ENERGY RESEARCH CG

Achieved Savings Analysis through Retail Electricity Competition

I. Executive Summary

- To demonstrate the value of competitive retail markets, ERCG has calculated that between 2011 and 2016, residential and commercial customers have saved a total of $25 billion by switching from the utility. The average savings during this period was $4.1 billion per year.

- We examined competitive retail markets in which the rate of switching from the default utility was meaningful. This restricts the analysis to 14 states in the US, primarily in the Northeast. The utility vs. retailer sales volume was roughly equivalent during the study period. Savings in the PJM region were the highest, in part because it covers the most territory and sales volume.

- History has shown that electricity markets are unpredictable, and customers are better off when they have more flexibility in their purchasing decisions. Protectionist policies to safeguard the solvency of regulated utilities have resulted in poor outcomes for residential and commercial customers.

- One of the key drivers of savings during the study period was lower priced shale gas. The utility default service product in most states is not designed to react quickly to market conditions. There is a substantial time lag between current wholesale market prices and historical prices. Retail suppliers, by contrast, are able to capture the benefits of falling prices more quickly and pass those savings opportunities along to customers.

- For competitive retail suppliers, the goal is to offer a superior option to the default utility product and their fellow competitive retail suppliers. Their profitability and survivability depend on their ability to create value for their customers. Regulated utilities are theoretically indifferent to serving default service customers and therefore have no incentive to provide customers with a better commodity price.

II. Overview of Methodology and Savings Calculation

- *Robust switching markets only*. We look at the 14 states where comparisons are significant. We exclude certain choice states since there isn't sufficient switching in those markets. We also have to exclude Texas because there is no default utility service, and hence no switching from the utility.

- *Mass market focus*. We look at residential and commercial customer segments. We exclude the industrial sector because in most developed retail markets, nearly all industrial customers have switched to a competitive supplier. For industrial customers, the comparison of utility vs. retailer rates is not meaningful.

- *The big picture*. By combining residential and commercial, we get a complete representation of utility vs. retailer rates. During the study period for these 14 states, the sales volume served by the default utility was 53% of all sales volume in the residential and commercial classes. The other 47% of sales volume was served by competitive retail suppliers. Between 2013-2016, utility vs. retail sales volume was evenly split, 50%-50%, each year.

- *Apples to apples comparison*. We compare residential utility rates to residential retailer rates, and commercial utility rates to commercial retailer rates. See below for more details on the calculation methodology.

Figure 1 – Savings Calculation Methodology

- Source data: Energy Information Administration (EIA), form 861
  - Data includes sales volume and revenue statistics by utility and retailer
  - 14 Markets: CA, CT, DC, DE, IL, MA, MD, MI, NH, NJ, NY, OH, PA, RI
  - Texas excluded from analysis since there is no utility default service
- Calculation methodology
  - (A) by state-ISO combination and year, calculate the average rate paid by residential and commercial customers who haven't switched (i.e. bundled utility rate)
  - (B) by state-ISO combination and year, calculate retailer revenues and utility delivery revenues (i.e. the amount switching customers paid)
  - (C) by state-ISO combination and year, multiply switched volumes by (A) in order to estimate how much switching customers would have paid if still with utility
  - Subtract (B) from (C) to estimate achieved savings.

The source of our data is EIA's form 861, a Federal database into which both utilities and retailers are required to report price and sales volume. It is published annually at the end of the year for the prior year – i.e. in December 2017, we have visibility into 2016; in December 2016, we can see 2015 data; and so on for each preceding year. Data is reported by customer segment, state, and ISO.[1]

We focus on the most recent 6-year period because retail suppliers' reporting into EIA-861 improved dramatically starting in 2011. The retailer sales and revenue data are essential for comparison purposes, and that is what enables this savings analysis. The savings are calculated as follows:

A) We figure out the average rate for non-switching customers
B) We figure out the dollar amount that switching customers paid
C) We take the sales volume of switching customers and figure out what they would have paid if they were still with the utility (from A)
D) Finally, we subtract B from C to estimate savings

If D is a positive number, then switching customers paid less for their electricity service.

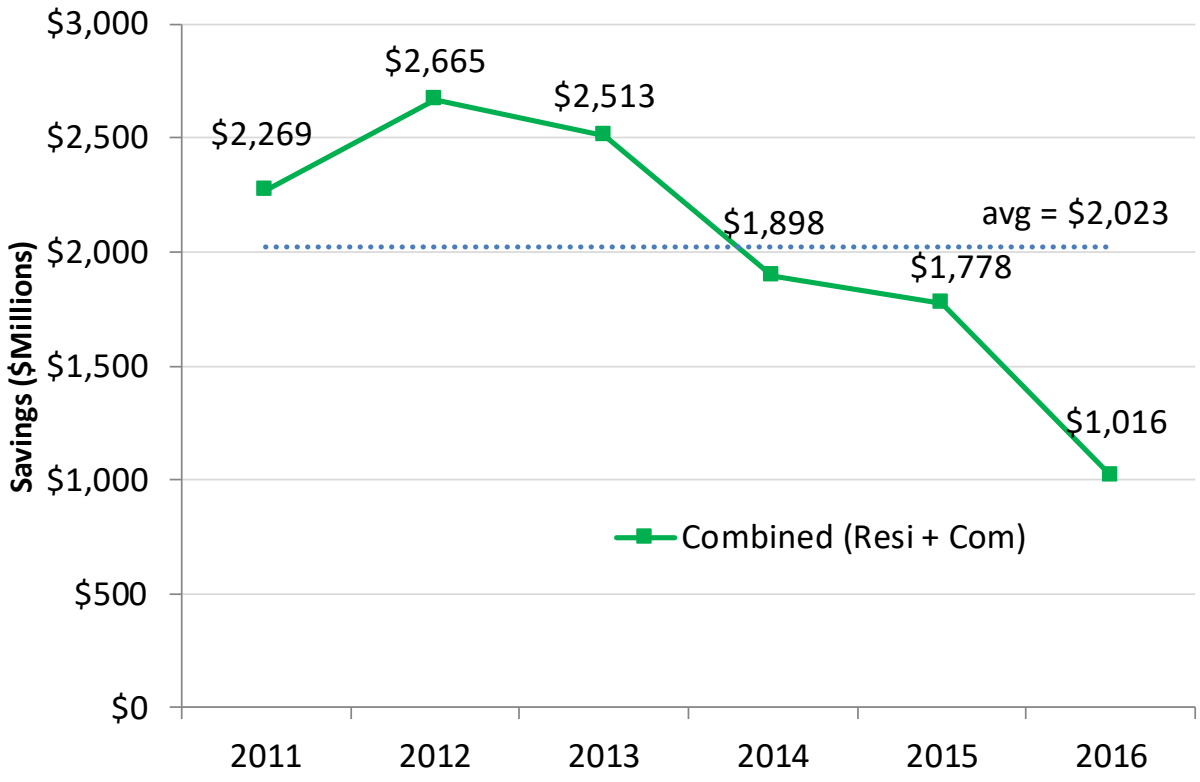
[1] ISO refers to an Independent System Operator, the regional transmission authority (e.g. PJM, NYISO). Most states are fully contained within a single ISO, but Illinois is an exception where one utility (ComEd) is in PJM while the remainder is served by MISO.

III. PJM Achieved Savings

PJM covers the largest competitive retail states in our analysis, namely Pennsylvania, Ohio, New Jersey, Maryland, the District of Columbia, Delaware, and a large part of Illinois.

As our analysis shows, switching residential and commercial customers saved $12.1 billion during 2011-2016 compared to residential and commercial customers that stayed on utility default service. The average savings per year was $2.0 billion across PJM competitive retail electricity markets over this six-year period.

Figure 2 – Estimated Retail Savings in PJM Markets, Residential and Commercial Segments (2011-2016)



The annual savings in PJM are substantial for two main reasons: interventionist policies and shale gas.

In the mid-2000s, retail competition was beginning to take hold throughout the US, and the price of natural gas was volatile and rising. Utility regulators at the three largest PJM markets – Pennsylvania, Ohio, and Illinois (ComEd) – saw that commodity prices were rising, and they all

instituted price caps in some form. The command-and-control policies were in effect until 2010 in Pennsylvania, 2013 in Illinois, and 2016 in Ohio. (The poorly designed multi-year laddered default service price determination mechanisms continue in all PJM states to this day.[2])

Rather than let competitive market dynamics play out with efficient outcomes, regulators decided that rate stability or some administratively determined price was preferable. The timing of the regulators' decisions in these large markets was unfortunate.

Commodity prices crashed in the later half of the 2000s due the Great Recession. This market shock alone was enough to wipe out any benefit of regulatory rate caps instituted in the mid-2000s to protect customers. The error was compounded into the 2010s when the shale gas revolution was making its impact on competitive retail markets.

In the period of our analysis (2011-2016), default utility rates still reflected the regulatory guardrails implemented in the mid-2000s. As a result, customers that stayed with the utility paid more than their switching counterparts. In Ohio, we estimate achieved savings was $4.7 billion over this six-year period. Pennsylvania saw $3.2 billion and Illinois $1.6 billion of estimated savings during the study period, simply by switching away from the utility. The other states that make up PJM combined to achieve an estimated $2.6 billion in savings from 2011 to 2016.

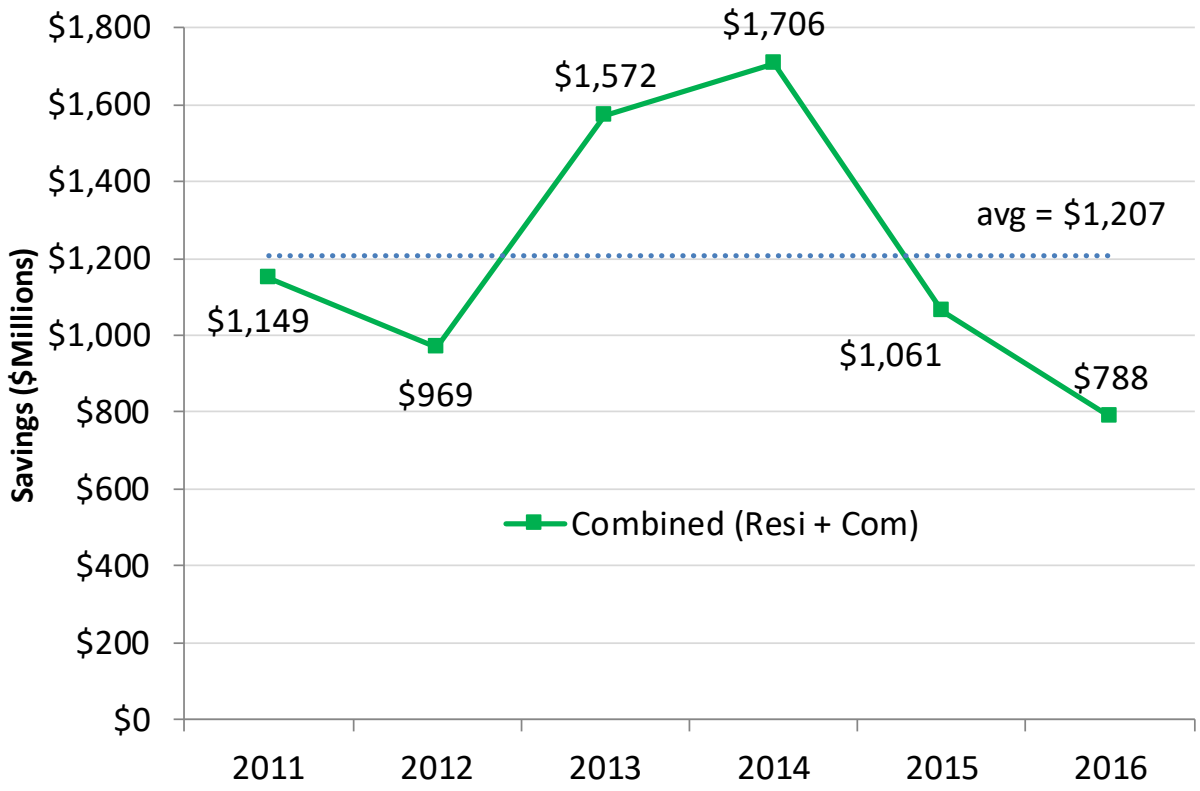
[2] For a comprehensive review of default service pricing in US markets, please read Young Kim's Chapter 12, "Unfinished business: the evolution of US competitive retail electricity markets" in Evolution of Global Electricity Markets, edited by Fereidoon Sioshansi: https://www.elsevier.com/books/evolution-of-global-electricity-markets/sioshansi/978-0-12-397891-2#

IV. NY Achieved Savings

New York's retail electricity market is entirely contained within a single regional transmission authority, the NYISO.

The achieved savings in New York exceed any other single state during the study period. Switching residential and commercial customers saved $7.2 billion during 2011-2016 compared to those that stayed on utility default service. The average savings per year was $1.2 billion across New York competitive retail electricity markets over this six-year period.

Figure 3 – Estimated Retail Savings in NY, Residential and Commercial Segments (2011-2016)



New York is unique in the US retail market landscape in that the default utility price is designed in principle as a wholesale market pass-through. The price the utility pays on the daily market for power is what the customer is supposed to pay, without markup. Furthermore, the default utility price has limited hedging mechanisms. Essentially, the New York market is designed to expose default utility customers to the risk of wholesale markets. For customers that wish to limit their commodity risk exposure, the competitive retail market provides an alternative.

Second only to Texas, which has no default utility option, New York has the most predictable market design to encourage retail supplier participation. Since retail suppliers know in advance the construct of the utility product that they will be competing against (even if suppliers don't know the precise rate until that day), this confers an advantage on retail suppliers.

In 2011 and 2013-2015, retail suppliers were able to deliver over $1 billion per year in savings to switching customers compared to those who remained with their default utility.

When taken as a whole, the savings story in New York is remarkable. There have been exaggerated claims that retail suppliers have not delivered savings to the residential segment, particularly low-income customers. The New York regulator has stepped in and banned retail electricity sales to certain customer segments unless retail suppliers can provide a guaranteed savings product.

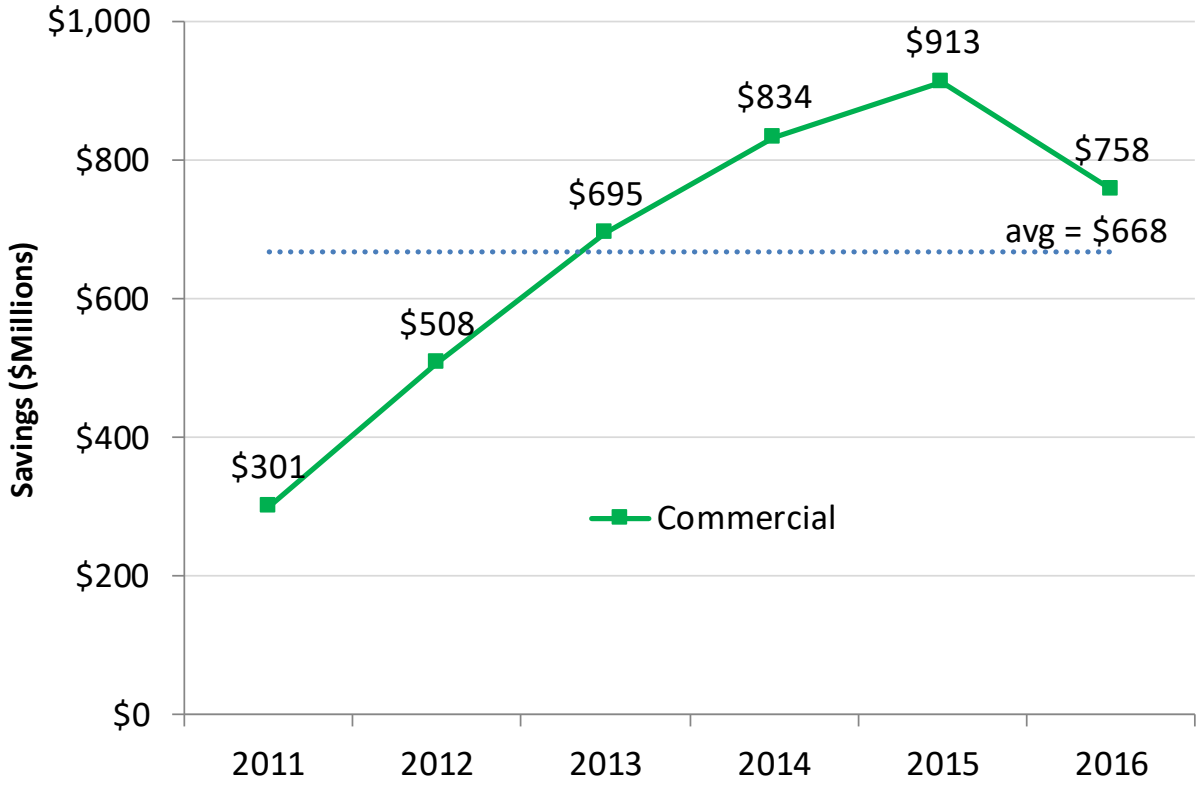
This regulatory intervention in an already well-functioning competitive market may have some detrimental effects in the long run. If history is any indication, retail suppliers will continue to deliver substantial savings for those customers that they are permitted to serve. But at minimum, certain residential customers will be denied the option to pick an alternative from the default utility. Many retail suppliers that serve the residential customer segment have decided to exit the New York market.

V. Capped Market Achieved Savings

Retail electricity markets in California and Michigan are only partially open to competition, mainly to non-residential customers.

For this reason, we limit the savings analysis to commercial customers only. Switching commercial customers saved $4.0 billion during 2011-2016 compared to commercial customers that stayed on utility default service. The average savings per year was $668 million in capped competitive retail electricity markets over this six-year period.

Figure 4 – Estimated Retail Savings in Capped Markets, Commercial Segments (2011-2016)



California and Michigan have shopping caps, which artificially limit the sales volume that retailers can serve in these markets. In California, retail switching was suspended in 2001 following the state's electricity market crisis. In 2009, California allowed a limited re-opening to non-residential customers for approximately 20% of non-residential sales volume. In 2008, Michigan's retail shopping was capped at 10% of each utility's weather adjusted retail sales volume from the prior year.

Utility regulators in California and Michigan may have their justifications for restricting retail switching activity, presumably to protect the financial health of the utilities. However, as our analysis shows, the end result of their decisions is to force most of their commercial customers to pay more for electricity than they would if they were allowed to switch to a competitive retail supplier.

In California, during our study period, the cost of providing power to the utility default service customer base has been rising every year, but retail supplier rates to California customers have been steady. In Michigan, utility default service rates have been stable but shopping customers have been able to benefit from lower cost shale gas in the Midwest.

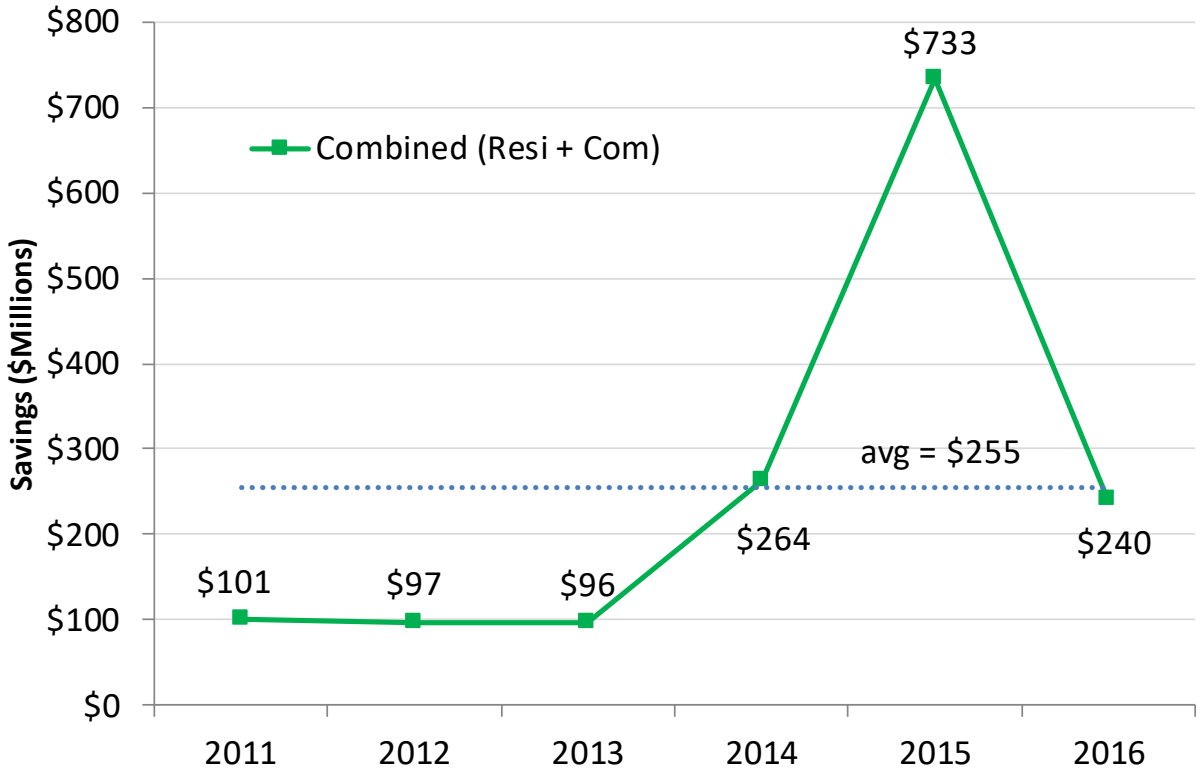
With shopping caps come waiting lists. In both California and Michigan the number of customers looking to switch away from the utility far exceeds the number allowed to shop. In other markets with no shopping restrictions, the customer can bear some of the blame for failing to exercise their option to switch and miss out on the potential savings opportunity. In California and Michigan, the blame for denying customers these potential savings rests squarely on the regulators for keeping in place these utility protectionist policies.

VI. New England Achieved Savings

New England covers some of the smallest competitive retail states in our analysis: Massachusetts, Connecticut, New Hampshire, and Rhode Island. Excluded are Maine since the source data is problematic and Vermont, which is not open to retail competition.

Switching residential and commercial customers saved $1.5 billion during 2011-2016 compared to those that stayed on utility default service. The average savings per year was $255 million across New England competitive retail electricity markets over this six-year period.

Figure 5 – Estimated Retail Savings in New England Markets, Residential and Commercial Segments (2011-2016)



The regulatory construct of default utility pricing in New England is similar to most markets in PJM. When procuring power for their default service customers, New England utilities are required to make wholesale market purchases at pre-determined intervals for a portion of their load obligation. This system is designed to provide New England customers at any given time a weighted average price over multiple years to smooth out any price spikes.

For the same reasons that PJM customers overpaid for electricity when staying with the default utility, New England customers were stuck paying higher prices with the utility when shale gas was lowering the cost of wholesale electricity throughout the Northeast.

Default utility prices, by design, are simply not quick enough to respond to market conditions. Retail suppliers, of course, can and do take advantage of attractive wholesale market prices. The nimble and dynamic competitive retail market can outperform the static set-it-and-forget-it style of regulated utilities. If the New England market were larger, the achieved savings during this period would be considerably larger. The combined residential and commercial annual sales volume in New England is just 20% of the residential and commercial sales volume in PJM.

VII. Concluding Comments

This is a study looking at actual achieved savings. By limiting the scope of analysis to realized savings, we are underestimating the full potential of the competitive retail market. Here are three reasons why –

1. A recent study[3] looked at how regulated utilities can attempt to hide the true cost of default service by shifting expenses to the distribution side of the ledger. By doing so, utilities may discourage switching since the utility's price to compare seems artificially lower than it really is. Utilities have a moral hazard here – they know that they will collect all of their distribution costs from customers whether or not they switch to a competitive supplier for the commodity portion of the bill. Therefore, utilities have an incentive to shift expenses to the distribution side. This type of utility behavior would underreport savings achieved by retail suppliers.

2. There have been studies that examined how much customers could have saved if they chose the lowest available offer.[4] Unfortunately, the availability of savings does not always convince a customer to switch from the default utility. The achieved savings could have been higher if every customer switched to a lower priced offer.

3. We also know that customers make purchasing decisions on more than price alone. Green power is more expensive than brown power, yet many customers have chosen retail suppliers that offer 100% green power. Since no utility's default service product is 100% green, a strict comparison of price would favor the utility.

[3] In September 2018, NRG conducted an analysis that PECO, the utility serving the Greater Philadelphia Area, misallocated over $100 million of residential default service costs to distribution utility costs.

[4] In July and August 2017, the Retail Energy Supply Association (RESA) published a series of analyses in Connecticut, Rhode Island, and Pennsylvania demonstrating that the savings potential for residential customers alone was over $10 million per month (or over 30%) in each of these states.

We are studying past performance in a declining price environment. In the future, wholesale prices are likely to increase. Retail suppliers are fully prepared for this possibility and many are offering customers the ability to lock into a long-term fixed price deal. Regardless of prices and timing, the competitive retail market can outperform the regulated utility, which has a rigid and regimented pricing structure.

If past performance in active choice markets is an indication, retail competition works. Instead of considering further caps and limits on retail choice, we should be eliminating barriers to entry and opening up competition in more states. As our savings analysis shows, regulated utilities are inefficient and add unnecessary costs to the customers they serve. Retail suppliers are more nimble and their incentives are better aligned to their customers.

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About ERCG

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