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A Texas Capacity Market: The Push for Subsidies

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Findings

- Capacity markets are a redistribution scheme that relies on taxes, subsidies, and penalties to recreate the incentives naturally found in an energy-only market.
- Capacity markets will result in at least $4 billion per year of subsidies with no guarantee that the extra subsidies will boost capacity.
- Capacity markets offer Texas no appreciable benefit that it couldn't get from its energy-only market at a cheaper, more efficient price.

This is the third in a series of papers examining the debate over the reliability of the Texas electricity market.

Introduction

Texas boasts one of the greatest energy markets in the world. Its robust competition has brought about billions of dollars in investment in new energy generation, strong reserves of affordably priced electricity, and dozens of energy providers, ensuring that Texans not only can keep the lights on but that they can do so at prices well below the national average. (Peacock 2013)

Yet, despite years of success, many policymakers have begun to question whether Texas' energy-only market can continue to deliver adequate generation in the years ahead. They worry that low investment and projected shortfalls in ERCOT's capacity reserve margin indicate that Texas's competitive market can no longer induce sufficient incentives for new peak generation.

Instead of looking at current regulations that distort the market, recent debate has centered on installing a top-down, system-wide capacity market that subsidizes the operational costs of energy production in the hopes that energy companies will invest in new capacity. Advocates claim that the centralized market will offer reliability both in terms of averting disruptions in the grid and furnishing generators a reliable source of income.

Past experience, however, shows that capacity markets, at best, have a threadbare track record at boosting energy investment. Its cumbersome regulations cannot accurately recreate the incentives naturally found in the market, resulting in a multi-billion dollar redistribution scheme whose greatest success will be at inflating electricity rates all the while shifting the risks of bad business decisions onto consumers. Capacity markets provide ratepayers no appreciable benefit that they cannot get from an energy-only market at a more reasonable price. Policymakers would have better success at boosting investment in peak-time energy capacity if they turned instead toward eliminating those government regulations that impede market incentives, such as system-wide offer caps, wind subsidies, and the power to disgorge profit.

With this in mind, this paper seeks to explore the structure, costs, and past "successes" of capacity markets in order to show that they do not represent a good investment for Texas ratepayers, especially when compared to the alleged limitations of the energy-only market and the availability of more efficient solutions. The paper first looks at the structure of capacity markets, observing how their artificial demand curve and imprecise incentives compare to Texas' energy-only market. Next the paper surveys the expected costs that a proposed capacity market would encumber onto Texas ratepayers. The survey uses both Texas-specific numbers as well as the costs associated with other capacity markets. Particular attention will be paid to PJM's capacity market—the regional transmission organization (RTO) that serves all or parts of 13 states in the mid-Atlantic—since it closely resembles the capacity market proposed for Texas and is one of the most mature capacity markets in the country. A future paper will look at the problems associated with capacity markets, including the relationship between high capacity payments and energy investment and inquire whether capacity markets have proven successful at boosting an RTO's energy capacity in light of its multi-billion dollar overhead. The paper concludes that, even if Texas needs additional energy resources, a capacity market is not a cost efficient means of achieving that.

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What is a Capacity Market

In simple terms, a capacity market is a method of redistribution. It redistributes risk away from energy investors to consumers, and it redistributes power away from market participants to regulators.

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Capacity markets work by issuing a series of direct payments, or subsidies, to generators based on the amount of generating capacity they have. These payments are not for the amount of energy they have produced, but the amount of energy they could theoretically produce if their operations were running at peak efficiency and, most important, if that energy were needed. (Kleit and Michaels 2013b) Capacity markets treat the ability to produce energy, and the reliability this allegedly confers on the market, as a separate commodity. (Rose 2011) This means that consumers pay for it in addition to their monthly electricity use. It also means that generators get these payments regardless of how much electricity they actually produce and sell.

The point of a capacity market is not to offer ratepayers an efficient and cheap product, but to assemble enough artificial incentives that will move energy producers to invest in the amount of capacity that regulators, rather than market participants, have deemed sufficient for a region's short-term energy needs. The result is a system where generation companies make a profit merely for existing, and ratepayers assume some of the risks associated with those companies' bad business decisions. It is a stark contrast to Texas' current energy-only market, where electricity generators are paid only for the electricity they sell and bear all the risks of investment.

How is the Need for Capacity Measured?

The specifics of a capacity market are left up to the interests and imagination of regulators. In a traditional market, price-signals induce behavior by conveying information on opportunity costs as well as the value a product has to consumers. Because a change in price will affect the profitability of alternative choices, price-signals provide incentives for market participants to shift towards more gainful behavior. Resource owners invest in goods with higher demand while consumers economize on goods whose relative prices have risen.

Capacity markets, however, do not resemble the traditional definition of markets found in your introductory economics textbook; they do not resemble the definition found in an advance textbook either. In a capacity market, prices do not emerge. They are imposed top-down through an artificially constructed demand curve that is based on a region's estimated resource needs, the estimated cost of entry for new generation plants, and a predictable stream of revenue for energy investors. (Kleit and Michaels 2013c)

Importantly, there is no objective structure for the capacity market's demand curve—the Brattle Group, a consulting firm commissioned to address ERCOT's generation needs, expects considerable controversy over the "shape, slope, and height of the curve"—meaning that the 'value' of additional supply will be determined by an artificial, administrative rule that opens up the energy market to the political and regulatory process as well as a "high risk of ongoing litigation and associated market uncertainties." (Brattle Group 2012; Newell 2012) This is because 'capacity' is an artificial commodity of which there is no natural demand. Regulators, therefore, must fashion a pseudo "market" by commanding energy producers to purchase their product and relying on taxes, subsidies, and penalties to recreate the incentives naturally found in the market. (Rose 2011; Kleit and Michaels 2013a) As a result, even if all interested parties genuinely intend to install the most efficient system, a centralized capacity market will only have a tenuous link to economic efficiency.

Here lies the capacity market's greatest weakness. The capacity market can only mimic the price signals found naturally in an energy-only market, and it can only do so through a cumbersome net of administrative regulations, informed by the limited foresight of a handful of policymakers—this, versus the collective wisdom of millions of market actors responding in real-time to changes in supply and demand. Its artificiality means that prices in a capacity market only align with true scarcity by happenstance. (Kleit and Michaels 2013b) Combined with policymakers' fear of an inadequate energy supply, capacity markets lead to a high

likelihood that energy generators will overinvest in energy capacity. Only in this case, the costs for over-investments are socialized through the system rather than landing on the generation company, and the decision to overinvest is made by regulators rather than the market participants who bear the costs.

How Would a Capacity Market Operate in Texas?

Although capacity markets may assume different forms, the current debate over Texas' energy market orbits around a central capacity market that closely resembles the market run by PJM. Under this model, regulators would host a forward auction that would procure capacity resources three years in advance for one year. In other words, generators would pledge to provide a set amount of capacity for one year, called a commitment period, with a delivery date three years out, called the forward period. (Brattle Group 2012)

In addition, a Texas capacity market would require a mechanism to tailor the amount of capacity commitments made as the delivery date approached since information and foresight are limited, and operational delays as well as changes in transmission, load growth, and demand response could affect the accuracy of the planning reserve margin. The Federal Energy Regulatory Commission (FERC) observed in its 2013 Commission Staff Report that longer forward periods and longer commitment periods, like the ones proposed for Texas, "can result in increased risk for customers" because "they place greater reliance on the accuracy of long-term forecasts of energy prices, demand, and the economy." (FERC 2013) PJM attempts to correct this problem by holding three incremental auctions that allow suppliers to find replacements for the commitments they can no longer fulfill and enable PJM to procure more capacity if the expected peak demand proves higher than originally forecasted. Texas would need to adopt a similar mechanism to smooth over the problems associated with an artificial demand curve, but whether that mechanism will be as successful as the naturally-occurring corrections found in an energy-only market remains in serious doubt.

What Will a Texas Capacity Market Cost?

By all accounts, a capacity market, even if successful, will be an very expensive way to meet Texas' energy needs—hardly surprising when you consider the fact that the very purpose of a capacity market is to increase energy costs paid for by consumers in order to increase the profitability of generators. Rough estimates have put capacity payments in a capacity market somewhere between $3 to $5 billion per year. PUC Commissioner Ken Anderson, using PJM capacity pricing, estimated that imposing a centralized capacity market on ERCOT's load would cost "north of $3.6 billion [per year]. … and that's before anybody pays for energy." (Anderson 2012) According to a study by Charles River Associates, and commissioned by NRG Energy, capacity payments would cost Texas ratepayers, at minimum, $4.7 billion annually. (Plewes and Hieronymus 2013) Put another way, the capacity payments forfeited to generators, regardless of the energy those generators produced, and excluding design and implementation expenses, would amount to over $180 per year for every man, woman, and child in Texas. This is in addition to the price of the electricity actually purchased by users. The end result is that in a centralized capacity market, where risk is socialized, everyone will wind up paying for bad investments.

This can be seen clearly from the experience of PJM customers. PJM installed a centralized capacity market in 2007. Since that time, capacity payments have totaled approximately $54 billion (through the end of 2012). (Sommer and Schlissel 2013) Split evenly, that is approximately $900 per person. New Jersey's portion alone amounted to over $11 billion, almost $1,300 for each person living in the state. Capacity payments in 2010 added $140 to the average homeowner's electric bill; retail stores saw a $1,000 increase to their electric bill, and industrial facilities saw a $15,000 increase. (APPA 2012) Dr. Kenneth Rose notes in his 2011 examination of capacity markets that capacity payments represented 18 percent of a customer's wholesale bill that year, the largest component if one does not include the electricity itself. (Rose 2011)

That money will not be offset by ensuing benefits to the state's economy. Some supporters of the capacity market have alleged that the ensuing boost to energy capacity will offset those figures by averting the losses to the gross state product that otherwise would come from rolling blackouts. Said differently, Texas would experience a smaller loss under a capacity market than it would under its current energy-only market because the latter cannot keep up with peak energy demand. Charles River Associates has taken the vanguard on this wagon train, claiming in its report that a capacity market will save Texas $14 billion dollars in losses to the gross state product over the next 15 years. (Plewes and Hierony-

mus 2013) A closer look at the report's methodology, however, reveals that these "savings" only arise because the organization used a strawman scenario. The report assumes that the energy-only market will reach a long-run reserve margin of only 8 percent but provides no independent justification for that assumption outside of citing a single Brattle Group report. ERCOT has never reached this long run reserve margin under an energy-only market. (Ring 2013) Instead, it has hovered around the target reserve margin by the time the delivery date arrives. Energy-only markets typically show a shortfall in the capacity reserve margin several years out but then close that gap as market conditions become clearer. Thus, the study paints a portrait of what would occur if the energy-only market falls to a reserve margin it has never seen. It has few real-world applications.

Conclusion

Past experience shows that capacity markets cost consumers billions of dollars in capacity payments, most of which is funneled into existing generation. They do not induce even a fraction of the investment that Texas has experienced in its energy-only market. This is due in large part to the fact that capacity markets can only sloppily mimic the natural incentives found in a competitive market, resulting in a mishmash of regulations, subsidies, and penalties that pays generators for services they already provide and gives them little reason to become more efficient. Capacity markets, therefore, provide ratepayers no appreciable benefit that they couldn't get from Texas' energy-only market more cheaply.

If the Texas energy debate truly pivots on how much the market benefits ratepayers, then policymakers have an obligation to consider not just the challenges facing the energy-only market but also significant challenges and costs of its proposed replacement. Capacity markets can never be as successful and efficient as Texas' energy only market. Policymakers should reject the push for a capacity market and turn instead towards removing those government intrusions that distort market incentives and inhibit investment in Texas' world-class energy-only market. ★

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