THE HIGH COST OF RENEWABLE ENERGY SUBSIDIES

The first in a four-part series examining the harm caused by renewable energy subsidies in Texas.

Prepared by Bill Peacock

July 2020

ENERGY ALLIANCE

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- Texas began subsidizing renewable energy in 1999 with renewable energy credits (RECs)
- In 2005, the Texas Legislature expanded RECS authorized the PUC to build the $13 billion CREZ lines for wind and solar
- Since 2006, wind and solar generators in Texas have received about $19.4 billion from taxpayers and consumers
- The distortions caused by the rapid growth of wind and solar generation are significantly decreasing the reliability of the electricity grid

Executive Summary

Federal, state, and local subsidies for renewable energy are undermining the reliability of the Texas electricity market. And Texans are paying a high price for the privilege of a less reliable market. Since 2006, wind and solar generators in Texas have received about $19.4 billion from taxpayers and consumers. It is estimated they will receive another $15.9 billion over the next decade. Texas policymakers should eliminate subsidies for renewable energy in order to ensure an energy abundant future for Texas.

Introduction

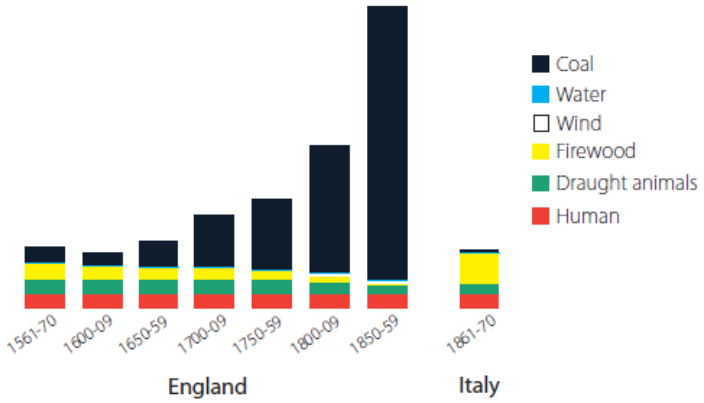
In his new book, *A Question of Power*, Robert Bryce explains the tremendous power and benefits we can access when the natural resources of this world are efficiently converted into electricity:

Electricity has conferred on us a bit of the creative power that God showed in Genesis. With the flip of a switch, we can kill the anti-God and banish darkness. With a touch of our mobile phones we can ensure safe passage through a strange hotel or garage at night. With quadrillions of electrons at our beck and call, we can create as much light as we want.

America has been blessed to be a leading producer and user of energy in the world. Our increased energy use has brought greater prosperity to America and the world. Though it has not always been like this.

For thousands of years, most humans struggled to have enough energy to keep themselves warm and fed. Energy was largely provided by humans, animals, and from inefficient renewable sources, i.e., water, wind, solar, and wood. Only the wealthiest could afford to harness enough energy to consistently protect themselves from the constant assaults of nature in the form of heat, cold, floods, famine, etc.

Figure 1: England Led the Industrial Revolution by Turning Coal into Prosperity



Source: E.A. Wrigley, Energy and the English Industrial Revolution, p. 95.

Then, by about 1800, parts of Western Europe, America and other areas developed the necessary protections for private property and amassed enough capital to allow the building of the extensive and expensive infrastructure—which we take for granted today—necessary to take advantage of fossil fuels by converting them to mechanical energy. Almost overnight, it seemed, a new energy abundance made it possible for the middle class and even the poor to experience a standard of living previously reserved for the wealthy. As Kathleen Hartnett White explains,

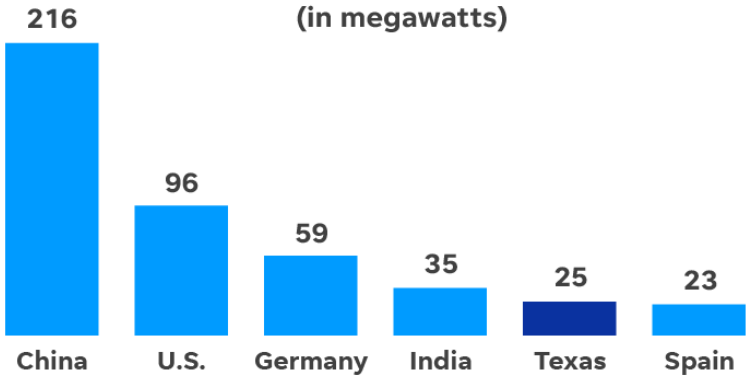
> fossil fuels, as a necessary condition of the Industrial Revolution, made modern living standards possible and vastly improved living conditions across the world. Humanity's use of fossil fuels has released whole populations from abject poverty.

As a result of the rapid growth in the use of coal, oil, and natural gas, renewable sources of energy basically disappeared from use for close to 200 years in the developed world. Over the last 30 years or so, however, there has been concerted and expensive effort to eliminate the use of fossil fuels and replace them with renewable energy, the inefficient energy sources they had displaced. This effort has come at a high cost to Texans.

Renewable Energy Subsidies in Texas

A commonly noted factoid is that as a stand-alone country, Texas would be the 10th largest economy in the world. Perhaps less well known is the fact that it would rank fifth in the world for wind power capacity. The growth of wind generation in Texas seemingly came out of nowhere. But the explanation is quite simple.

Figure 2: Top Wind Producers 2018



Source: USA Today

In 1999, Texas policymakers started a process that within a few years would give Texas the most competitive energy market in the world. Prices, not government mandates, were the main determinant for whether generators would profit from building new generation. With a few speed bumps along the way, the market flourished, providing Texans with an affordable and reliable supply of electricity.

The foundation for wind's rapid growth was established about the same time. In 1999, the Texas Legislature adopted a renewable portfolio standard that forced retail electric provided to purchase renewable energy or pay for renewable energy credits (RECs). Renewable energy generation also was eligible for local property tax abatements in chapters 312 (counties, cities, and special districts) and 313 (school districts) of the Texas Tax Code. The biggest factor in promoting renewables, however, came in 1992 from the federal government in the form of tax credits for wind and solar generation. With these subsidies, renewable generators have taken advantage of Texas' competitive market to undercut their competitors on price and force their way into the market, sometimes selling far below their costs or

actually paying people to take electricity off their hands to earn the tax credits. In most cases, this would be called predatory pricing and be investigated for antitrust violations. But this practice has been ignored when it comes to renewable energy.

Figure 3: Renewable Energy Subsidies in Texas 2006-2019				
	Federal	**State**	**Local**	**Total**
Production Tax Credit (wind)	7,030,300,081			
Investment Tax Credit (solar)	514,787,806			
Stimulus Payments	1,993,100,000			
CREZ Transmission Lines		7,256,173,522		
Grid Interconnection		955,733,333		
Renewable Portfolio Standard		546,153,911		
Chapter 312 Abatements			208,824,460	
Chapter 313 Tax Limitations			907,932,435	
Total Texas Renewable Subsidies	**9,538,187,887**	**8,758,060,766**	**1,116,756,895**	**19,413,005,548**
Sources: ERCOT; PUCT; Texas Comptroller; Joint Committee on Taxation; US Dept of Treasury; Life:Powered				

Renewable energy started to take off in Texas around 2006, especially in the form of wind energy. Solar energy took longer but is now rapidly growing in Texas. Since 2006, subsidies for wind and solar power generators have totaled about $19.4 billion. These subsidies are paid for by taxpayers and consumers—mainly from Texas, on top of the $36 billion Texans already pay for electricity each year.

The following provides a brief overview of the subsidies that renewable energy generators receive in Texas.

Federal Renewable Subsidies

The Production Tax Credit. The PTC, first adopted in 1992, is widely seen as 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. Under the new 21 percent corporate tax rate, the PTC can still carry a pretax value as high as 3.0¢/kWh. Tax equity including the PTC and depreciation now generally account for over 50 percent of the capital needed to construct a typical wind facility.

The Investment Tax Credit. The Investment Tax Credit (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. This credit is used when homeowners purchase solar systems outright and have them installed on their homes. In the case of the Section 48 credit, the business that installs, develops, and/or finances the project claims the credit.

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). The value of an award was equivalent to 30% of the project's total eligible cost basis in most cases. Qualifying technologies included wind, solar, and other renewable energy sources. These payments have come to an end.

State Renewable Subsidies

Renewable Portfolio Standard. Unlike the PTC, Texas' Renewable Portfolio Standard (RPS) is not energy-based. Rather, the Texas Legislature adopted a capacity-based program that requires retail electric providers (REP) to purchase a certain number of megawatts from qualified resources operating in the state, based on their share of the overall retail market in ERCOT. The policy was first adopted in 1999 and later expanded to require 5,000 new megawatts of renewables be installed by January 1, 2015, with a final target of 10,000 megawatts operating by 2025. These levels were surpassed long ago. To ensure compliance, Texas established a renewable energy credit (REC) program as a means of tracking renewable production and ownership through RECs. Both mandatory (under the RPS) and voluntary retirement of RECs take place through the program.

Competitive Renewable Energy Zone (CREZ) Transmission Lines. In 2005, the Texas Legislature required the 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." A final PUC order in October 2008 required the state to build 2,376 miles of new transmission rights-of-way. The cost would be borne by ratepayers. The sole reason for building these lines was to benefit construction of wind generation.

Grid Interconnection. In order to supply power to the grid, renewable energy sources have to enter into interconnection agreements with existing Transmission Service Providers (TSPs). Interconnection agreements oblige TSPs "to plan, license, engineer, design, procure equipment and materials, and construct" the interconnection. Wind and solar farms, like other generators, initially guarantee payment of these costs to the TSPs, but once the project is connected and generation is started, the costs are forced onto Texas consumers.

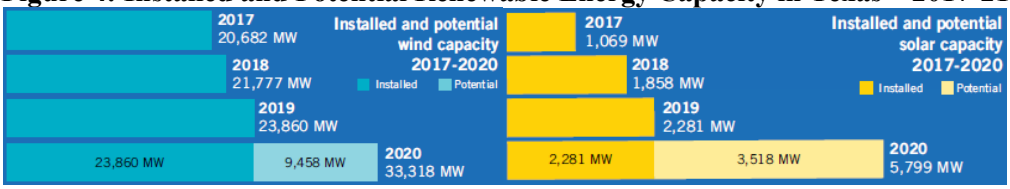
Local Renewable Subsidies

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. Tax abatements are only able to be offered in a "reinvestment zone," which may encompass a number of properties or the property of a single private entity for which abatement is being sought. 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.

The above descriptions are from The Cost of Renewable Energy Subsidies in Texas, published by the Texas Public Policy Foundation.

There are more costs coming to Texans because of renewable subsidies. The market distortions caused by the subsidies, along with other factors, have for the most part pushed new coal, natural gas, and nuclear generation out of the Texas market. As seen in Figure 4, wind and solar power are experiencing rapid growth.

Figure 4: Installed and Potential Renewable Energy Capacity in Texas – 2017-21



Source: ERCOT

Figure 5 provides an estimate of the cost of renewable energy subsidies in Texas for the next decade. These numbers do not take into account the cost of the subsidies for the new generation coming online in 2020 and future years. The costs continue to climb. In 2020, the subsidies are estimated to exceed $2.3 billion. The total cost over the next ten years will exceed $15.9 billion. That would bring the total cost of renewable subsidies in Texas from 2006 through 2029 to more than $35 billion.

Figure 5: Estimate of Renewable Energy Subsidies in Texas 2020-2029

	Federal	State	Local	Total
Production Tax Credit (wind)	5,499,090,000			
Investment Tax Credit (solar)	2,060,365,598			
CREZ Transmission Lines		6,064,757,594		
Grid Interconnection		136,533,333		
Renewable Portfolio Standard		272,197,500		
Chapter 312 Abatements			358,956,769	
Chapter 313 Tax Limitations			1,560,681,603	
Total Texas Renewable Subsidies	**7,559,455,598**	**6,473,488,428**	**1,919,638,372**	**15,952,582,397**

Sources: ERCOT; PUCT; Texas Comptroller; Joint Committee on Taxation;

Federal Renewable Subsidies

Federal subsidies for renewable energy are not only provided in Texas. Renewable generators across the country are eligible to receive them. In addition to the subsidies listed above, these subsidies include a number of direct payments and research and development grants to both wind and solar. Some of these are likely also given to Texas recipients, but it is difficult to track these payments by state. Similarly, these payments are not projected in future years, though they are almost certain to continue. Figure 6 shows the total cost of these renewable energy subsidies to U.S. taxpayers and consumers will exceed $119 billion.

Figure 6: Federal Renewable Energy Subsidies 2006-2029

	2006-2019	2020-2029	Total
Production Tax Credit (wind)	28,052,300,000	21,900,000,000	49,952,300,000
Investment Tax Credit (solar)	16,794,900,000	18,590,000,000	35,384,900,000
Direct Payments	28,833,826,052		28,833,826,052
Research and Development	4,856,275,958		4,856,275,958
Total	**78,537,302,010**	**40,490,000,000**	**119,027,302,010**

Sources: ERCOT; PUCT; Texas Comptroller; Joint Committee on Taxation; US Dept of Treasury; Life:Powered

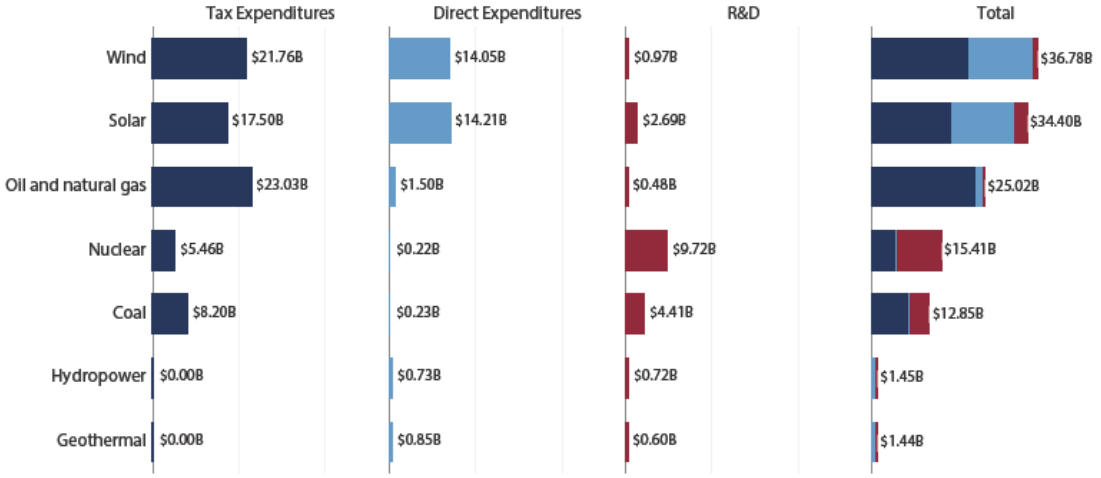
Renewable Energy Has No Future

Renewable energy was quickly put out of business by fossil fuels for a reason. During the Industrial Revolution, "[t]he application of fossil fuels to a huge range of devices and machines … increased manufacturing productivity by leaps and bounds and reduced hard labor. The steam engine and derivative devices mechanized production that previously was the hard labor of human or animal muscle. With mechanization, productive efficiency soared, and so did energy efficiency" (White). Renewable energy cannot come close to matching that efficiency. It takes more land and resources to turn wind and solar

into mechanical energy that is required for fossil and nuclear fuels. Intermittency is also a major problem for wind and solar. When the wind is not blowing or the sun is not shining, no energy is produced at all. Batteries, which many claim will save renewables from intermittency, cannot fix this problem. Batteries themselves are highly inefficient on the scale needed for industrial storage and add more costs to generation sources that are already cost uncompetitive.

Proponents of wind energy say otherwise, saying if subsidies for fossil fuels, which they claim vastly outweigh those for renewables, were eliminated, renewable energy would be competitive. But recent groundbreaking research from Brent Bennett, et al. reveals the lie to that claim. Over the last decade, federal subsidies for wind and solar energy totaled $71.2 billion compared to only $53.3 billion for oil, natural gas, nuclear energy, and coal combined. If it were not for the massive amounts of federal, state, and local subsidies, very few wind and solar farms would exist in Texas or the United States today.

Figure 7: Comparison of Energy Subsidies: 2010-19



Source: Brent Bennett, et al.

Conclusion

The cost of renewable energy subsidies does not come only in dollar terms. The distortions caused by the rapid growth of these inefficient resources are significantly deceasing the reliability of the electricity grid in Texas and the United States. Both the high costs and the poor reliability contribute to slower economic growth. And people who find themselves surrounded by wind turbines or solar panels frequently find the joy sapped out of their lives. Despite recent setbacks because of surplus oil and gas production and COVID-19, the future on energy development in the United States is bright. The remaining step to ensure an energy abundant future is too eliminate subsidies for renewable energy.

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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