

The EMPEROR'S NEW CLOTHES
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PART 10 — RUNNING THE NUMBERS

ONE OF THE BASIC RULES OF BUSINESS (AND GOVERNMENT IS ALSO A BUSINESS) IS TO "FOLLOW THE MONEY." THIS IS DIFFICULT WHEN ANALYZING THE COST OF "GREEN" ENERGY SUCH AS WIND POWER. THE TRUE FINANCIAL COST OF WIND ENERGY IS UNDERSTATED COMPARED TO THE COST OF ELECTRICITY FOR TRADITIONAL SERVICES BECAUSE THE COST OF TAX BREAKS AND SUBSIDIES ARE IGNORED. THESE ALTERNATIVE

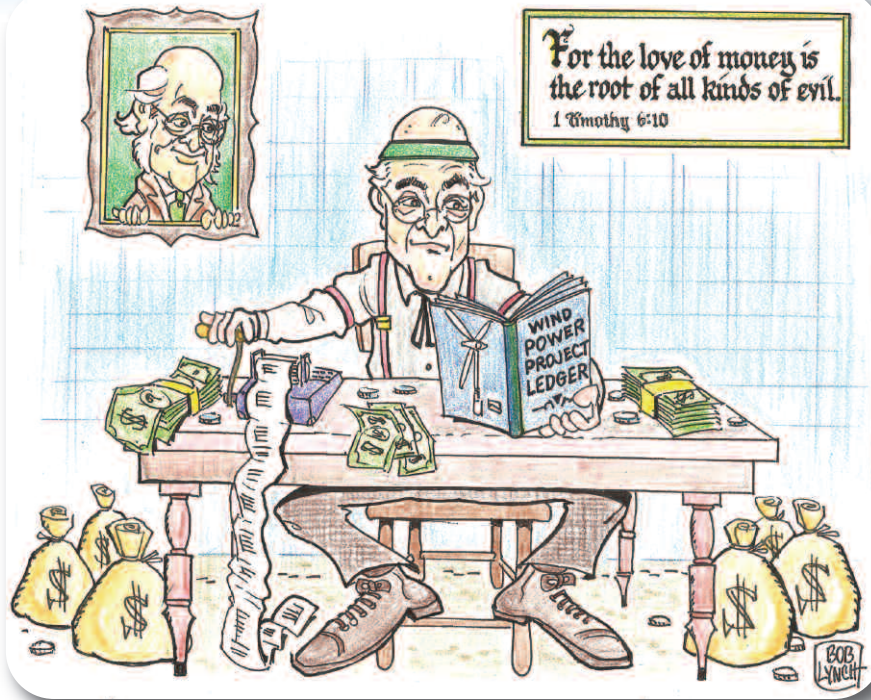
ENERGY SUBSIDIES ORIGINALLY WERE JUSTIFIED AS NEEDED TO HELP NEW ALTERNATIVE ENERGY TECHNOLOGIES UNTIL THEY BECAME COMMERCIALY VIABLE. THESE SUBSIDIES AT THE FEDERAL, STATE AND LOCAL GOVERNMENT LEVELS ARE SO WIDESPREAD THAT VERY FEW PEOPLE REALLY SEE THE WHOLE COST PICTURE. I SINCERELY DOUBT THAT MOST OF OUR LEGISLATORS SEE THE WHOLE COST PICTURE EITHER.

This editorial is my attempt to share what I've learned after considerable research. Thank goodness for accountants in our society. They can be counted on to keep track of the money. The hard part is finding and interpreting their reports. One thing you can count on, just like your cooperative knows its business numbers; the alternative energy producers know theirs. And all players in ANY business know their numbers when they lobby their federal, state and local governments.

The Rate Payer's View

For example, I looked up an application to the Ohio PUCO for a proposed 300,000 kW wind-power electric generation facility in Hardin County. This project will have 200 wind turbines each with a 1,500 kW name plate capacity. Using information from this PUCO application, Figure 1 was prepared to calculate the cost of electricity from a rate payer's viewpoint assuming your cooperative built the project. Therefore, the cost estimate does not include any "profit," which we assume the Hardin County wind farm developer plans to earn.

I tried to structure the analysis in Figure 1 so you can follow the calculations. Two critical assumptions to this analysis are the interest rate of 7 percent and the 28 percent annual capacity factor. The 7 percent interest may be a little high today for mortgages, but "in the ball park" for business loans. The 28 percent annual capacity factor also may be a little high for Ohio (See Part 7 - Wind Power Economics & Operation - Reliability of Wind?). The Hardin County developer claims a 26 to 30 percent annual capacity factor and wind turbine blade manufactur-



ers claim they are getting better results. Despite my skepticism, the analysis assumes 28 percent, or the average claimed by the developer.

Assuming my assumptions are correct, then the projected end result for a \$600 million investment is the project should generate 735.84 million kWh at an average cost of 9.744 cents per kWh. This is higher than the 7.2 cents Buckeye Power projects when the last coal plant scrubber is completed in 2013. However, this comparison assumes wind power and coal power are equal in value,

| Merchant Wind Project Economics Rate Payer's View | | Figure 1 |
|--|----|-------------|
| Number of Turbines in Wind Farm | | 200 |
| X Turbine Nameplate Capacity in kW | | 1,500 |
| Size of Wind Farm in kW | | 300,000 |
| Annual Capacity Factor | | 28% |
| x 100% Capacity = 365 Day x 24 Hours | | 8,760 |
| x Wind Farm Size = Annual Energy kWh / yr | | 735,840,000 |
| x Turbine Cost per kW | \$ | 2,000 |
| Total Cost of Wind Farm | \$ | 600,000,000 |
| Wind Farm Cost x 30% Equity | \$ | 180,000,000 |
| Wind Farm Cost x 70% Debt | \$ | 420,000,000 |
| Interest Rate | | 7% |
| Project Cost Analysis | | |
| Depreciation = Total Cost / 20 years | \$ | 30,000,000 |
| Interest = Debt @ 7% | | 29,400,000 |
| Operation & Management | | 8,500,000 |
| Land Lease = 200 Turbines x \$10,000 / yr | | 2,000,000 |
| Property Taxes = \$6 per kW Nameplate | | 1,800,000 |
| Total Annual Cost | \$ | 71,700,000 |
| Cost per kWh Produced | \$ | 0.09744 |

Note: This analysis uses information supplied in the Hardin County, Ohio Wind Farm PUCO Case.: 09-0479-EL-BGN Re: Application for Certificate of Environmental Compatibility and Public need.

when they are clearly not due to radically different operating characteristics (See Part 7 regarding wind power operation issues).

The Investor's View

Having spent my career in the not-for-profit electric cooperative industry, my eyes were opened when I analyzed the Hardin County wind project from an investor's point of view. We have the expense side of the project in Figure 1, but what we don't know is the revenue side needed to calculate the expected profit. There has to be one, otherwise why invest in the project? Let's explore the tax subsidy side of the project.

Nearly all of the investment in a commercial wind project can be recovered from taxable income through five-year double declining balance depreciation using "Modified Accelerated Cost Recovery Systems" (MACRS) per IRS publication 946. Figure 1 depreciated the project over its 20-year useful life. MACRS allows depreciation over six years as shown in Figure 2. MACRS provides the investor with three benefits:

- 1) A further reduction in federal income tax liability as shown in Figure 2 assuming a 35 percent marginal tax rate,
- 2) Prompt recovery of the equity investment. If we assume a 30 percent equity for the \$600 million project, then the investor's \$180 million is fully recovered in two years (Note also the full project cost is recovered in six years), and

| Merchant Wind Project Economics Investor's View | | | | Figure 2 |
|--|-------------------------|----------------|---|----------|
| Deduction From Taxable Income | | | | |
| Tax Year | % of Total Project Cost | Amount | Further Reduction in Federal Income Tax Liability @ 35% | |
| 1st | 20.00% | \$ 120,000,000 | \$ 42,000,000 | |
| 2nd | 32.00% | 192,000,000 | 67,200,000 | |
| 3rd | 19.20% | 115,200,000 | 40,320,000 | |
| 4th | 11.52% | 69,120,000 | 24,192,000 | |
| 5th | 11.52% | 69,120,000 | 24,192,000 | |
| 6th | 5.76% | 34,560,000 | 12,096,000 | |
| Totals | 100.00% | \$ 600,000,000 | \$ 210,000,000 | |

Note: The format for the "Investor View" analysis table and the associated analysis of federal tax breaks and subsidies in this editorial follows closely the analysis prepared by Glenn R. Scheede in his paper "High Cost & Low Value of Electricity from Wind" Feb. 4, 2010.

"These higher costs forced on electric companies will be passed on to electric rate payers in their monthly bills — with the blessings of our federal and state legislators. Folks, I think we now can see where the financial 'green' in green power comes from."

3) An interest-free loan courtesy of the U.S. taxpayers, since the depreciation deduction will continue four more years after the equity is recovered.

In addition, the wind farm owner can receive a wind production tax credit of 2.22 cents per kWh for electricity generated in the first 10 years. This works out to nearly \$161.9 million. (735,840,000 kWh per year x 2.22 cents per kWh x 10 years = \$161,884,800).

This credit is available for projects put into service by Dec. 31, 2012. That cutoff date is one reason why I'm certain tax subsidies are going to be part of the 2011 and 2012 federal budget debates.

On the other hand, as part of the "stimulus" package, a wind farm started in 2010 and operating before the end of 2012 could opt for a 30 percent investment tax credit instead of the production tax credit. This works out to 30 percent of \$600 million, or \$180 million. If I were building a project in Ohio, I would take the investment tax credit, since the annual wind capacity factory would have to exceed 31 percent to make the production tax credit a "better deal."

And lest we let a tax subsidy go to waste, if a wind project developer can't use all of these tax credits, then the developer can take on "partners" with large tax liabilities

and "share" them as part of a tax shelter deal.

In addition, the Hardin County property tax would have been \$41 per kW name plate rating. Instead, per Ohio's Renewable and Advanced Energy Project Property Tax Exemption enacted with Ohio Senate Bill 232 in the summer of 2010, qualified energy projects in Ohio are exempted from public utility tangible personal property taxes and real property taxes. In lieu of these taxes, a qualified facility employing at least 75 percent Ohio-based employees during construction would pay \$6 per kW. However, the project must be in service by Jan. 1, 2013. This property tax reduction amounts to (\$41 - \$6 = \$35) x 300,000 kW nameplate or \$10.5 million per year.

In addition, the Alternative Energy Portfolio Standard enacted with Ohio SB 221 in 2008 assures profits for wind project owners by requiring an increasing percentage of the electricity sold in Ohio must come from "alternative energy sources."

I can't calculate the profit, but there certainly will be one. This means the price for power generated will exceed the 9.744 cents per kWh calculated in Figure 1. That's higher than Buckeye's 2013 projected 7.2 cents, which is projected to be lower than the generation cost of other Ohio utilities.

These higher costs forced on electric companies will be passed on to electric rate payers in their monthly bills — with the blessings of our federal and state legislators. Folks, I think we now can see where the financial "green" in green power comes from. Like the Emperor in the story (see Part 1), the answer is staring back in the mirror — if we only will acknowledge what we see.