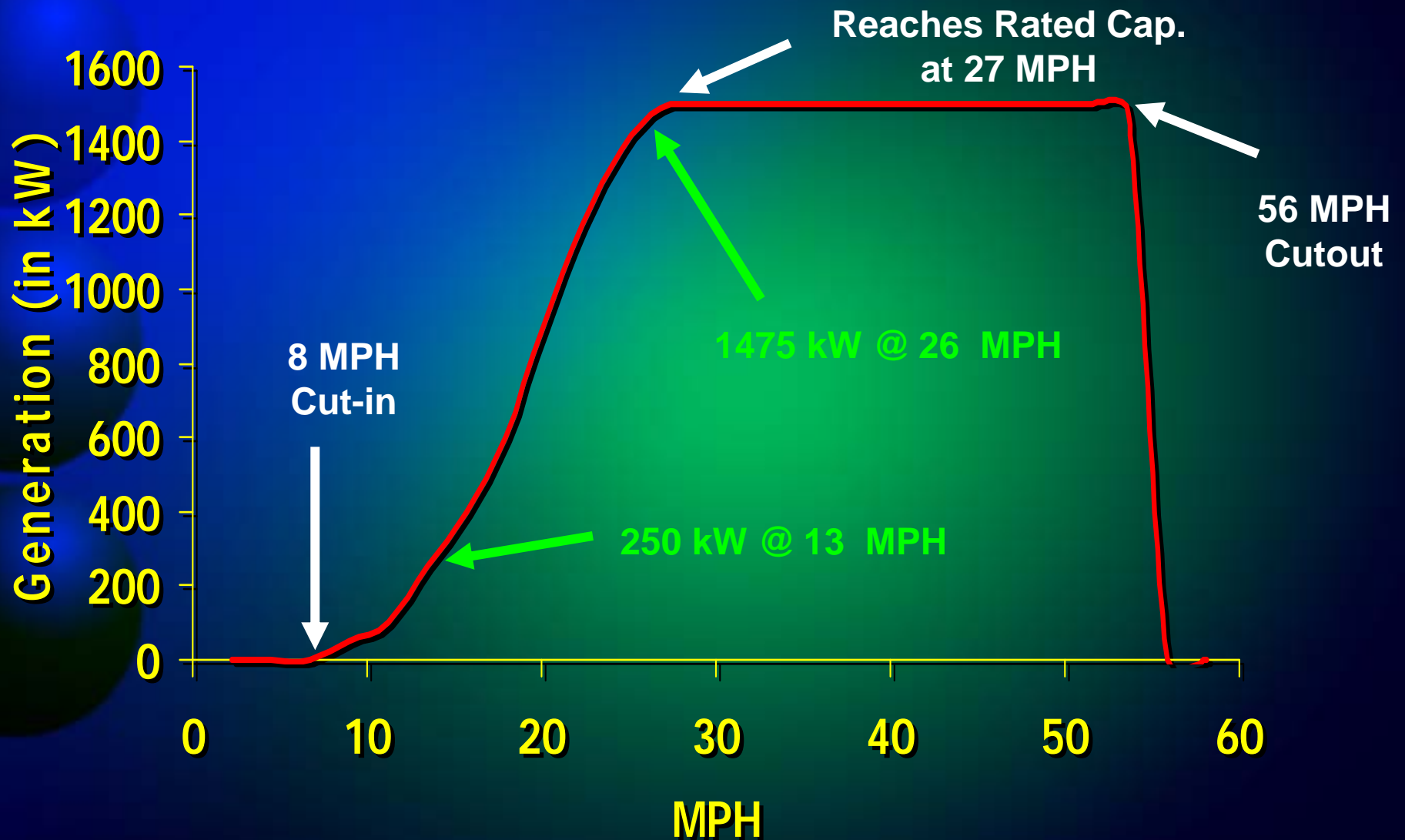
Siting is Critical!

*Generation increases with
the cube of wind speed*

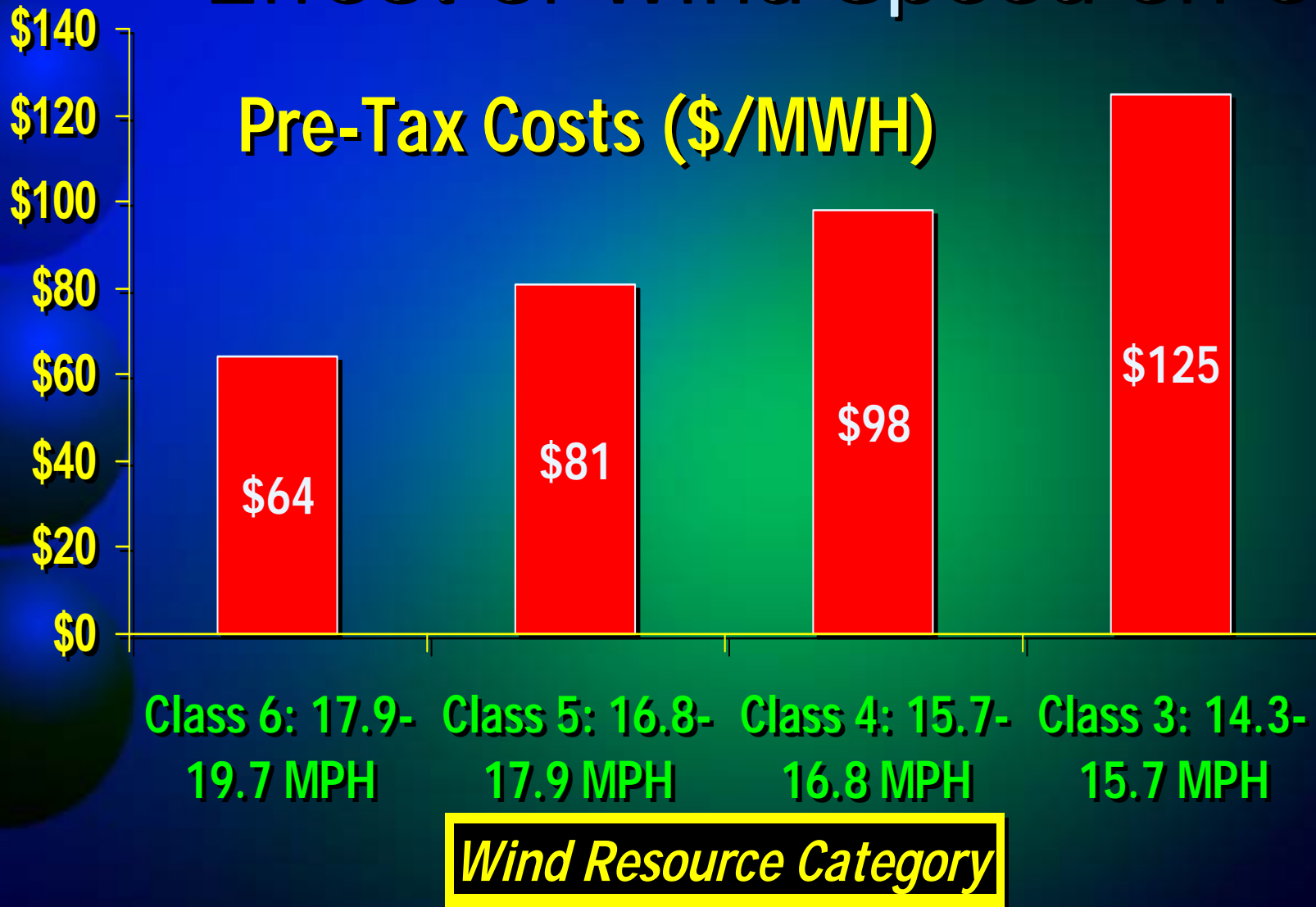
A 15% increase in wind
speed yields a 50%
increase in production



Power Curve: Generation vs Wind Speed



Effect of Wind Speed on Cost



Investment & Risk Comparison

Project Developer

- 
- **Transmission Risk**
 - **2-3 years wind studies**
 - **Engineering \$\$\$**
 - **Permitting Risk**
 - **Operating Risk**
 - **Market Risk**
 - **Tax Risk**

Cost: \$3-5 Million/turbine

Landowner

1/4 to 1/2 acre of
land per turbine

Revenue:
\$4-\$6000/turbine/yr

Wind Project Schedule...

Siting/Leasing

Resource Assessment: 2 yrs Data Collection

Environmental Studies/Permitting

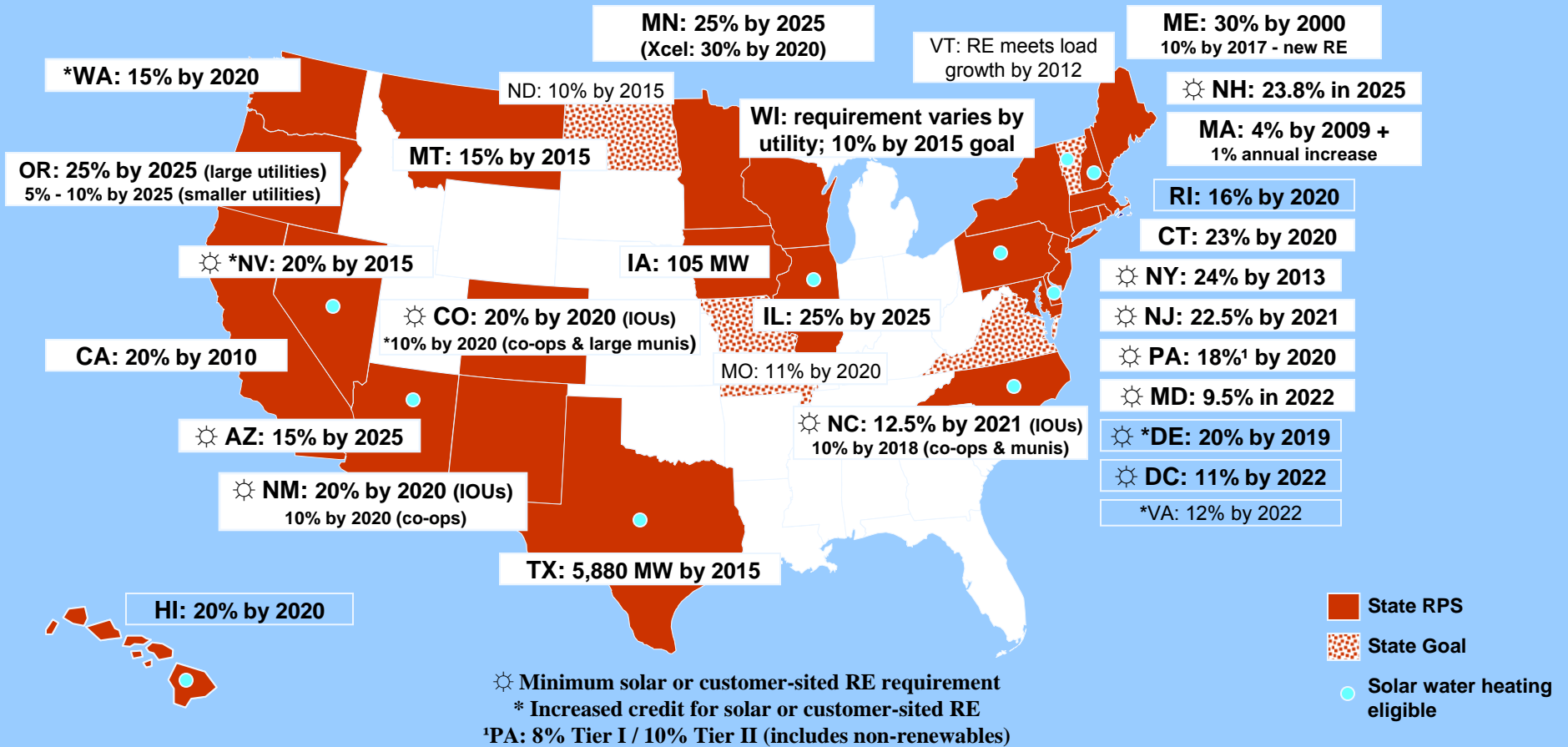
Order Turbines

Construction

Commissioning

Start to Finish: Roughly 2 1/2 years

Renewable Portfolio Standards



2007 US Electricity Consumption

Over
4,000,000,000 MWh/yr

**A 15% by 2020 RPS would
require ~250,000 MW of Wind**

Will require building one 1.5 MW
turbine every 45 minutes

To move the product to market:

UNITED STATES ANNUAL AVERAGE WIND POWER

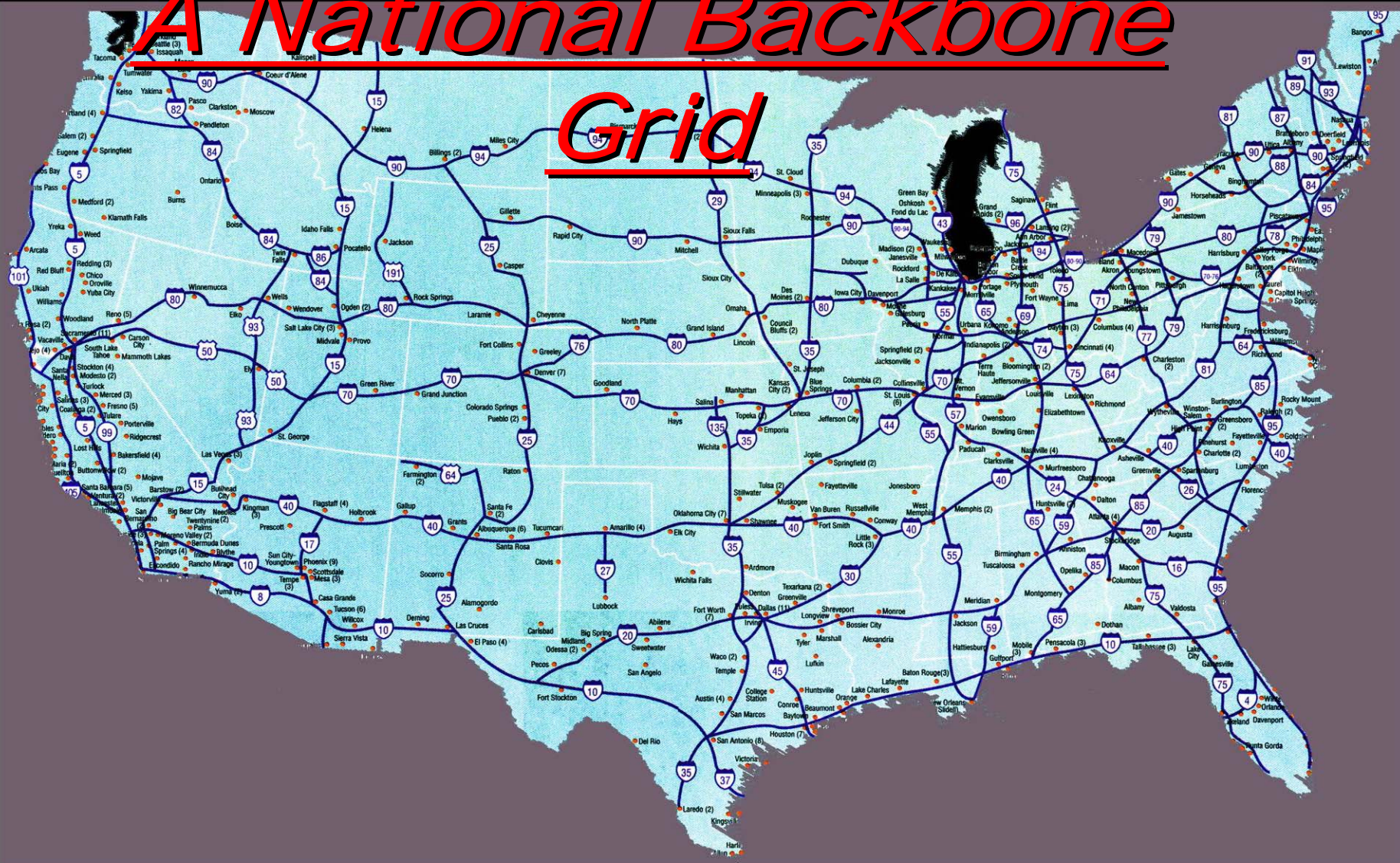


We need "Wires"!

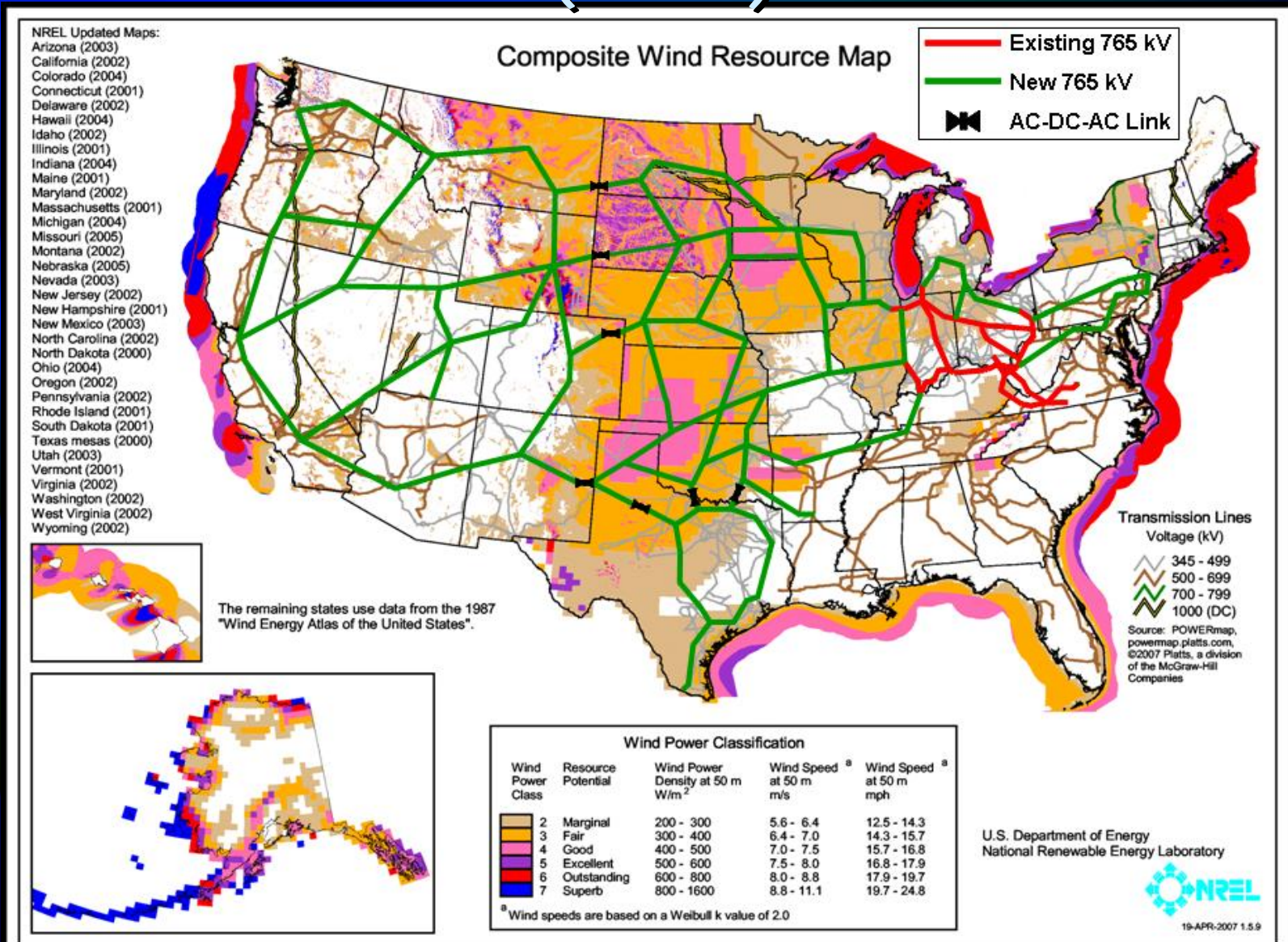
A Long Term Vision...

A National Backbone

Grid



One Draft Concept... (AEP)





happytoast