



The True Cost of Wind Energy

by **Bill Peacock**

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TALKING POINTS

- The total cost of Texas wind energy subsidies will top out at around \$2.24 billion a year, with a total cost through 2025 of \$28.3 billion.
- Of that total, Texas consumers and taxpayers can be expected to pay about \$20.1 billion.
- Over the next 18 years, adding wind to the ERCOT grid could cost at least \$60 billion in subsidies, increased generation and system management costs, economic costs from disruptions of service due to unreliability, and tax breaks.

The cost of wind energy relative to other sources of energy is a source of great contention. Advocates of wind energy claim it is cost competitive with conventional sources, while others claim wind is not competitive without government subsidies and incentives. This dispute notwithstanding, an examination of Texas' wind energy market—the largest in the U.S.—offers the opportunity to accurately examine the cost of wind energy.

Like all public policy issues related to energy, the subject of wind energy is highly complex. However, one need not delve too deep into the details before realizing the higher relative cost of wind energy. One simple piece of anecdotal evidence begins the process of sorting out the facts: wind-energy generators in West Texas sometimes “sell” electricity by paying a “purchaser” to take delivery of it. Why would they do this? Because subsidies paid for by consumers and taxpayers make it possible to bid a negative price into the market and still make a profit.

The Foundation's just released study on this issue, *Wind Energy: Past, Present, and Future*, pulls together a vast array of information to assess—among other things—the true costs of wind energy in Texas. This paper provides more detail about the calculations and assumptions that went into developing these cost estimates.

A careful look at the costs of wind energy in Texas reveals that Texas consumers and taxpayers ought to think twice about the state's current policy of subsidizing wind energy.

The three major subsidies for the Texas wind industry are: 1) the building of transmission lines through the Competitive Renewable Energy Zones (CREZ) process, 2) the Production Tax Credit (PTC), and 3) Renewable Energy Credits (RECs).^{*} These three subsidies will total about \$2.24 billion dollars annually when wind generation has reached the state's 2025 target of 10,000 MW of installed capacity.

Table 1: Estimated Cost of Selected Texas Wind Energy Subsidies

Wind Energy Subsidy	Peak Annual Cost	Total Cost 2008-2025
CREZ Transmission (state)	\$1,326,000,000	\$17,901,000,000
PTC (federal)	789,937,795	9,027,173,625
RECs (state)	126,932,400	1,436,163,947
Total	\$2,242,870,195	\$28,364,337,571

^{*} The CREZ process subsidizes wind energy by adding a charge to all consumers within ERCOT to pay for the cost of new transmission lines; The PTC is a per kWh federal income tax credit for wind energy generators; RECs are a mechanism through which state-mandated payments are made from retail electric providers to wind energy generators.

Table 2: Calculation of Wind Energy Subsidies

Renewable Energy Credits				Production Tax Credits			CREZ Costs	Total	TX Total	TX Consumer Total
Year	Target	RECs	REC Cost	MWhs	PTC Credit	PTC Cost				
2008	2280	6,431,242	28,940,587	13,000,000	0.0200	260,000,000		288,940,587	50,855,869	28,940,587
2009	3272	9,229,396	41,532,281	13,894,541	0.0204	283,448,640		324,980,921	65,424,038	41,532,281
2010	3272	9,229,396	41,532,281	14,789,082	0.0208	307,731,226		349,263,507	67,470,806	41,532,281
2011	4264	12,027,550	54,123,975	15,683,624	0.0212	332,871,735	331,500,000	718,495,711	413,681,583	385,623,975
2012	4264	12,027,550	54,123,975	16,578,165	0.0216	358,894,773	663,000,000	1,076,018,748	747,375,053	717,123,975
2013	5256	14,825,704	66,715,669	17,472,706	0.0221	385,825,583	994,500,000	1,447,041,252	1,093,736,733	1,061,215,669
2014	5256	14,825,704	66,715,669	18,367,247	0.0225	413,690,068	1,326,000,000	1,806,405,737	1,427,585,417	1,392,715,669
2015	5880	16,585,834	74,636,251	19,261,788	0.0230	442,514,802	1,326,000,000	1,843,151,053	1,437,935,623	1,400,636,251
2016	5880	16,585,834	74,636,251	20,156,329	0.0234	472,327,049	1,326,000,000	1,872,963,300	1,440,448,484	1,400,636,251
2017	6704	18,910,107	85,095,481	21,050,871	0.0239	503,154,780	1,326,000,000	1,914,250,261	1,453,506,169	1,411,095,481
2018	6704	18,910,107	85,095,481	21,945,412	0.0244	535,026,690	1,326,000,000	1,946,122,171	1,456,192,638	1,411,095,481
2019	7528	21,234,380	95,554,711	22,839,953	0.0249	567,972,214	1,326,000,000	1,989,526,925	1,469,428,831	1,421,554,711
2020	7528	21,234,380	95,554,711	23,734,494	0.0254	602,021,548	1,326,000,000	2,023,576,259	1,472,298,833	1,421,554,711
2021	8352	23,558,653	106,013,940	24,629,035	0.0259	637,205,667	1,326,000,000	2,069,219,608	1,485,723,717	1,432,013,940
2022	8352	23,558,653	106,013,940	25,523,576	0.0264	673,556,342	1,326,000,000	2,105,570,283	1,488,787,699	1,432,013,940
2023	9176	25,882,927	116,473,170	26,418,118	0.0269	711,106,162	1,326,000,000	2,153,579,332	1,502,411,986	1,442,473,170
2024	9176	25,882,927	116,473,170	27,312,659	0.0275	749,888,552	1,326,000,000	2,192,361,722	1,505,680,936	1,442,473,170
2025	10000	28,207,200	126,932,400	28,207,200	0.0280	789,937,795	1,326,000,000	2,242,870,195	1,519,515,898	1,452,932,400
Total			1,436,163,947			9,027,173,625	17,901,000,000	28,364,337,571	20,098,060,310	19,337,163,947

If the \$2.24 billion were apportioned over the approximately 6.5 million Texas industrial, commercial, and residential users, it would run about \$345 per electric customer. Looking at the portion of the subsidies affecting only residential consumers, the peak annual value of these three subsidies would range from approximately \$109 to \$138. If we factor out the PTC (paid by taxpayers, not consumers), we can expect actual residential electric bills to increase on average from about \$71 to \$89 annually.*

However, the impact of wind subsidies on Texas consumers, taxpayers, and the economy is far greater than the increase in electric bills. A conservative estimate of the total cost of these subsidies through 2025 shows a cost of at least \$28.36 billion. Of that, about \$20.1 billion

will be borne directly by Texas consumers and taxpayers. The rest will be paid for by U.S. taxpayers in other states.

Table 2 shows the calculation of the cost of these subsidies. The costs of RECs, the PTC, and CREZ construction were calculated through 2025 because this is the year that the Texas Legislature set for reaching the target installed capacity for wind generation of 10,000 MW. Additionally, it is a short enough time frame to ensure a reliable estimate, and yet long enough to help portray the cumulative impact of wind energy subsidies on Texas consumers and the Texas economy.

RECS were assumed to cost \$4.50, which is in line with current prices, and well below prices of the past. The

* The "CREZ transmission cost impacts" spreadsheet developed by the Texas PUC was used to apportion the costs of wind energy subsidies to residential electric consumers and to estimate the increase in annual residential electric bills.

Renewable Portfolio Standard (RPS) targets in statute were used through 2015, then a straight line projection was used to get to the 2025 target. A 32.2 percent capacity factor, the same as ERCOT uses today, was used to turn installed MW capacity into MWhs.

For the PTC calculations, we estimated current generation in MWhs for 2008 based on YTD numbers, then used a straight line projection to fill in the gap between 2008 and the projected generation based on the 10,000 MW target for 2025. The PTC was valued at 2 cents per kWh in 2008, then conservatively indexed for inflation at 2 percent per year.

The determination that CREZ costs are subsidies for wind generation has by far the largest impact on the calculation of wind subsidies. Some would argue that CREZ costs are not wind subsidies since transmission costs are uplifted, or socialized, throughout ERCOT. But the CREZ process wouldn't have been undertaken if not for wind, and legislative direction and probable dispatch priority rules make it unlikely that a significant amount of thermal generation will come online to use

the CREZ transmission lines. It is clearly appropriate to classify CREZ costs as subsidies for wind energy, and this determination will become even clearer within the next few years.

The overnight cost of building the CREZ transmission lines was estimated to be \$4.93 billion. (ERCOT System Planning 2008) However, this amount does not include costs such as financing and escalation in construction costs. Adding these raises the price to an estimated \$7.8 billion. (Norwood 2008) This price still does not include profit or costs to transmission companies such as operations, depreciation, interest, and maintenance over the life of the project. A conservative recovery factor of 17 percent was used to calculate the annual impact of all of these costs on Texas consumers. The Public Utility Commission of Texas will make a similar calculation when the transmission companies seek to recoup these costs via rate increases in a few years. Finally, the impact of CREZ costs on electricity bills was phased in from 2011 through 2014—the actual costs will likely be factored into bills more quickly than this estimate. ★

RESOURCES

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About the Author

Bill Peacock is the vice president of administration and director of the Texas Public Policy Foundation's Center for Economic Freedom. He has been with the Foundation since February 2005.

Bill has extensive experience in Texas government and policy on a variety of issues, including economic and regulatory policy, natural resources, public finance, and public education. His work has focused on identifying and reducing the harmful effects of regulations on the economy, businesses, and consumers.

Prior to joining the Foundation, Bill served as the Deputy Commissioner for Coastal Resources for Commissioner Jerry Patterson at the Texas General Land Office. Before he worked at the GLO, Bill was a legislative and media consultant. He has also served as the Deputy Assistant Commissioner for Intergovernmental Affairs for then-Commissioner Rick Perry at the Texas Department of Agriculture and as a legislative aide to then-State Rep. John Culberson.

Bill began his career in state policy in 1989 in the Texas Senate as the analyst for public education and school finance for the Senate Education Committee.

Bill has a B.A. in History from the University of Northern Colorado and a M.B.A. with an emphasis in public finance from the University of Houston.

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