

Offshore Wind Energy: How much will it cost, CAN it cost?

Opening Plenary Session

Virginia Offshore Wind Conference 2011

Virginia Beach, VA

22 June 2011



George Hagerman

VCERC Director of Research
Virginia Tech Advanced Research Institute
900 North Glebe Road
Arlington, VA 22203

Email: hagerman@vt.edu
Phone: 703-387-6030

How much will offshore wind energy cost?



Published: April 01, 2011

[Home](#) / [business](#) /

Offshore wind energy costs are high now, but should come down

By PETER BACQUÉ

Offshore wind energy costs are higher now than other forms of new power generation, but those costs should decline as the new U.S. industry grows, a report to the Virginia Offshore Wind Development Authority said.

The all-in cost for power from offshore wind generators would be \$243 per 1,000 kilowatt-hours according to the report, which was based on U.S. Department of Energy figures.

For the same amount of power, the report said, the cost would be \$211 with solar photovoltaic systems, \$125 with combustion turbines, \$114 using advanced nuclear generation, \$113 with biomass energy, \$109 with advanced coal plants, \$97 using land-based wind systems, and \$66 with combined-cycle turbine technology.

Offshore wind energy is probably the largest renewable resource available for Virginia, said Guy Chapman, Dominion Resources Inc.'s director of renewable research and program development.

"It's one that we can technically work with," Chapman said. "We just have to get the costs down."

How much will offshore wind energy cost?



Published: April 01, 2011

[Home](#) / [business](#) /

Offshore wind energy costs are high now, but should come down

By PETER BACQUÉ

Offshore wind energy costs are higher now than other forms of new power generation, but those costs should decline as the new U.S. industry grows, a report to the Virginia Offshore Wind Development Authority said.

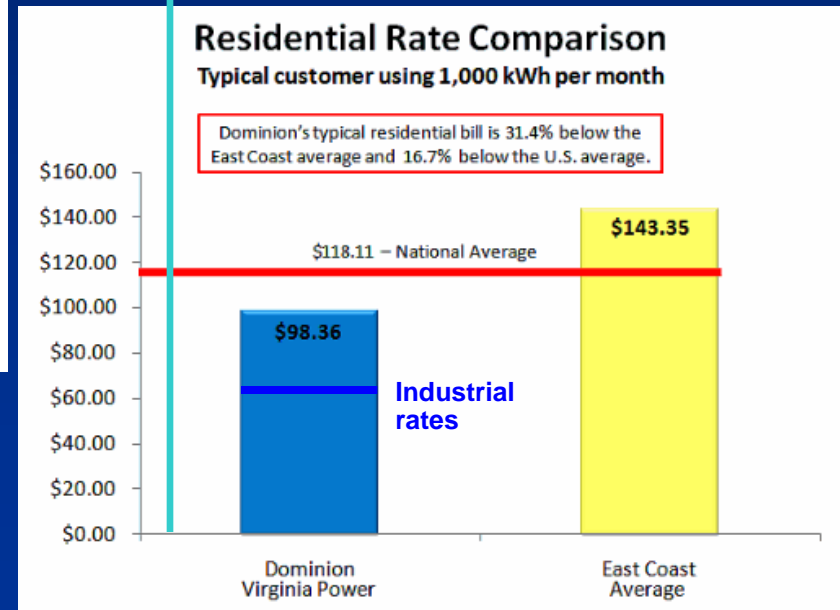
The all-in cost for power from offshore wind generators would be \$243 per 1,000 kilowatt-hours according to the report, which was based on U.S. Department of Energy figures.

For the same amount of power, the report said, the cost would be \$211 with solar photovoltaic systems, \$125 with combustion turbines, \$114 using advanced nuclear generation, \$113 with biomass energy, \$109 with advanced coal plants, \$97 using land-based wind systems, and \$66 with combined-cycle turbine technology.

Offshore wind energy is probably the largest renewable resource available for Virginia, said Guy Chapman, Dominion Resources Inc.'s director of renewable research and program development.

"It's one that we can technically work with," Chapman said. "We just have to get the costs down."

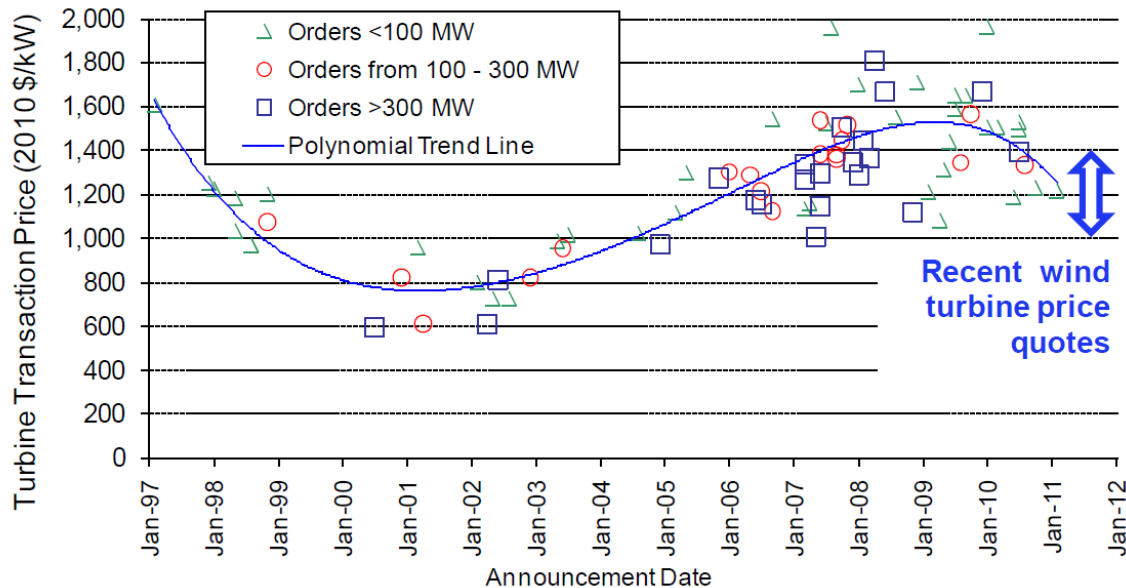
Is offshore wind really this far off the chart?



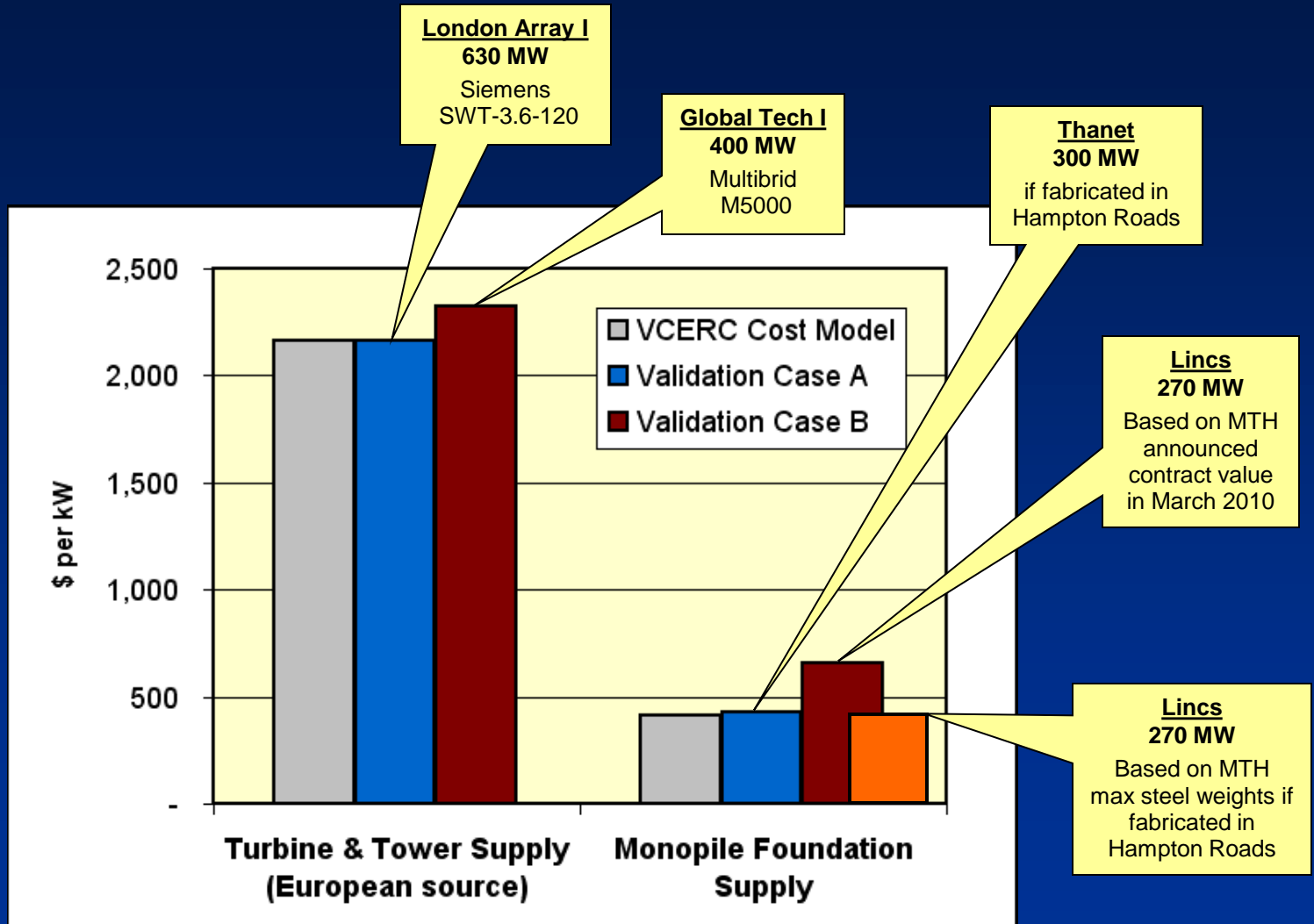
U.S. Energy Information Administration Estimates Disagree with U.S. Wind Market Trends

Table 2. Comparison of Updated Plant Costs to *AEO2010* Plant Costs

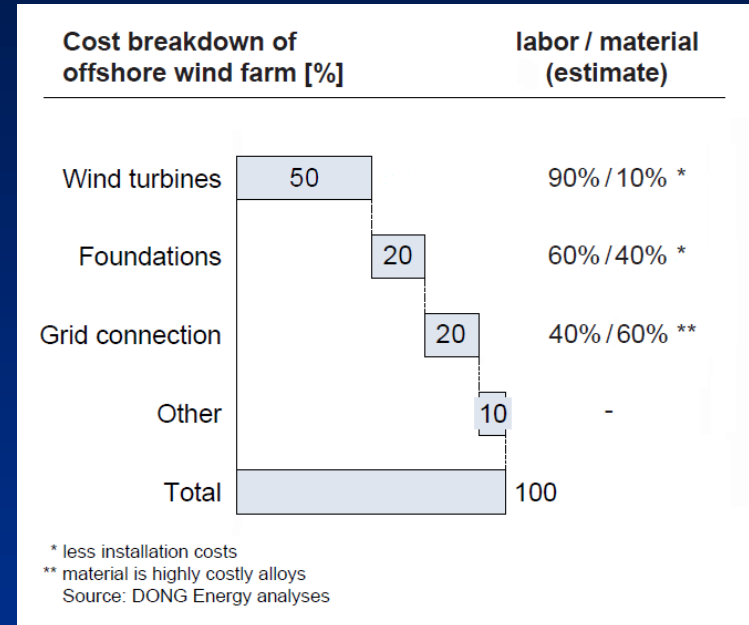
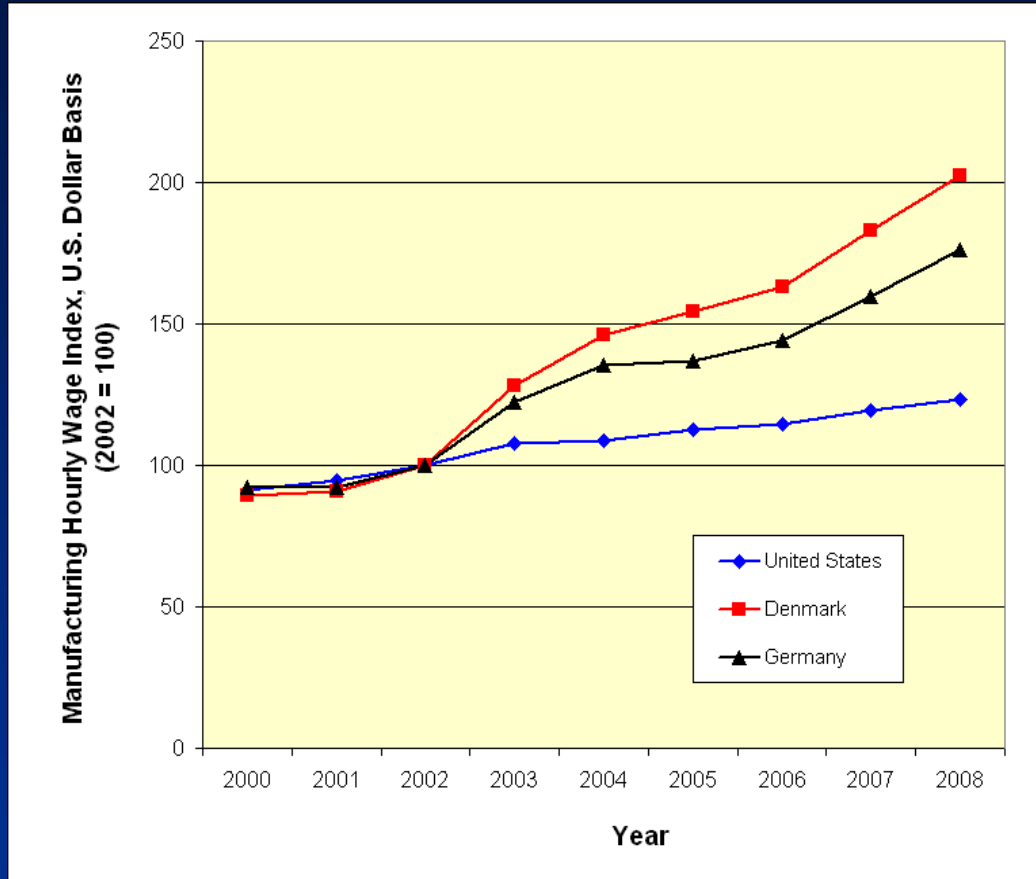
Table II					
	Overnight Capital Cost (\$/kW)			Nominal Capacity KW's	
	AEO 2011	AEO 2010	% Change	AEO 2011	AEO 2010
Coal					
Advanced PC w/o CCS	\$2,844	\$2,271	25%	1,300,000	600,000
Natural Gas					
Conventional NGCC	\$978	\$1,005	-3%	540,000	250,000
Renewables					
Wind Offshore	\$5,975	\$4,021	49%	400,000	100,000



VCERC Modeled Capital Costs Compared with European Project Data for Major Cost Centers



US Projects Racing to be First are Disadvantaged by Higher Manufacturing Labor Costs in Europe

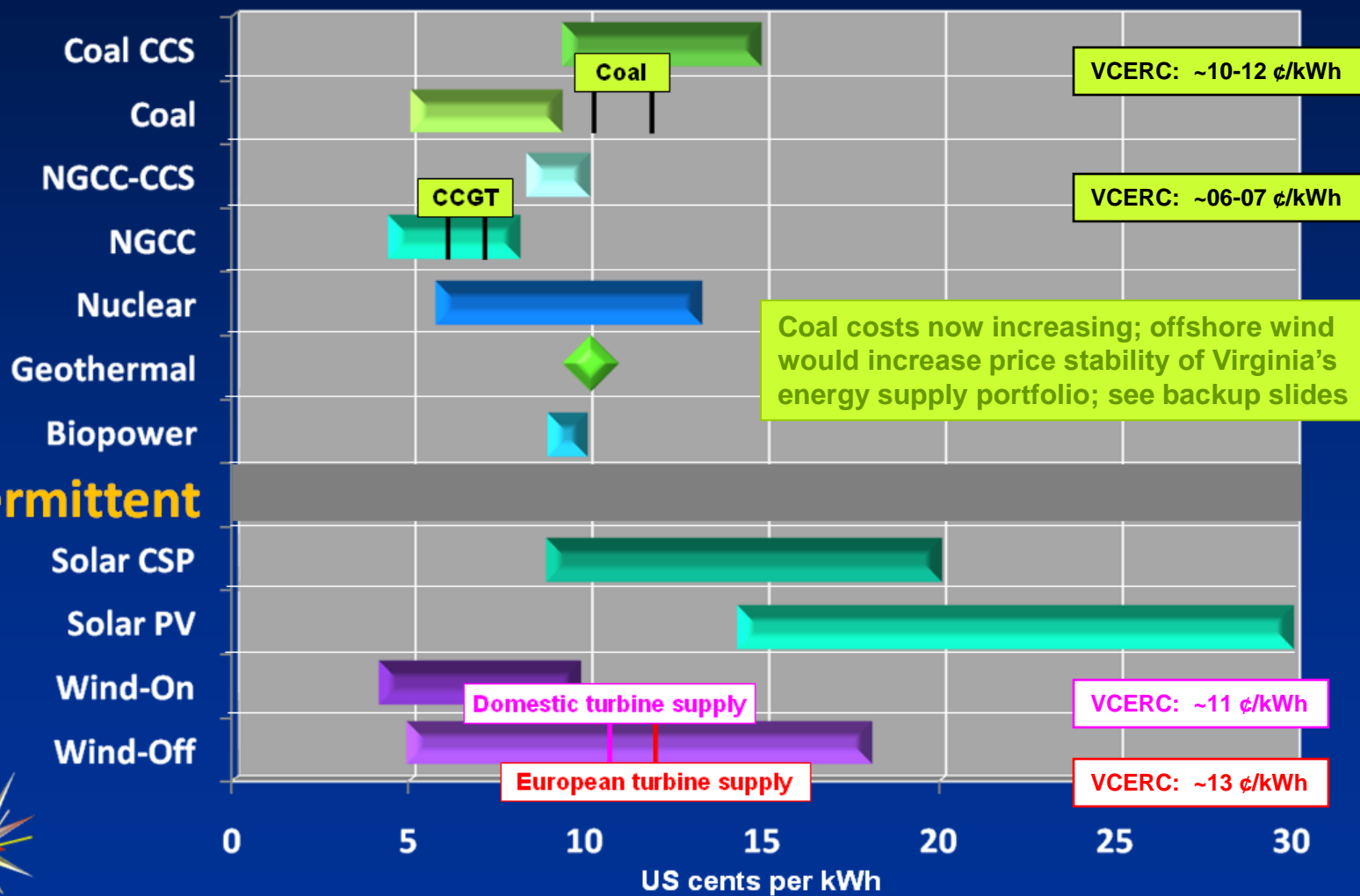


Manufacturing wage data published by U.S. Bureau of Labor Statistics on 22 Oct 2009
 (www.bls.gov/fls/prodsupptabletoc.htm, Table 8. Hourly compensation, U.S. dollar basis)

Cost breakdown and labor/material ratios from Dong Energy presentation dated 11 Aug 2009
 (www.energirike.no/pub/56/filer/Dong%20-%20EnergiRikekonferancen%20perhp%202009.pdf)

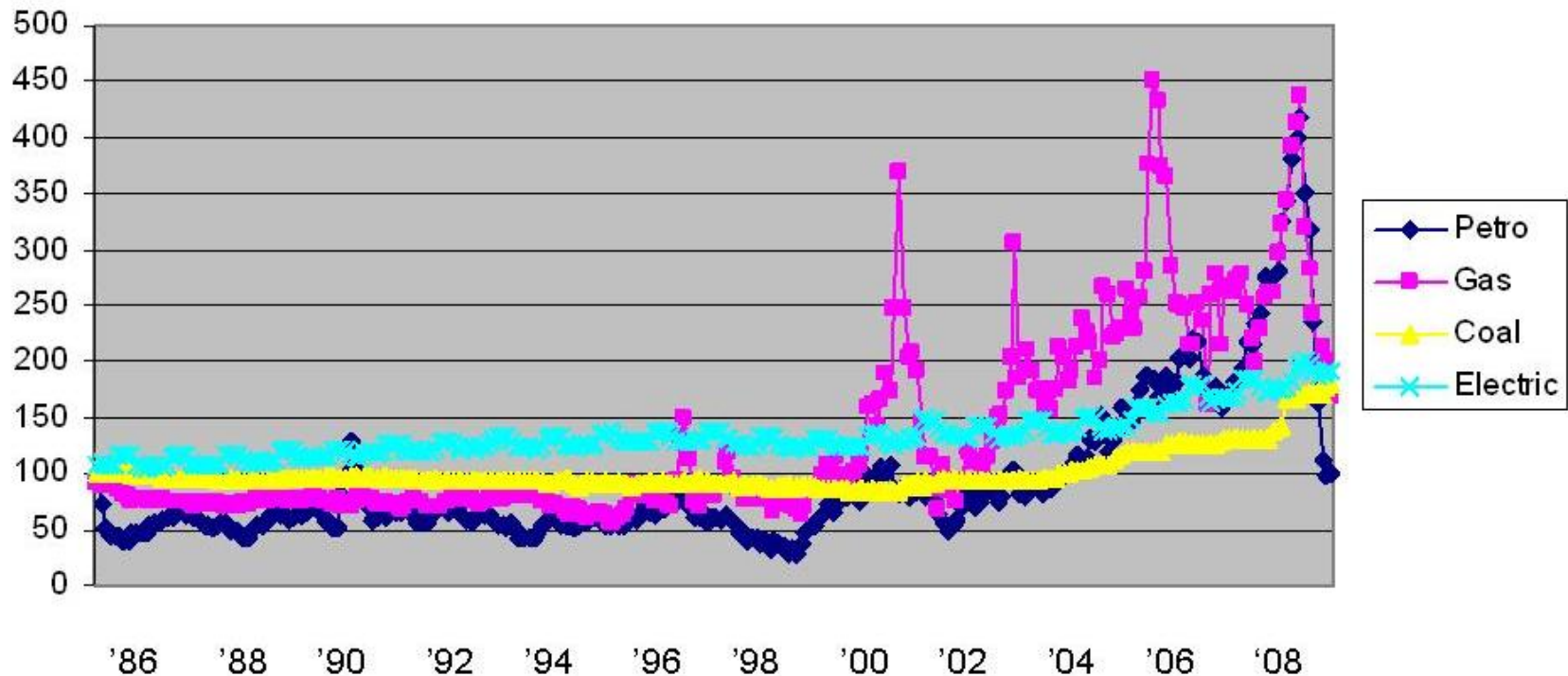
VCERC Results Compared with Recent National Academy of Sciences Study

Baseload



Ratepayers Must Consider Price Stability and the Potential for Future Fuel Price Increases

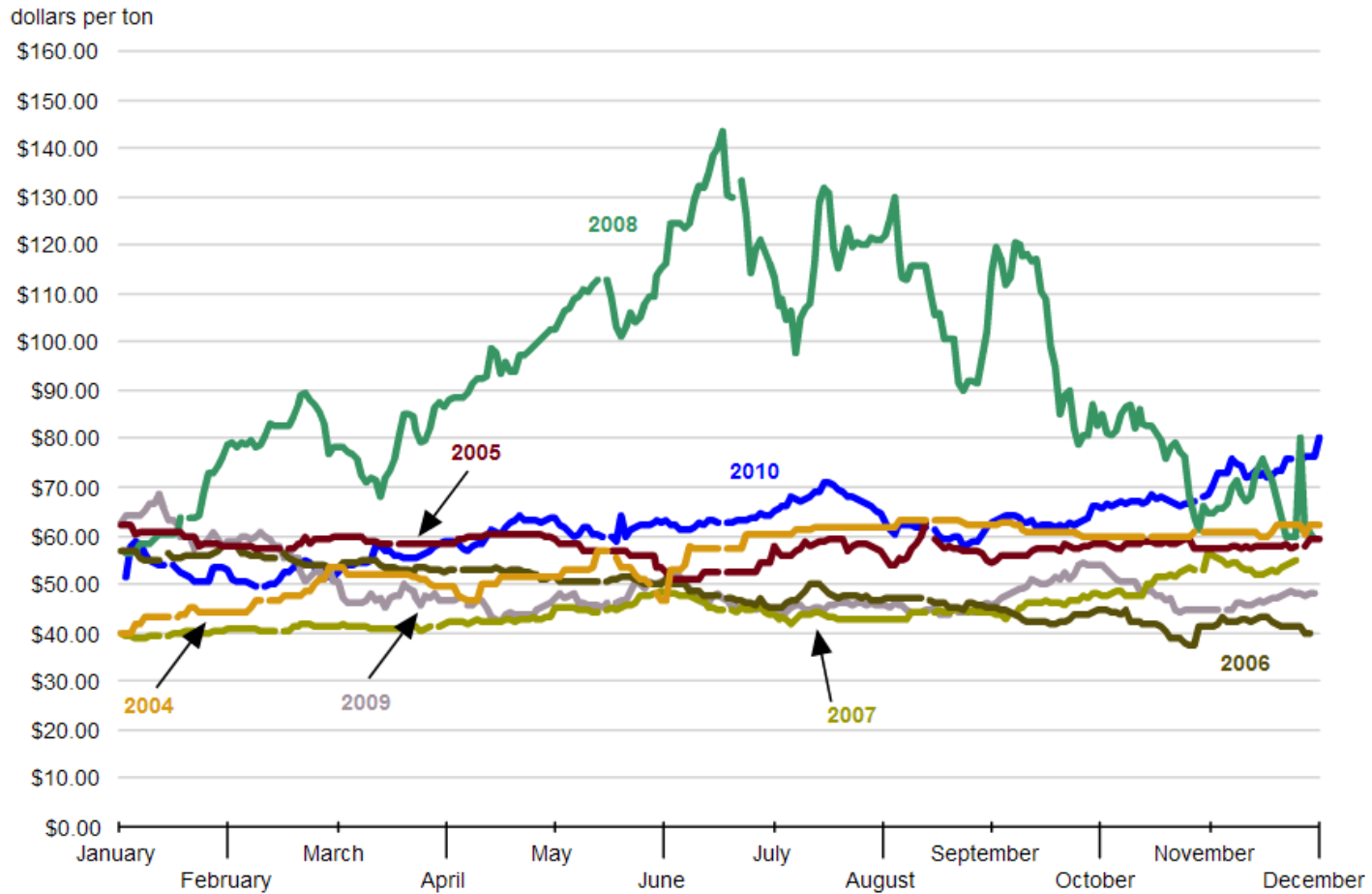
U.S. Retail Electricity vs. Wholesale Input Prices, 1986-2009



All Commodities Expressed as Index of 1984=100. Source: Bureau of Labor Statistics.

Coal is No Longer Stably Priced

NYMEX Central Appalachian Coal Futures Near-Month Contract Final Settlement Price History



Data as of 12/31/2010

Note: No data available for Western PRB and Eastern CSX prior to 6/30/09.

Thank You!

VCERC Offshore Wind Studies Final Report:
www.vcerc.org/report.htm



Any questions?

Email: hagerman@vt.edu