

Investment in Wind yields negligible Environmental Benefits

A February 26, 2003, news story distributed by PRNewswire states, “Radnor Township announced today that it's Town Hall will purchase 62% of its electricity from wind energy, making it the nation’s leading wind energy purchaser among municipalities.”

The story also indicates that the purchase involves 1,400,000 kilowatt hours (kWh) per year for 3 years, with the electricity coming from a wind plant near Mount Storm in West Virginia.

Action has negative environmental consequences

The Township officials’ action was no doubt well intentioned but analysis of the transaction described in the story shows that they:

- Incorrectly assume the action has a favorable environmental impact.
- Do not understand the actual costs and benefits of electricity from commercial wind plants.
- Do not recognize that the tiny, if any, environmental benefit of their action is overwhelmed by the adverse environmental, ecological, scenic and property value impact in West Virginia where wind plants are being constructed to produce the electricity.
- Could have taken other action resulting in greater benefit, without the environmental costs.

Radnor’s Planned Purchase not ‘Significant’

Though the purchase is referred to as ‘significant’, it is not. The amount of electricity involved – 1,400,000 kWh per year -- may sound like a lot but it is equal to just 1/1000 of 1% of the 136,778,000,000 kWh of electricity sold by electric utilities in Pennsylvania during 2001.

Adverse Environmental Impact of Wind Plants in West Virginia

The FPL Energy-owned wind plant that would, in theory, produce the electricity that Radnor plans to purchase is but one of several planned for scenic West Virginia. Another proposal in the area would result in 200 (350-400 ft.) wind turbines along 14 miles of picturesque high mountains near Canaan Valley National Wildlife Refuge, Canaan Valley State Park, Blackwater Falls State Park, and the Monongahela National Forest, which includes Dolly Sods and Dolly Sods Wilderness Area. (Famous places in Monongahela National Forest nearby are Bear Rocks, Stack Rocks, Blackbird Knob, Red Creek Campground, and the Allegheny Front Bird Observatory.)

True costs and benefits of electricity from commercial wind plants

The story reveals that Radnor officials were misled and don’t understand that commercial wind energy is not an environmentally benign source of electricity. The officials are probably not aware of certain facts such as the following:

1. **Electricity produced from wind detracts from electric system stability.** Wind turbines produce electricity only when the wind is blowing within certain speed ranges. Their output is intermittent, highly variable, and largely unpredictable and uncontrollable. They detract from – rather than add to – electric system stability. Because electric systems must be constantly kept in balance (supply-demand, frequency, voltage, transmission line load), reliable or “dispatchable” generating units, powered generally by traditional energy sources, must be immediately available to “back up” the unreliable output from wind plants.
2. **Promoters of wind energy routinely overstate environmental benefits.** Wind promoters incorrectly advocate that each kilowatt-hour (kWh) of electricity produced by a wind turbine displaces the same amount of fuel-use and emissions associated with a kWh of electricity produced by a fossil-fuel generating unit. However, the reliable generating units that serve in the “backup” role for the unreliable output of wind turbines must be running at near full capacity, or in “spinning reserve” mode, even when the turbines are generating electricity. While operating in these modes, the fossil-fueled units are producing close to the same amount of emissions as they would in generating modes. Therefore, the contribution of wind turbines to emission reduction will be tiny, at best, and perhaps non-existent. In addition to the incorrect assumption by kWh-per-kWh offsets, wind energy advocates often use outdated information about emissions when making their claims, not taking into account the difference that newer, cleaner burning fossil fueled plants make.
3. **Promoters routinely ignore wind development environmental damage.** Electricity from wind is not environmentally benign. Damage caused by wind plants are becoming increasingly clear, which explains the growing opposition to them in the US and Europe. Wind plants adversely affect a wide variety of environmental, ecological, and scenic values. Concerns include bird kills, interference with migration patterns, and noise and “flicker” at nearby residences, often affecting the occupant’s health. Local governments that are responsible for safety must be aware of common problems such as fires, falling ice, and blade disintegration caused by mechanical failures and lightning.

The scenic impact of wind plants is significant, and as valued natural landscapes disappear, more concern is apparent. Governments are recognizing that protective measures are needed. An Oregon official who, after recently passing a wind facility along the Washington-Oregon border, was quoted in a Washington paper as saying: “How is this different than allowing illuminated advertising billboards in our most beautiful places?”

4. **The huge machines produce very little electricity.** If FPL Energy’s 66-megawatt wind plant on West Virginia’s Backbone Mountain, with its 44 wind turbines spread across over 4,000 acres of land, achieves an annual 30% capacity factor, it will produce 173,448,000 kWh of electricity each year (i.e., 66,000 kW x 8760 hours x .30). That sounds like a lot of electricity but, in fact, it is equal to:
 - a. 13/100 of 1% of the 136,778,000,000 kWh of electricity sold by electric utilities in Pennsylvania during 2001.
 - b. 19/100 of 1% of the 92,783,000,000 kWh of electricity produced in West Virginia during 2000.
5. **The primary driving force for the construction of wind plants is the windfall profits accruing to their owners as a result of federal and state tax shelters and other credits—not because of benefits to the environment.** Wind plants provide few, if any, environmental benefits and few net economic benefits to the areas where they are located.

A company proposing a new 300 megawatt wind plant in West Virginia costing \$300,000,000 would be able to:

- a. Shelter \$132,000,000 from federal income tax liability in the tax year when the project went into service, an additional \$67,200,000 in the second year, \$40,320,000 in the third year, and the remaining \$60,480,000 in the next 3 years because of generous accelerated depreciation allowed for wind plants. Assuming a marginal tax rate of 35%, this could reduce the company's federal tax liability by \$46,200,000 in the first year, \$23,530,000 in the second year, \$14,112,000 in the third year and \$21,168,000 in the next 3 years.
- b. Deduct an additional \$14,191,200 per year for 10 years from its federal tax liability because of federal Production Tax Credits of \$0.018 per kWh for all electricity produced.
- c. Escape significant West Virginia corporate income tax liability because the federal accelerated depreciation reduces taxable income. The tax that could be avoided could amount to 9% (the WV corporate tax rate) of the amount of the federal depreciation deduction; i.e., \$11,880,000 in the first year, \$6,048,000 in the second year, \$3,628,800 in the third year, and \$5,443,200 in the next three years.
- d. Avoid approximately 90% of the normal liability for the West Virginia's Business & Occupation Tax and for the West Virginia Property Tax that provides funds for County and School functions -- because of special tax breaks passed by the West Virginia Legislature. (This benefit would be worth \$2.5 to \$3 million per year in avoided taxes.)

The above federal and state tax breaks add up to \$77,423,460 in the first year, \$48,911,460 in the second year and a total of \$325,434,600 for the first 10 years. The tax breaks for wind plant owners shift tax burdens to remaining taxpayers, further degrading supposed local economic benefits.

The value of the tax breaks to the wind plant owner could easily exceed the owner's income from the sale of electricity, particularly in the early years of the project. That income would be approximately \$23,652,000 per year if the wind plant achieved a 30% capacity factor and the electricity were sold for \$0.03 per kWh (i.e., 300,000 kW x 8760 hrs. x .30 capacity factor x \$0.03 per kWh sale price would = \$23,652,000).

Radnor could more effectively reduce environmental impact of it's electric generation

Radnor is a wealthy Township. According to the Town's web site, the average home sale price in 2000 was \$382,269. Quite likely, many residents there can afford environmental improvement measures without exporting adverse environmental impacts onto others. However, no one needs to be wealthy to be more environmentally sensitive.

Census data shows that Radnor has about 10,000 households. If each household substituted two 27-watt energy efficient light bulbs for two 100-watt incandescent bulbs that are used an average of 4 hours per day, the people of Radnor Township would avoid the use of 2,131,600 kWh of electricity each year*, approximately **50% more** than the 1,400,000 kWh wind power purchase!

* 2 bulbs x 73 watts x 4 hours would save 584 watt-hours per day. 584 watt-hours x 365 days = 213,160 watt-hours per year per household. 10,000 households x 213,160 watt-hours = 2,131,600,000 watt-hours or 2,131,600 kWh.

Reduced Electric bills for Radnor residents

At \$5 per bulb, 20,000 bulbs would cost \$100,000. But, assuming an average rate of \$0.13 per kWh, Radnor residents would reduce their electric bills by \$277,108 annually. So in addition to reducing the environmental impact associated with generating the unneeded 2,131,600 kWh, the cost to electric consumers would also be reduced. (That might explain the purchase participation of Exelon, the parent company of the local utility that serves Radnor Township.)

Environmental Symbolism over Substance

Radnor Township's decision to purchase 1,400,000 kWh of electricity from wind energy is a clear case of symbolism over substance. Contrary to the claim in the press release, the Commissioners should not receive acclaim for [their] "visionary wind purchase", because the attempt to polish their environmental image ignores the adverse environmental, ecological, scenic and property value impacts on the West Virginia residents where the giant wind turbines are located. Others involved in the scheme include:

- FPL Energy, the current owner of the wind plant on Backbone Mountain in West Virginia, now called the "Mountaineer Wind Energy Center."
- The Exelon Power Team that has contracted for the purchase of electricity from the FPL Energy wind plant.
- Washington Gas Energy Services, Community Energy, Inc. and the Energy Cooperative, the companies marketing the electricity.
- Radnor Township Environmental Advisory Committee, and the Clean Air Council of Pennsylvania who are participating in or encouraging environmental symbolism.
- The collection of organizations in the Washington, DC, area that have announced similar purchases during the past few weeks of what is purported to be electricity produced from the FPL Energy owned wind plant in West Virginia. These include:
 1. Montgomery County, Maryland
 2. Catholic University, American University, and the World Bank- District of Columbia

The U.S. Department of Energy sponsored a conference at which Radnor's symbolic purchase was announced. The overall cost of that conference to taxpayers and participants exceeded \$100,000, which could have paid for the 20,000 energy efficient light bulbs that would have allowed Radnor Township to realize a greater savings in electricity use than the amount of the token wind energy purchase. Not only would that have meant less consumption, equating to less generation, resulting in less emissions and less cost, it would also have NOT supported an inappropriate and unnecessary power plant in another state, that is robbing local residents of their natural environment and their quality of life.

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