

EIA Lowers its Forecast for the Contribution of “Wind Energy”

The latest annual energy forecast issued by the US Energy Information Administration (EIA) indicates that, by the year 2030, wind energy would supply less than 1% of US electric generation and about 4/10 of 1% of total US energy consumption.

This forecast, which likely overstates the potential contribution of wind energy, helps show that officials of the wind industry and US Department of Energy are misleading the public, media and government officials with their claims that wind might supply 20% of US electricity.¹

EIA data. Each year, EIA issues forecasts of US energy supply, demand and prices in a document called “Annual Energy Outlook.”² EIA’s forecasts are based on its National Energy Modeling System (NEMS). Like all forecasts, EIA begins with historical data and then makes many assumptions about current and future energy market conditions.

The data in the tables below is taken from the early release of the AEO 2007 “Reference Case.” The tables show “Actual” data for 2005 and EIA’s forecast for the year 2030:

- The 1st table shows US Energy Consumption by energy source.
- The 2nd table shows US electric generation by energy source.

US Energy Consumption by Energy Source: 2005 Actual and EIA Forecast for 2030				
In Quadrillion Btu - Quads				
<u>Energy Source</u>	<u>Actual 2005</u>		<u>EIA Forecast 2030</u>	
	Quad Btu	% of Total	Quad Btu	% of Total
<u>"Traditional" Sources</u>				
Petroleum Products	40.28	40.07%	50.97	38.71%
Natural Gas	22.63	22.51%	26.89	20.42%
Coal	22.87	22.75%	34.14	25.93%
Nuclear Power	8.13	8.09%	9.33	7.09%
Conventional Hydropower	2.71	2.70%	3.09	2.35%
Other	<u>0.08</u>	<u>0.08%</u>	<u>0.04</u>	<u>0.03%</u>
Sub Total - Traditional	96.70	96.20%	124.46	94.52%
<u>Non-hydro Renewables</u>				
Geothermal	0.32	0.32%	0.55	0.42%
Wood	0.41	0.41%	0.39	0.30%
Biofuels Heat and Coproducts	0.25	0.25%	0.93	0.71%
Other Biomass	2.01	2.00%	3.14	2.38%
Municipal Solid Wastes	0.29	0.29%	0.35	0.27%
Solar Thermal, electric & Hot Water	0.06	0.06%	0.11	0.08%
Solar Photovoltaic	0.00	0.00%	0.01	0.01%
Ethanol	0.33	0.33%	1.20	0.91%
Wind	<u>0.15</u>	<u>0.15%</u>	<u>0.53</u>	<u>0.40%</u>
Sub Total -Non-hydro Renew.	3.82	3.80%	7.21	5.48%
Total	100.52	100%	131.67	100%

Data Source: EIA, Annual Energy Outlook 2007, Tables A2 and A17

Those who follow US developments in “wind energy” will note that EIA’s forecast for the contribution from wind in 2030 is nearly 20% lower in AEO 2007 than it was in AEO 2006. Specifically, in AEO 2007, EIA forecast that:

- Wind would supply 40/100 of 1% of total US energy consumption in 2030, down from 49/100 of 1% in AEO 2006.
- Wind would supply .89/100 of 1% of total US electric generation in 2030, down from 1.09% in AEO 2006.

Energy Sources for US Electricity Production: 2005 Actual and EIA Forecast for 2030				
(In billions of kilowatt-hours)				
Energy Source	Actual 2005		EIA Forecast 2030	
	Billion kWh	% of Total	Billion kWh	% of Total
<u>"Traditional" Sources</u>				
Coal	2,015.00	49.93%	3,330.00	57.44%
Nuclear	780.00	19.33%	896.00	15.46%
Natural Gas	752.00	18.63%	937.00	16.16%
Petroleum	122.00	3.02%	107.00	1.85%
Pumped Storage, net imports, other	10.00	0.25%	8.00	0.14%
Conventional Hydropower	<u>265.07</u>	<u>6.57%</u>	<u>307.69</u>	<u>5.31%</u>
Sub Total - Traditional	3,944.07	97.73%	5,585.69	96.35%
<u>Non-Hydro Renewables</u>				
Geothermal	15.12	0.37%	22.66	0.39%
Wood & other biomass	37.83	0.94%	101.91	1.76%
Municipal Solid Wastes	23.31	0.58%	27.70	0.48%
Solar Thermal	0.54	0.01%	1.43	0.02%
Solar Photovoltaic	0.34	0.01%	5.76	0.10%
Wind	<u>14.60</u>	<u>0.36%</u>	<u>51.85</u>	<u>0.89%</u>
Sub Total -Non-hydro Renew.	91.74	2.27%	211.31	3.65%
Total	4,035.81	100%	5,797.00	100%

Data Source: EIA, Annual Energy Outlook 2007, Tables A8 and A16

EIA’s Forecast may still be on the high side for several reasons.

Capital costs. First, “wind farm” capital costs are likely to be higher than the \$1,167 per kilowatt-hour (kW) EIA assumed for AEO2006.³ While EIA has not yet released documents showing the assumptions that underlie its AEO2007 projections, it seems likely that EIA has begun to recognize some part of the large increases in the capital costs associated with “wind farms” that have occurred during the past two years.

Actual capital costs for “wind farms” vary widely, but \$1,167 per kW is far below the cost being reported from other sources. For example, the Kansas Corporation Commission has indicated that the cost of the Elk River “wind farm” was around \$1,600 per kW and that \$1,700 per kW may be a better planning number. The American Wind Energy Association (AWEA) reports that the 2,454 MW of wind turbine capacity added in the US during 2006 cost “approximately \$4 billion,”⁴ which would mean average cost of about \$1,630 per kW. AES Corporation has estimated that capital costs for its planned projects will be \$1,750 per kW.⁵

In the US, the wind industry does not appear particularly concerned about high capital costs, probably because of the extraordinarily generous 5-year double-declining balance accelerated

depreciation allowed for capital investments in commercial wind energy facilities. Thanks to wind industry lobbyists and generous members of Congress, “wind farm” owners can recover the entire capitalized cost, including development costs, and whether financed by equity or debt, of “wind farms” in only 5 years. That’s in addition to the \$0.019 (soon to be \$0.02) per kWh Production Tax Credit. Tax burden escaped by “wind farm” owners is shifted to ordinary taxpayers who don’t have generous tax shelters.

Growing opposition to “wind farms.” Second, EIA’s forecast probably does not yet reflect the steadily growing opposition in the US (as well as in Europe) to “wind farms.” During the past three years hundreds of citizen-led groups have been formed in the US and other countries to oppose “wind farms.” The wind industry and other wind advocates label this growing opposition as “nimbyism” (not in my back yard). However, facts gathered by the citizen-led groups make clear that the true economic, environmental, scenic and property value costs of “wind farms” often exceed their true benefits. They have demonstrated that:

- The primary motivation for building “wind farms” is the huge federal and state tax breaks and other subsidies, not energy or environmental benefits.
- The huge (35-40 story) machines produce very little electricity and that electricity is intermittent, volatile, unreliable, and most likely to be available at night and in winter when winds are strong – not on hot weekday summer afternoons when electricity demand is high.
- Wind turbines *cannot* be relied on to produce electricity when needed to meet peak demand. Areas with growing demand will have to build reliable (“dispatchable”) generating units whether or not wind turbines are built.
- Wind industry lobbyists and other wind advocates have greatly overstated the environmental and energy benefits of wind energy and understated the true costs.
- Adverse environmental and ecological impacts of “wind farms” include their impact on birds, bats, wildlife, and unique ecosystems; scenic impairment when they are built near homes, on mountain ridges, or near protected areas; reductions in neighbors’ property values; interference with communications; noise, shadow flicker and more.
- The true economic cost of electricity from wind is very high when massive tax breaks and subsidies as well as backup power costs are taken into account.

Concern about high cost of tax breaks and subsidies for “wind farms.” Third, “wind farms” would not be built if it were not for the massive tax breaks and subsidies enjoyed by “wind farm” owners – the costs of which are borne by ordinary taxpayers and electric customers. Growing realization of the huge cost of these subsidies has spawned opposition to their continuation in Europe. In the US, the public, media and government officials have not yet realized the full extent and cost of subsidies that wind industry lobbyists and other advocates have been able to “wring” from apparently unsuspecting federal and state government officials.

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¹ *Wind Power Today*, US Department of Energy, Office of Energy Efficiency and Renewable Energy, May 2006, page 2. <http://www.nrel.gov/docs/fy06osti/39479.pdf> The alleged quote from President Bush does NOT accurately show what he said. For real quote, see: <http://www.whitehouse.gov/news/releases/2006/02/20060221.html>.

² An “early release” of AEO2007 that includes EIA’s “Reference Case” forecast was posted on EIA’s web site on Dec. 5, 2006. <http://www.eia.doe.gov/oiaf/aeo/index.html> AEO2007 probably will be released in early February.

³ Table 38 <http://www.eia.doe.gov/oiaf/aeo/assumption/pdf/electricity.pdf>

⁴ AWEA press release, http://www.awea.org/newsroom/releases/Wind_Power_Capacity_012307.htm

⁵ <http://library.corporate-ir.net/library/76/761/76149/items/224069/AESWindGenerationReview121106.pdf>