

The Cost of the Production Tax Credit and Renewable Energy Subsidies in Texas

by Bill Peacock
& Josiah Neeley

Key Points

- Payments under the federal production tax credit (PTC) in Texas will total \$4.6 billion through 2015 if the PTC is extended.
- Wind subsidies are disrupting Texas' long term electric reliability at a cost of billions of dollars to Texas consumers.
- Congress should allow the PTC to expire at the end of 2012.

Executive Summary

The Production Tax Credit (PTC), a federal tax credit which subsidizes the production of renewable energy, is set to expire at the end of 2012. The potential loss of the PTC is sending shock waves through the renewable industry; for instance, new construction of wind generation has slowed to a crawl. This shouldn't be surprising since the PTC pays renewable energy generators as much as \$22 per megawatt hour (MWh).

Whatever benefits accrue through the PTC to the renewable energy sector, our research shows that everyone else suffers. The continuation of the PTC will cause disruptions in electricity markets and impose higher costs on consumers and taxpayers. The negative consequences of the PTC are particularly apparent in Texas, which has more wind-generated electricity than any other state.

The PTC's current annual cost in Texas is approximately \$622 million. If continued, the cost of the PTC in Texas alone would run about \$4.6 billion through the 10 years ending in 2015. Taken altogether, renewable energy subsidies in Texas will cost taxpayers and consumers about \$13.4 billion over that same period.

Additionally, renewable energy subsidies—particularly the PTC—are both disrupting and imposing significant costs on Texas' electricity market. The PTC is one of the major factors causing concerns about whether Texas' energy-only market can provide sufficient levels of resource adequacy.

Our research leads us to conclude that because of the adverse effects renewable subsidies have on consumers, taxpayers, and the Texas electricity market, Congress should allow the PTC to expire.

The Cost of Renewable Energy Subsidies in Texas

The PTC is just one of the subsidies available to renewable energy producers in Texas. Other subsidies available in Texas include Renewable Energy Credits (RECs) under the state's Renewable Portfolio Standard, federal grants under the 2009 stimulus bill, and access to transmission through the Competitive Renewable Energy Zone (CREZ) program.

As the renewable industry is pushing hard for Congress to extend the PTC, it is worth examining the cost of renewable subsidies in Texas, which in 2011 produced a nation leading total of 28,295,000 MWh from wind.¹

Since 2006, renewable subsidies in Texas have totaled more than \$7.2 billion (*see table next page*). In 2012 alone, the PTC is estimated to cost taxpayers \$622 million while RECs are estimated to increase consumers' electricity bills by \$67 million.

CREZ costs to date attributable to wind are approximately \$2.45 billion. The completion of the lines is estimated to cost another \$4.1 billion in the years ahead.

Subsidies from the 2009 federal stimulus are also sizable. Approximately \$1.65 billion in fed-

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Ten Year Cost of Renewable Subsidies in Texas: 2006-2015* Total: \$13.41 billion

Year	Renewable Energy Credits		Production Tax Credit		CREZ Costs To Date/Future	Stimulus Costs
	Retired	Cost	Wind MWh	Cost		
2006	4,200,975	\$18,904,388	6,341,451	\$126,829,020		
2007	5,025,934	\$22,616,703	8,732,934	\$174,658,688		
2008	13,618,248	\$61,282,116	15,237,876	\$304,757,529		
2009	15,908,404	\$47,725,212	18,809,812	\$383,720,165		\$482,286,859
2010	20,984,518	\$57,707,425	26,800,000	\$557,654,400		\$381,372,435
2011	24,372,369	\$67,024,015	28,295,000	\$622,490,000		\$766,210,170
2012	24,372,369	\$67,024,015	28,289,651	\$622,372,326	\$2,462,064,014	\$21,585,305
2013	24,372,369	\$67,024,015	28,289,651	\$622,372,326	\$4,094,058,032	
2014	24,372,369	\$67,024,015	28,289,651	\$622,372,326		
2015	24,372,369	\$67,024,015	28,289,651	\$622,372,326		
Total	181,599,924	\$543,355,917	217,375,679	\$4,659,599,105	\$6,556,122,046	\$1,651,454,769

Sources: ERCOT; U.S. Department of Energy; and calculations by the authors

eral grants went to wind farms, the production of wind turbine components, or to help Texas deal with the increased amount of wind power on the electrical grid.²

Despite the mature nature of the wind industry, the cost of renewable subsidies in Texas is increasing. If the PTC is continued, the 10 year cost of renewable subsidies in Texas should total about \$13.4 billion, an average cost of \$1.34 billion a year over the period.

The PTC and Resource Adequacy in Texas

The cost of these direct subsidies, however, is only a portion of the total effect of renewable energy subsidies in Texas. Additionally, one must consider the costs imposed on the Texas electricity market.

It is well known that Texas is undergoing a major debate over whether price signals are adequate to maintain resource adequacy; less well known is that a significant portion of the problem with price signals can be laid directly on the doorstep of subsidies for wind generation.

The PTC allows wind generators to bid electricity into the market at negative prices. In other words, generators can use proceeds from the PTC to pay people to take electricity from them and still make a profit. When wind-generated

electricity is bid into the market at a negative price, all other sources of generation must match that price or risk getting knocked off the grid. This decreases the profitability of non-wind generation and gives companies fewer resources and incentives to invest in new capacity. Over time, this will serve to degrade the reliability of the Texas grid, increasing the risk of blackouts.

Donna Nelson, chairman of the Public Utility Commission of Texas (PUCT) further explains this:

Federal incentives for renewable energy ... have distorted the competitive wholesale market in ERCOT. Wind has been supported by a federal production tax credit that provides \$22 per MWh of energy generated by a wind resource. With this substantial incentive, wind resources can actually bid negative prices into the market and still make a profit. We've seen a number of days with a negative clearing price in the west zone of ERCOT where most of the wind resources are installed. ... The market distortions caused by renewable energy incentives are one of the primary causes I believe of our current resource adequacy issue... [T]his distortion makes it difficult for other generation types to recover their cost and discourages investment in new generation.³

* CREZ costs listed in 2012 represent all costs incurred from inception through the July CREZ Progress Report No. 8. Those listed in 2013 represent all future costs scheduled to be incurred after the July report. We attribute 95 percent of CREZ cost to wind, to allow for some general benefit from the CREZ lines through reduced congestion on the grid.

The Northbridge Group recently published a study confirming the distortions in the market caused by the PTC. The Northbridge study reports that the five-fold increase in wind generation since 2006 parallels an increase in negative pricing. In the ERCOT West Zone, negative pricing occurred between 8 percent and 13 percent of the time from 2008 to 2011.⁴

Negative prices cause both short and long term harmful effects. According to Northbridge, negative prices:

- Disrupt the operation of physical electricity systems and markets by sending distorted hourly price signals to other market participants whose resources are needed to meet demand reliably and cost effectively.
- Distort competitive markets, disrupt normal operation of the system, raise costs, and imperil reliability.
- Undermine essential fossil generation operating at minimum levels during low demand periods [because they] make operating fossil generation at minimum levels extremely expensive as operators must pay not only for their fuel costs, but also just to generate.
- Distort the price signals developers and investors rely on to determine what, when, and where to build generation

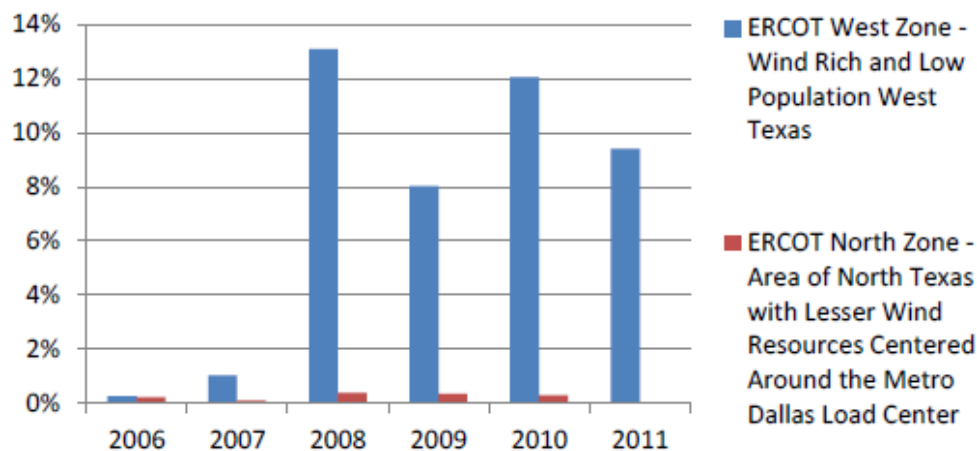
and transmission [and] lower the expected future revenues for all types of base load and intermediate generation that does not receive production-based subsidies.⁵

The disruption of the Texas electricity market by negative wind prices is only going to get worse as more transmission lines are built and frequency of negative pricing throughout the state comes to resemble the West Zone. As the Brattle Group noted in a recent report:

Wind generation puts downward pressure on energy prices in all parts of ERCOT whenever the wind blows. However, the effect is greatest in the West Zone, where more than 70 percent of ERCOT's wind capacity is located ... The CREZ project is primarily designed to move electricity generated by wind and other renewable resources from remote parts of Texas (i.e., West Texas and the Texas Panhandle) to the more heavily-populated areas of Texas (e.g., Austin, Dallas-Fort Worth, and San Antonio). This transmission expansion will also increase Texas' ability to build more wind generation, but may in the future erode non-wind generator economics more by depressing energy prices in the other three zones.⁶

It is difficult to quantify the cost of the PTC's distortions on the market. But one method of doing so would be to look at the cost of solving Texas' resource adequacy challenges.

Percentage of Hours with Negative Real-Time Electric Energy Prices in ERCOT, 2006-2011



Source: The Northbridge Group

PUCT Commissioner Ken Anderson recently did some “back of the envelope” calculations of the cost of imposing a PJM-style capacity market on ERCOT. He came up with a cost of over \$3.6 billion per year.⁷ The portion of this cost that can be attributed to renewable energy subsidies is debatable, but these costs could easily exceed the costs of the direct subsidies, more than doubling consumer costs.

Conclusion

At a bare minimum, renewable energy subsidies in Texas run on average about \$1.3 billion a year, with the PTC taking up nearly half of that cost. Because of the PTC’s per megawatt hour subsidy, it causes substantially more distortion to the market than other renewable subsidies. A credible case could be made that the PTC is more responsible than any other single factor in causing ERCOT’s resource adequacy challenges.

Competition is working in Texas. It is government interference with the market—led by the PTC—that is causing the current concerns over reliability. Texas need not abandon wholesale competition and move toward a capacity market. But there will likely be efforts to do so as long as the PTC is in place. Congress should allow the PTC to expire; if not, consumers, taxpayers, and Texas’ world-class energy-only electricity market will pay the price. ★

¹ Electric Reliability Council of Texas, *Energy by Fuel Type for 2011* (9 Jan. 2012).

² Texas Recovery Act Snapshot, 1603 Program: Payments for Specified Energy Property in Lieu of Tax Credits, U.S. Department of Energy.

³ Donna Nelson, testimony before the Texas Senate Natural Resources Committee (6 Sept. 2012).

⁴ Frank Huntowski, Aaron Patterson, and Michael Schnitzer, *Negative Electricity Prices and the Production Tax Credit*, The Northbridge Group (Sept. 2012) 10.

⁵ Huntowski, et al, *Negative Electricity Prices*, 15-17.

⁶ Samuel Newell, Kathleen Spees, Johannes Pfeifenberger, Robert Mudge, Michael DeLucia, and Robert Carlton, “ERCOT Investment Incentives and Resource Adequacy,” The Brattle Group (1 June 2012) 20-21.

⁷ Energy Choice Matters, “Anderson: ‘Back of The Envelope’ Calculation Shows \$3.6 Billion in Costs When Applying PJM-Style Capacity Market to ERCOT” (30 July 2012).

