SUBSIDIES TO NOWHERE

A Year-by-Year Estimate of Renewable Energy Subsidy Costs for Texas and for the U.S.

By Bill Peacock

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Introduction

The Texas electricity market is being overrun by renewable energy generation. Since 2018, 79.3% of all new generation has been intermittent renewable energy. Only 19.1% has come from generation that can be dispatched, and all of that comes from one source—natural gas. The lack of diversity that has resulted from this overreliance on renewables has come at a great cost to Texans.

Figure 1: New Generation in ERCOT - 2018-21		
Biomass	0	0.00%
Coal	0	0.00%
Natural Gas	1,418	19.07%
Nuclear	0	0.00%
Solar	2,083	28.01%
Storage	119	1.60%
Wind	3,816	51.32%
Total Capacity Completed (MW)	7,437	100.00%

Source: Public Utility Commission of Texas

The cost on the minds of most Texans is the blackouts we experienced this past winter. Millions of Texans went days without electricity and/or water. A number of people died. Companies went bankrupt. And Texans now face years of paying off billions of dollars overcharges imposed by Texas government during the blackouts. All because Texas policymakers have refused to end policies that benefit renewables over the interests of other generation types. And over the interests of Texans.

The cost of the actions of Texas policymakers extends well beyond this past winter, however. As far back as 1999, the Texas Legislature has provided subsidies, tax abatements, and benefits to renewable energy companies. Add in the cost of federal subsidies and tax credits, and from 2006 through the end of 2021 renewable energy generators in Texas will have benefitted to the tune of $24.2 billion.

Figure 2: Renewable Energy Subsidies in Texas - 2006-21			
Local	State	Federal	Total
$1,571,321,249	$10,319,180,506	$12,287,652,941	$24,178,154,696

This explains why almost 80% of all new generation over the last three years has come from renewables. Wall Street bankers and investment firms have partnered up with renewable energy companies from all over the world to chase the billions of dollars available if the companies will pick this form of energy favored by politicians and bureaucrats across the globe—including the state of Texas.

The Energy Alliance has previously published summaries of our estimates of the costs of renewable energy. This is the first time, however, we have published year by year estimates. These numbers will allow interested parties to have a full understanding of the costs of renewable energy subsidies, tax credits/abatements, and benefits being paid for by taxpayers and consumers. Most of our numbers focus on Texas, but we also provide an estimate of federal—but not state and local—costs for the entire United States.

The Cost of State and Local Renewable Energy Subsidies in Texas

It is a common belief that federal tax credits for renewable energy are primarily responsible for the rapid deterioration of the reliability of the Texas grid. However, the truth is more complex than that. It is true that the per kWh subsidies from the federal government drive investment in the grid today. However, it was state and local subsidies, especially the building of the CREZ (Competitive Renewable Energy Zone) transmission lines, that made most of the renewable generation possible. This balance can be seen in the fact that the total amount of state and local subsidies through 2021—$11.9 billion— almost equals the amount of federal subsidies that flowed into Texas during that same period.

State Renewable Subsidies

State subsidies for renewables from 2006-21 will total about $10.3 billion by the end of the year, with another $4.9 billion expected through 2029.

Renewable Energy Credits (REC). Texas' Renewable Portfolio Standard (RPS). was put into place by the Texas Legislature in 1999 and expanded in 2005. It requires retail electric providers (REP) to purchase a certain number of megawatts from renewable generation operating in the state, based on their share of the overall retail market in ERCOT. If a REP opts not to buy the electricity, it can instead buy a renewable energy credit (REC) from the generator to satisfy its responsibility. Renewable generators then get to sell their output twice: once as electricity and again as a credit. Our estimates are based on publicly available data on the number of RECs traded in a year. We then estimate their average cost each year. *Estimated cost 2006 - 2021: $600,593,411.*

CREZ Transmission Lines. In 2005, the Texas Legislature required the Public Utility Commission of Texas (PUC) to oversee the development of CREZ transmission "in areas in which renewable energy resources and suitable land areas are sufficient to develop generating capacity from renewable energy technologies." The PUC required construction of 2,376 miles of new transmission rights-of-way to largely benefit wind generation, with the cost to be paid by all Texas electricity consumers. Our estimates are based on publicly available data about the installed cost of the CREZ lines. We then use the standard methodology employed by Texas PUC regulators in transmission rate cases to determine the annual cost of the CREZ lines to consumers. Included in this are assumptions about costs of capital, rates of return, depreciation, etc. *Estimated cost 2006 - 2021: $8,626,320,420.*

Grid Interconnection. Wind and solar farms, like other generators, have to connect to the Texas grid to transmit their electricity. Once a generator is connected to the grid and generation is started, the costs of the interconnection are paid for by Texas consumers. Our estimates are based on publicly available data of the interconnection costs of each wind or solar farm. We then average those costs out over time. *Estimated cost 2006 - 2021: $1,092,266,667.*

Local Renewable Subsidies

Chapter 312 and Chapter 313 Property Tax Abatements/Limitations. The Texas Legislature authorizes local governments to administer property tax abatements under sections 312 and 313 of the Tax Code. Chapter 312 abatement, offered by counties, cities, and special purpose districts, may last up to 10 years in duration and must be conditioned upon improvements being made to the property. The rules for Chapter 313 abatements, offered through school districts, are similar. The Comptroller's 2019 report lists

389 current and executed 313 agreements. Of these, 221—or 57 percent—are for renewable energy projects, which account for only 9.7 percent of the 313 jobs created, an average of 5.4 per project. We use the Comptroller's reports on 312 and 313 agreements to aggregate the cost of these abatements to local governments. *Estimated cost 2006 – 2021: $1,571,321,249.*

Figure 3: Texas State and Local Renewable Subsidies ($) (2006 – 2029)						
Year	**REC**	**CREZ**	**Interconnection**	**313**	**312**	**Total**
2006	18,904,388		68,266,667	4,030,710	927,063	**92,128,828**
2007	22,616,703		68,266,667	8,543,444	1,964,992	**101,391,806**
2008	61,282,116		68,266,667	17,397,160	4,001,347	**150,947,289**
2009	47,725,212		68,266,667	27,002,279	6,210,524	**149,204,682**
2010	57,707,425		68,266,667	46,639,339	10,727,048	**183,340,478**
2011	67,435,074	894,760,433	68,266,667	62,522,393	14,380,150	**1,107,364,716**
2012	60,653,819	872,564,329	68,266,667	76,735,791	17,649,232	**1,095,869,837**
2013	55,380,265	850,395,825	68,266,667	76,938,486	17,695,852	**1,068,677,094**
2014	18,347,591	828,255,474	68,266,667	54,479,356	12,530,252	**981,879,340**
2015	25,305,713	806,143,837	68,266,667	57,490,604	13,222,839	**970,429,660**
2016	22,406,510	784,061,490	68,266,667	98,825,981	22,729,976	**996,290,622**
2017	25,222,036	762,009,017	68,266,667	115,405,562	26,543,279	**997,446,561**
2018	31,503,638	739,987,018	68,266,667	113,915,799	26,200,634	**979,873,756**
2019	31,663,423	717,996,100	68,266,667	148,005,531	34,041,272	**999,972,993**
2020	27,219,750	696,036,887	68,266,667	181,729,080	41,797,688	**1,015,050,072**
2021	27,219,750	674,110,011	68,266,667	187,835,436	43,202,150	**1,000,634,014**
2022	27,219,750	652,216,119		193,042,386	44,399,749	**916,878,004**
2023	27,219,750	630,355,872		205,309,908	47,221,279	**910,106,809**
2024	27,219,750	608,529,942		186,363,657	42,863,641	**864,976,990**
2025	27,219,750	586,739,016		166,965,354	38,402,031	**819,326,151**
2026	27,219,750	573,683,601		136,247,481	31,336,921	**768,487,753**
2027	27,219,750	560,664,604		120,109,068	27,625,086	**735,618,507**
2028	27,219,750	547,682,753		101,289,663	23,296,622	**699,488,788**
2029	27,219,750	534,738,790		81,789,570	18,811,601	**662,559,711**
Total	**818,351,411**	**13,320,931,117**	**1,092,266,667**	**2,468,614,038**	**567,781,229**	**18,267,944,460**

Sources: ERCOT; PUCT; Texas Comptroller;

The Cost of Federal Renewable Energy Subsidies in Texas

Most federal subsidies for renewables--in Texas and nationally—come in the form of tax credits. For a brief period after the Great Recession, some direct payments were also made. The details of each of these are below. We use the Joint Committee on Taxation's reports, Estimates of Federal Tax Expenditures, to determine the total U.S. annual costs of the PTC and the ITC. And we use a report from the U.S. Department of Treasury to determine the total U.S. annual cost of the stimulus payments. We then apportion those costs to ERCOT based on ERCOT's annual share of U.S. wind and solar generation. Beyond 2024, we project the costs based on life of current tax credits.

The Production Tax Credit (PTC). The PTC, first adopted in 1992, is the primary incentive behind wind energy development in the United States. By 2016, the PTC reached 2.4¢ per kWh which, pretax, equated to 3.5¢. At this value, the PTC equaled or exceeded the wholesale price of electricity in many parts of the country. *Estimated cost 2006 – 2021: $9,013,990,081.*

Figure 4: Texas Federal Renewable Subsidies ($) (2006 – 2029)				
Year	**TX PTC Cost**	**TX ITC Costs**	**Stimulus (1603)**	**Total**
2006	126,829,020			**126,829,020**
2007	174,658,688			**174,658,688**
2008	175,839,380			**175,839,380**
2009	189,728,055		482,286,859	**672,014,914**
2010	277,345,875		381,372,435	**658,718,310**
2011	279,612,640		766,210,170	**1,045,822,810**
2012	297,386,130		363,230,536	**660,616,666**
2013	299,232,278			**299,232,278**
2014	264,270,588	29,845,426		**294,116,015**
2015	540,674,940	16,260,320		**556,935,260**
2016	836,378,010	24,121,068		**860,499,077**
2017	1,107,564,477	76,002,547		**1,183,567,024**
2018	1,280,610,000	159,716,504		**1,440,326,504**
2019	1,180,170,000	208,841,941		**1,389,011,941**
2020	1,079,730,000	229,416,905		**1,309,146,905**
2021	903,960,000	536,358,149		**1,440,318,149**
2022	677,970,000	570,190,029		**1,248,160,029**
2023	602,640,000	531,313,436		**1,133,953,436**
2024	577,530,000	111,446,233		**688,976,233**
2025	527,310,000	53,131,344		**580,441,344**
2026	502,200,000	28,509,501		**530,709,501**
2027	351,540,000			**351,540,000**
2028	175,770,000			**175,770,000**
2029	100,440,000			**100,440,000**
Total	**12,529,390,081**	**2,575,153,404**	**1,993,100,000**	**17,097,643,485**

Sources: Joint Committee on Taxation; US Dept of Treasury.

The Investment Tax Credit (ITC). The ITC is currently a 30 percent federal tax credit claimed against the tax liability of residential (Section 25D) and commercial and utility (Section 48) investors in solar energy property. The Section 25D residential ITC allows the homeowner to apply the credit to his/her personal income taxes. In the case of the Section 48 credit, the business that installs, develops, and/or finances the project claims the credit. *Estimated cost 2006 – 2021: $1,280,562,861.*

Stimulus Payments. As part of the federal stimulus payments made by the federal government in response to the Great Recession, §1603 of the American Recovery and Reinvestment Tax Act (ARRTA) program offered renewable energy project developers cash payments in lieu of investment tax credits (ITC). These payments have come to an end. *Estimated cost 2006 – 2021: $1,993,100,000.*

The Total Cost of Renewable Energy Subsidies in Texas

Added together, renewable energy subsidies going to generators in Texas will total about $24.2 billion from 2006 through the end of this year. We project—at the present—that taxpayers and consumers will be

out another $11.2 billion through 2029. However, that figure could dramatically increase because of a number of initiatives in the works in Congress and the Biden Administration.

Figure 5: Texas Local, State, & Federal Renewable Subsidies ($) (2006 – 2029)				
Year	**Local**	**State**	**Federal**	**Total**
2006	4,957,773	87,171,055	126,829,020	**218,957,848**
2007	10,508,436	90,883,370	174,658,688	**276,050,494**
2008	21,398,507	129,548,783	175,839,380	**326,786,670**
2009	33,212,803	115,991,879	672,014,914	**821,219,596**
2010	57,366,387	125,974,092	658,718,310	**842,058,789**
2011	76,902,543	1,030,462,174	1,045,822,810	**2,153,187,527**
2012	94,385,023	1,001,484,815	660,616,666	**1,756,486,504**
2013	94,634,338	974,042,757	299,232,278	**1,367,909,373**
2014	67,009,608	914,869,732	294,116,015	**1,275,995,355**
2015	70,713,443	899,716,217	556,935,260	**1,527,364,920**
2016	121,555,957	874,734,667	860,499,077	**1,856,789,701**
2017	141,948,841	855,497,720	1,183,567,024	**2,181,013,585**
2018	140,116,433	839,757,323	1,440,326,504	**2,420,200,260**
2019	182,046,803	817,926,190	1,389,011,941	**2,388,984,934**
2020	223,526,768	791,523,304	1,309,146,905	**2,324,196,977**
2021	231,037,586	769,596,428	1,440,318,149	**2,440,952,163**
2022	237,442,135	679,435,869	1,248,160,029	**2,165,038,033**
2023	252,531,187	657,575,622	1,133,953,436	**2,044,060,245**
2024	229,227,298	635,749,692	688,976,233	**1,553,953,223**
2025	205,367,385	613,958,766	580,441,344	**1,399,767,495**
2026	167,584,402	600,903,351	530,709,501	**1,299,197,254**
2027	147,734,154	587,884,354	351,540,000	**1,087,158,508**
2028	124,586,285	574,902,503	175,770,000	**875,258,788**
2029	100,601,171	561,958,540	100,440,000	**762,999,711**
Total	**3,036,395,267**	**15,231,549,195**	**17,097,643,485**	**35,365,587,953**

One thing in particular to watch are new subsidies for battery storage. While batteries are not renewable generation, they key point is that that batteries do not generate electricity at all. Batteries are extremely expensive. And extremely inefficient. Combining those two, Robert Bryce calculates "storing the 9.6 terawatt-hours of electricity needed for California to get 80 percent of its electricity from renewables would require the state to install more than seven hundred million Power walls" (Tesla's latest battery). Texas would need even more batteries. Large scale use of batteries on an electricity grid will never be economically viable. The only possible reason for attempting this would be to make up for the unreliability of wind and solar.

The Cost of Federal Renewable Energy Subsidies Across the U.S.

This paper focuses on the cost of renewable energy subsidies in Texas. Yet renewable energy subsidies are spread across the United States. As noted above, they generally come in the form of tax credits for wind (the PTC) and solar (the ITC), with some direct payments in the past. Their costs are tracked by a

number of federal sources. Our estimates for the costs of the PTC, ITC, and stimulus payments are based on the publicly available data as noted above. Our estimates of the direct and research and development costs are based on a report from Life:Powered. These estimates are only of the federal subsidies, and do not include the billions of dollars of subsidies from state and local governments across the U.S., including Texas. *Estimated cost 2006 – 2021: $95,037,302,010.*

Figure 6: U.S Federal Renewable Subsidies ($) (2006 – 2029)					
Year	**PTC US**	**ITC US**	**Stimulus (1603)**	**Direct/R&D**	**Total**
2006	646,800,000	12,600,000		160,387,483	**819,787,483**
2007	505,500,000	12,300,000		256,577,878	**774,377,878**
2008	600,000,000	70,000,000		271,206,121	**941,206,121**
2009	700,000,000	380,000,000	966,433,234	825,389,975	**2,871,823,209**
2010	1,000,000,000	130,000,000	3,459,423,055	1,454,409,679	**6,043,832,734**
2011	1,100,000,000	700,000,000	3,314,637,270	1,090,580,720	**6,205,217,990**
2012	1,300,000,000	1,040,000,000	4,766,263,073	996,124,555	**8,102,387,628**
2013	1,400,000,000	1,950,000,000	5,142,265,625	917,957,370	**9,410,222,995**
2014	1,200,000,000	1,870,000,000	2,564,658,452	673,380,355	**6,308,038,807**
2015	2,300,000,000	1,010,000,000	1,942,772,660	1,012,878,071	**6,265,650,731**
2016	3,300,000,000	1,190,000,000	91,224,116	920,160,351	**5,501,384,467**
2017	4,200,000,000	1,850,000,000	970,759,649	886,468,722	**7,907,228,371**
2018	5,100,000,000	3,180,000,000	17,405,663	650,237,933	**8,947,643,596**
2019	4,700,000,000	3,400,000,000		338,500,000	**8,438,500,000**
2020	4,300,000,000	4,000,000,000			**8,300,000,000**
2021	3,600,000,000	4,600,000,000			**8,200,000,000**
2022	2,700,000,000	4,400,000,000			**7,100,000,000**
2023	2,400,000,000	4,100,000,000			**6,500,000,000**
2024	2,300,000,000	860,000,000			**3,160,000,000**
2025	2,100,000,000	410,000,000			**2,510,000,000**
2026	2,000,000,000	220,000,000			**2,220,000,000**
2027	1,400,000,000				**1,400,000,000**
2028	700,000,000				**700,000,000**
2029	400,000,000				**400,000,000**
Total	**49,952,300,000**	**35,384,900,000**	**23,235,842,797**	**10,454,259,213**	**119,027,302,010**

Sources: Joint Committee on Taxation; US Dept of Treasury; Life:Powered

Conclusion

Renewable energy will never be able to power the world. As one of the oldest sources of power on earth, it has proven itself to be lar less efficient and far more expensive than modern fuels like oil, natural gas, coal, and nuclear. Any future gains in efficiency or cost will be marginal. Subsidies, whether from federal, state, or local governments, will never change that—no matter how many billions of dollars Americans are forced to pay the big multinational businesses that are harming the electric grid.

Bill Peacock is the policy director of The Energy Alliance. He conducts research for the Alliance on issues related to energy policy. These include federal and state regulation of electricity markets, the Texas electricity market, renewable energy, federal, state, and local energy subsidies, and the relationship between free markets, regulatory policy, and economic prosperity.

The Energy Alliance is a project of the Texas Business Coalition to raise awareness of issues about the energy market that matter most to consumers: Reliability, Affordability, and Efficiency.

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