

## **Renewable Energy Lowers Energy Costs for Consumers**

Adding renewable energy sources to the Pennsylvania electricity market reduces, or “suppresses,” the price of energy to the consumer. Renewables – whether wind, hydro, biogas or solar – operate without fuel costs. Particularly at times of high electricity demand, these low operating cost renewables displace resources with substantially higher operating costs, which in turn lowers the price customers pay for electricity. This consumer benefit is called the “price suppression effect.”

### **Analyses support the consumer benefits of this effect:**

- A 2010 analysis of House Bill 2405 by the engineering consultancy Black and Veatch indicates that “...the net present value of the price suppression benefit over the life of the (bill) could be \$3.5 to \$6.2 billion .... Notably this savings is much higher than the direct electricity cost impacts ... (\$1.6 billion increase for AEPS).
- A 2009 PJM Interconnection study of the impacts of adding wind generation to the market concluded that “...15,000 MW of wind offers wholesale market price reductions of \$4.50-6/MWh, translating to reductions in annual market-wide expenditures of \$3.55 billion to \$4.74 billion versus not having that wind in place.”
- A 2009 PECO/Exelon study of the market impact of adding 400 MW of capacity to the Pennsylvania Peach Bottom Nuclear facility gives further support to the price suppressive effects of low marginal cost generation:

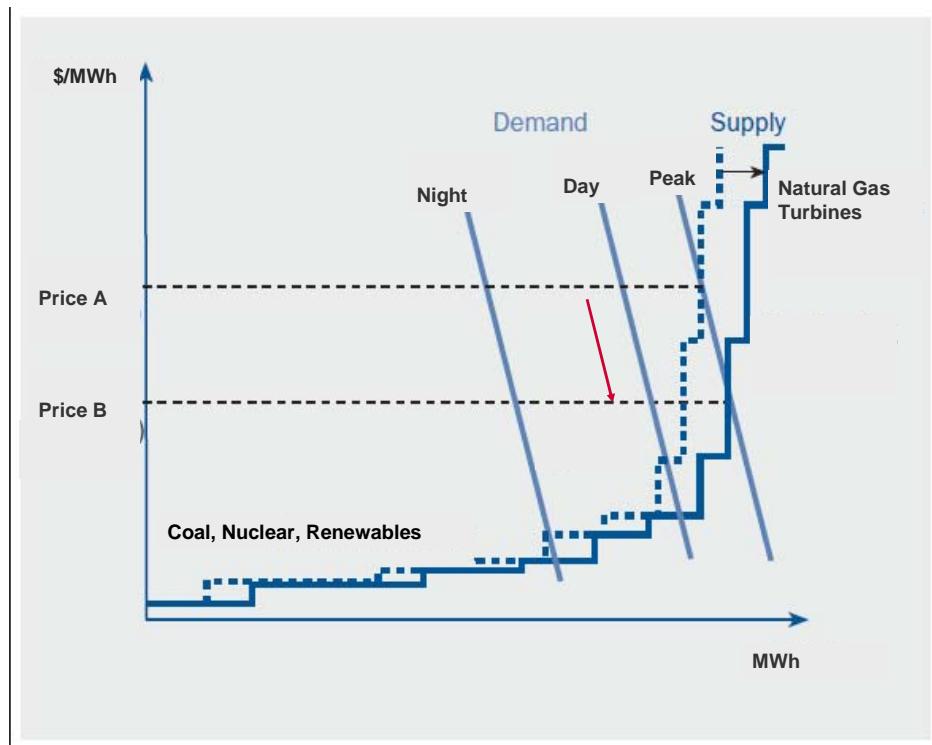
“We estimate conservatively that these benefits would average **\$137 million** per year in Pennsylvania, and more than **\$425 million** per year in all of PJM-East.”
- A New York State Energy Research and Development Authority (NYSERDA) analysis of New York’s Renewable Portfolio Standard (RPS) estimates that the reduction in wholesale electricity prices from the addition of renewable energy resources in 2010 is likely to be approximately \$2/MWh (0.2 cents/kWh).
- A 2009 study by Tudor, Pickering, Holt, & Co., Energy Investment & Merchant Banking, of the impacts of wind generation estimated that “...6,500 mw of wind capacity dispatched into the supply stack significantly impacts prices. Vs. no wind, the marginal price of off- peak power falls by \$20/MWh during peak demand (24%), \$15 off-peak (25%).

### **Economic rationale:**

Renewables have low marginal costs (zero fuel costs) and consequently enter near the bottom of the electricity supply curve. When these resources enter the market, resources with higher marginal costs (e.g. natural gas turbines) are displaced. Graphically, this shifts the electricity supply curve to the right (see figure below), resulting in a lower electricity price. As illustrated in the figure, this effect is most pronounced during times of peak electricity demand, for example summer afternoons. In the figure, the peak price of electricity is reduced from Price A to Price B when

low marginal cost resources enter the market. This is called the ‘price suppression effect’.

The critically important point is that when the real-time electricity price is reduced, all electricity consumers benefit, since the reduction in price applies to all electricity traded – not only to electricity generated by renewables.



Source: Adapted from EWEA, 2010