ANALYSIS GROUP

At the Crossroads: Improving Customer Choice for Products in the U.S. Electricity Sector

An analysis of competition in energy, what we've experienced and what the future could hold

Paul J. Hibbard

July 2023

Analysis Group
111 Huntington Ave
Boston, MA 02199

Table of Contents

I. Executive Summary

In recent years, a number of states and industry stakeholders have reviewed the experience with retail competition (or "retail choice") in the electric industry, and have questioned the wisdom of allowing consumers to choose their energy supplier. Others have analyzed the experience with a focus on the potential for retail choice to generate consumer benefits and help states successfully achieve aggressive climate policy targets.

This paper evaluates the experience with and prospects for competition at the retail level. The analysis is both retrospective and forward-looking; it evaluates the purpose, history, and experience with competition in the retail supply of electricity to consumers, reviews existing market/pricing analyses, gauges the health and challenges of existing retail markets, and considers the potentially vital role that retail competition could play in an industry undergoing rapid transition. In short, based on this review the following observations stand out:

- A proper evaluation of the history and prospects of retail choice needs to reflect a range of metrics tied to social and consumer value;
- Retail choice remains an important tool in the toolbox to promote downward pressure on consumer energy costs through competition, and to support the rapid innovation needed for states to achieve critical energy and climate policy objectives; and
- States should continue improving the framework for retail choice through enhanced consumer protections, improved customer education and awareness, and steps to level the playing field among all providers of electricity at retail.

State interest in retail choice was driven in part by a disparity of electricity prices throughout the U.S, a feeling that poor utility management was at least in part responsible for this, and a desire to achieve lower prices through the discipline of competition at the retail level. Regulators were also focused on the potential that innovation and creativity in retail supply would increase the availability of supply options that better matched consumer interests. To date, 17 states and DC have implemented some form of retail choice. In states with retail choice, the franchised service territory of utilities remains in place, such that transmission and distribution are still supplied by the utilities, while generation is provided by competing suppliers.

The original drivers for electric industry restructuring focused on driving down costs and increasing accountability through competition. And over the past two decades the industry has continuously evolved at the wholesale and retail levels, in the focus and tools of state energy and climate policies, and in the interests and preferences of electricity consumers. The competitive retail market has in turn evolved to respond to these changes, providing renewable energy products and a wide variety of other products and services offered based on customer demand and preferences.

Products sold by retail suppliers across the 17 states and DC vary in every possible dimension, including contract commencement date and duration, energy product type, price structure and terms, incentives offered, and co-delivery options (e.g., energy efficiency, solar, etc.). These diverse features and the changing components and pricing of retail product offerings creates a dynamic market setting with continuously evolving retail products. While this innovation in the retail market facilitates meeting customers' evolving needs, it also makes it difficult to compare retail products on an apples-to-apples

basis across states, among retail suppliers within a state, or between competitive suppliers and utility default service offerings.

Retail product diversity significantly compromises efforts to assess the health of competitive markets based only on price. This report contains a complete review of the U.S. experience with retail choice, with a focus on a broad set of factors needed to assess the full value of retail competition for purchasers, for consumers as a whole, and for meeting societal efficiency, energy, and climate goals. Specifically, this study comprehensively evaluates the history and prospects of retail choice based on the following set of metrics focused on competition, consumers, and energy/climate policy:

- Competition – *Does retail choice expand consumer options for meeting their electricity needs? Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?*
- Energy Market Evolution and Climate Goals – *Do retail energy markets empower companies to evolve with customer demand and state policy goals and requirements? Can retail energy markets accelerate progress in achieving state climate goals?*
- Consumer Control, Engagement and Preferences – *Do consumers have more control over their usage and products? Are consumers more likely to be active participants and engaged energy users in retail energy markets? Do consumers have options tailored to their unique needs and preferences?*
- Long-Run Consumer Costs – *Is retail choice likely to put downward pressure on energy costs to consumers over time?*
- Education and Transparency – *Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?*
- Customer Service and Consumer Protection – *Does and will retail competition meet state requirements and objectives for customer service and consumer protection?*

The following observations and conclusions flow from our review of retail energy markets across all states that have adopted retail choice:

- Competition – In states where markets empower retailers, retail choice has substantially increased the options available to consumers for the purchase of electricity, and has clearly produced a diverse array of products that give electricity consumers the power to choose electricity supply based on price, risk tolerance, budgeting needs, and desired contract terms.
- Energy Market Evolution and Climate Goals – Retail energy markets can accelerate state achievement of climate goals by providing products to customers that go beyond simply meeting state clean energy and/or renewable energy portfolio standards, and that encompass a variety of sustainable energy products. Examples include products that engage customers in demand-response initiatives that support grid reliability and resilience, that enable and help manage the cost of vehicle electrification, and that involve the purchase of renewable generation outside of state requirements. The varied options consumers have to select retail market products with a renewable and/or "clean" footprint can drive private investments in low- and zero-carbon generation assets.

- Consumer Control, Engagement and Preferences – In states where retailers have access to customer data, retail suppliers continuously create and market a wide range of products that are designed to meet consumers energy cost management and non-price preferences, empowering the customer to be more engaged in energy use management tools and product offerings tailored to their specific interests and uses.
- Long-Run Consumer Costs – Competition for the provision of electricity creates the conditions to lower all customers' costs over time. Evidence from a review of statewide data supports the idea that retail choice can and does deliver long-run cost-reduction benefits in the retail supply of electricity for all customers. Moreover, while a review of the literature focused on the price-only impacts of retail choice reveals a range of methodological challenges, it also supports the idea that all classes of consumers – commercial, industrial and residential – have benefitted from retail choice.
- Education and Transparency – With retail choice, consumers are clearly empowered to choose electricity products and services from among diverse options, are exposed to products that provide a range of ways to think about energy choices and have opportunities to increase their understanding and knowledge of the supply of electricity. However, in most states, the efforts to-date to fully educate consumers about retail choice and alternative supply options have fallen far short, and this failure to educate all customers remains a significant barrier to realizing the full benefits of competitive retail supply of electricity.
- Customer Service and Consumer Protection – Optionality for customers can strongly support consumer protection. If a customer finds that a service or product falls short of expectations, they can select an alternative supplier. However, some states have logged diverse and multiple complaints regarding the marketing approaches and strategies of some retail supply companies. This is one of the most controversial and challenging elements of retail choice to date. While retail supply is not the only industry or consumer product where some participants engage in questionable or harmful sales and marketing activities, particular attention should be focused on this issue since electricity is a basic need. Successful retail suppliers recognize that providing quality service and continuously improving product offerings is a fundamental requirement to gain the trust of customers and thereby gain market share. But state rules and regulations must evolve to better protect consumers against deceptive advertising and inappropriate marketing practices and put in place robust requirements for licensed suppliers and consequential penalties for bad actors.

The competitive supply of electricity at retail is at something of a crossroads. Changes are needed to better protect consumers, and failure to do so risks losing the opportunity to capture the benefits of retail choice for all consumers. Some states and advocates appear to lean towards doing away with retail choice due to a perception of low benefits and negative experiences with marketing and supply to residential customers – experiences that by and large can be cured through corrective program design, regulatory action, and education.

But doing away with retail choice – rather than improving it – would be a mistake.

As with the evolution of wholesale competitive markets, these early years of retail competition have been a learning experience – not just for consumers, but for regulators and the retail supply sector. Yet now is a critical time for states to get it right. The benefits of a functioning competitive market for retail electricity

go well beyond price; it allows consumers to exercise choice, drives lower long-run costs through the pressure of competition, fosters innovation, and allows for unique product offerings tailored to consumer interest. More importantly, harnessing the productive innovation and creativity of retail supply – which is already evident in the products that suppliers have brought to market – will be a powerful tool in the toolbelt states will need if they are to successfully achieve aggressive decarbonization goals while managing the challenges of an industry undergoing rapid change in both supply and demand.

While this is a relatively new challenge, the retail market has already demonstrated its ability to react in concert with public policy goals. Across the U.S. suppliers have developed and sold product offerings that accelerate low/zero carbon options; enable price responsive demand; help manage new loads with vehicle electrification; help smooth load growth that will come with building electrification; and help manage reliability challenges associated with the increasing variability of supply and demand. These are challenges states will face at an increasing pace in the coming years, and retail supply can be a vital piece of the decarbonization puzzle.

With these industry, policy, and climate challenges in mind, the analysis described in this report points to the following recommendations, based on both the experience with and largely untapped potential of competitive supply of electricity at retail:

First, ***don't throw the baby out with the bathwater***. Retail choice was initiated with supplier licensing rules and regulatory oversight that were in hindsight too light in many states, opening the door to bad actors, deceptive practices, and bad outcomes. But it would be imprudent to eliminate retail choice at this time because of these experiences. Instead, this can and must be improved both (a) to prevent harm to consumers and establish customer service expectations and obligations that align with the importance of a market that delivers an essential good, and (b) to allow retail choice to continue to evolve. Many states have already reacted with revisions to strengthen consumer protection, marketing/advertising, and customer service requirements on retail suppliers, and these changes appear to work. These moves are appropriate, replicable in other states, and fully aligned with the consumer protection roles of state public utility commissions. In short, the bad experiences some states have had with the actions and predatory practices of some retail suppliers can be effectively ironed out of the framework for retail choice with relatively straightforward changes to the regulatory construct.

Second, states, utilities, and retail suppliers need to ***double down on efforts to increase consumer education and establish familiarity with retail choice***. Competition thrives with active, growing and informed consumer demand. Efforts to-date in most states to inform consumers about the availability and details associated with choosing one's electricity supplier have not been adequate to the task. Texas provides a solid benchmark in this respect – choice was not optional from the get go, and consumers are now familiar with electricity choice and fully comfortable with choosing (and re-choosing) suppliers.

Finally, with strong consumer protection rules in place, ***consider active steps to level the playing field between distribution utilities providing default service, community aggregators, and retail suppliers***. The principle of competitive retail supply is that a vibrant competitive market of suppliers will drive prices down and maximize the benefits to consumers of electricity purchase decisions. But the flip side of this coin is that the market needs to be truly fair and level across suppliers. In many states, this simply is not the case as incumbent utilities have primary or exclusive access to customer data and billing

administration, and these frustrate the purpose and conditions of competition. Some states have taken effective steps to level the playing field – by allowing supplier confidential access to customer data, and by allowing the customer-selected supplier the opportunity to be the point of contact with the customer through billing administration. States should work with stakeholders to develop acceptable and effective steps to level the competitive playing field and ensure that ratemaking treatment of utility innovative programs – such as energy efficiency, electric vehicle incentives, etc. – does not tilt the playing field towards utility provision of such programs.

II. Introduction and Overview

A. Introduction

In recent years, a number of states and industry stakeholders have reviewed the experience with retail competition in the electric industry, and some have questioned the wisdom of the move to allow consumers to choose their energy supplier. Others have analyzed the experience with a focus on the potential for retail choice to generate consumer benefits and help states successfully manage the transition underway in the industry and achieve aggressive climate policy targets.[1,2]

Changes in the electric industry and in wholesale markets late in the 20th century began to strip away the need for a monopoly in certain segments of the industry. State interest in retail choice was driven in part by a disparity of electricity prices throughout the U.S., a feeling that poor utility management was at least in part responsible for this, and a desire to achieve lower prices through the discipline of competition at the retail level.

To date, 17 states and DC have implemented some degree of retail choice. In states with retail choice, the franchised service territories of utilities remains in place, such that transmission and distribution are still supplied by the utilities, while generation is provided by competing suppliers.

While the original drivers for restructuring focused on driving down costs and increasing accountability through competition, the past two decades have witnessed significant changes – in state policies, in the structure of and participants in the energy market, and in the number and types of customers served through competitive retail supply. The competitive market has evolved to respond to these changes, providing renewable energy products outside of state portfolio requirements, tailoring products to an evolving understanding of consumer's preferences, and generating diversity in products and services based on customer demand.

The goal of this study is to revisit the reasons states introduced retail choice at the onset of competition in the electric industry and see if they still hold, consider the forward-looking role of retail choice in an industry undergoing a rapid transition, and consider ways in which the delivery of retail choice to customers can be improved.

Over the years, there have a number of analyses of the benefits and effectiveness of competitive markets in achieving the original objectives of restructuring in the late 20th century. However, most of these reports focused solely on price, evaluating changes in prices (e.g., in restructured vs. non-restructured states) without any effort to determine root causes. Others use statistical models to evaluate the performance of retail and/or wholesale competition, or assess time- or geography-specific questions about competition in the electric industry. Overall, the analyses completed to date tend to focus only on limited price comparisons, often make the mistake of comparing apples to oranges, and almost never account for the fact that the products compared are very different (e.g., comparing a utility default service product with a competitive 100 percent renewable product).

This study seeks to evaluate retail competition across multiple metrics tied to its ability to help meet the full range of consumer preferences and generate consumer and societal benefits. The analysis is both retrospective and forward-looking; we review and analyze the purpose, history, and experience with

competition in the retail supply of electricity to consumers, review existing market analyses, perform an independent analysis on the health of existing markets, evaluate the ongoing potential of retail competition, and provide observations and recommendations on retail choice for consideration by policymakers.

B. The Structure and Regulation of the U.S. Electric Power Industry and Retail Energy Markets

The U.S. electric power industry relies on a complex system of infrastructure, markets, and regulation to ensure reliable delivery of electricity to consumers. These market systems vary geographically depending on state regulation and market structure.

Generation is the creation of electric energy at power plants, through sources like renewable energy, fossil fuels and nuclear fuels.[3] After electricity is generated, the *transmission* of electricity occurs over wires, transformers, and substation facilities to transport high voltage electricity from generating sites to distribution centers or substations where the voltage is "stepped down" or reduced so it can be distributed locally. *Distribution* refers to the delivery of electricity to residences and businesses at low voltages.

The *wholesale market* is where the generated power is sold between the generators and resellers. Resellers include electricity utility companies, competitive power providers and electricity marketers. For most regions within the United States, the operation of and transactions in the wholesale market are regulated by the Federal Energy Regulatory Commission and overseen by the Independent System Operator (ISO) or Regional Transmission Organization (RTO).[4]

After the electricity is bought in the wholesale market, it can be sold to end-users in the retail market. In restructured states, customers have the ability to choose which retailer they purchase their retail electric supply from. In many states, if a customer does not choose a supplier, they will purchase supply from their local utility by default.

Utilities will periodically adjust the rates billed to customers based on operations, the costs to transmit and distribute the electricity and price they paid for electric supply in the retail energy market. To do this, they must file a rate case with state regulators and justify why current rates are no longer sufficient to cover costs.

Some utilities also create affiliate companies to compete directly with wholesale and retail suppliers in competitive markets. These entities do not recover costs from customers, operating as private companies, with the same exposure to market risk as wholesale and retail suppliers within the market.

In restructured states, customers have the option to choose a different supplier based on product offerings, price, renewable energy content, and other service alternatives. The local utility still owns the "poles and wires," manages the delivery of electricity and bills the customer for these services.

In some states, generation and the ultimate delivery and retail sales of electricity to end-use customers may also be met in part through municipal electric light companies ("municipals" or "munis") or electric

cooperatives ("cooperatives" or "co-ops"), with the generation, delivery, and retail sales of electricity overseen by each municipal's or cooperative's elected or appointed board of directors.[5,6]

States are primarily responsible for (1) establishing the framework for the structure of the electric industry within the state, (2) regulating utility ownership and operation of the lower-voltage distribution systems to end-use locations, (3) approving utility rate cases and (4) regulating the retail sales of electricity by investor-owned utilities ("IOUs") to end-use customers.[7,8]

C. History of Competition in the Electric Power Industry

Since early in the twentieth century the U.S. electric power industry had operated as a natural monopoly regulated to serve end-use consumers at low prices.[9] In turn, regulators granted utilities rates of return on capital investments sufficient to attract capital needed to develop infrastructure and reliably meet consumer demand.[10] In practice, within geographical areas, public utilities operated uniquely as vertically-integrated companies delivering all electric services to end-use customers within their franchised service territories.[11] This model worked well for decades as the price of electricity declined sharply from over 30 cents per kilowatt-hour (kWh) to less than 5 cents per kWh between 1890 and 1970.[12]

The constant decrease in prices (in both nominal and real terms) was driven by improved technology and economies of scale and scope.[13] However, during the 1970s, utility companies were forced to increase electricity prices due to a combination of factors including the oil crisis, higher inflation, and investment in more capital-intensive and risky generating resources such as nuclear power.[14] Between the 1970s and the 1980s, industry practitioners began to focus on the lack of competition in the industry and a perceived failure of monopolies to provide sufficient incentives to minimize costs, maximize efficiency, and charge competitive rates.[15,16,17] The move to restructuring of the U.S. electric power industry was also following and in part driven by similar changes in other U.S. and overseas regulated industries, such as the deregulation of the U.S. telecommunication industry in the 1970s and deregulation of the United Kingdom's electricity market beginning in 1989. [18,19]

Competition in Wholesale Sales of Electricity

Changes to the industry at the wholesale level began with various steps at the federal level opening the door to growth in independent power producers and open access to the nation's federally-regulated high-voltage transmission system. FERC also encouraged the formation of Independent System Operators (ISOs), which are independent, federally regulated entities established to coordinate regional transmission in a non-discriminatory manner, ensure the safety and reliability of the electric system, and administer competitive regional wholesale electricity markets.[20] FERC believed that ISOs "…ha[d] great potential to assist [t]he industry to help provide regional efficiencies, to facilitate economically efficient pricing, and [t]o mitigate market power."[21] The creation of these new organizations allowed for states to surrender operation and control over the transmission grid and provided incentives for non-utility linked organizations to enter the market. Through these changes in policy, competition in wholesale sales of electricity grew rapidly in the early twenty first century.

Competition in Retail Sales of Electricity

As changes in wholesale industry structures opened the door to wholesale competition, many states sought to go further, and apply the potential discipline and incentives of competition to the sale of electricity to ultimate consumers at the retail level. These steps were motivated in part by pressure from business customers – i.e., from larger consumers of electricity demanding lower electricity prices and the opportunity to not be captive to the local utility and instead shop for their energy needs from alternative suppliers.[22] In 1996, California was the first state to allow for retail competition. Many other states simultaneously or shortly thereafter were taking steps to consider the potential benefits of and structures for retail competition, and quickly on the heels of California's actions many states adopted their own forms of retail competition. By the mid-1990s, Connecticut, Maine, Massachusetts, New Hampshire, and Rhode Island had started to restructure their regulated electric utilities and introduce competition at the retail level.[23] New Hampshire was the first state that opened a retail market pilot program which began in May 1996.[24]

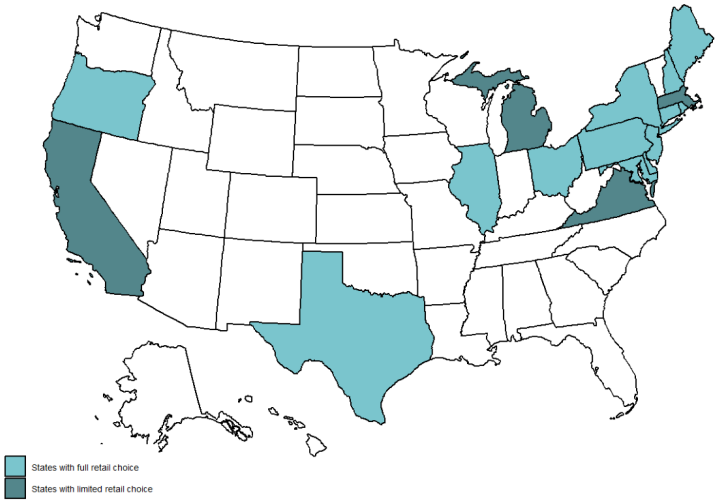
Original state interest in retail choice was driven in part by a disparity of electricity prices throughout the U.S, a feeling that poor utility management was at least in part responsible for this, and a desire to achieve lower prices through the discipline of competition at the retail level.[25] States that restructured their electricity markets expected that competition would encourage efficiency (e.g., real-time pricing), improve public confidence in the electric utility industry, serve the public interest (e.g., avoiding or delaying costs), and reduce the costs of regulatory oversight, among others.[26] Further, retail choice supporters expected more competition to lower prices, enhance services, and provide more innovative product offerings.[27] Notably, not all states felt the need to embrace competition at the retail level, often because prices in those states were already low and stable due to factors largely unrelated to the structure of their electric industries.

In states without retail choice, the production and delivery of electricity is still provided by public and private "monopoly suppliers" who are subject to government regulation of prices, entry, investment, service quality, and other aspects of firm behavior.[28]

D. An Overview of Retail Energy Choice in the U.S.

To date, 17 states and DC have implemented some degree of retail choice. These states include California, Connecticut, Delaware, Illinois, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Oregon, Pennsylvania, Rhode Island, Texas, and Virginia.

Figure 1: Retail Choice in the U.S.[29]



Among the 17 states that have adopted retail choice to various degrees, 12 states (Connecticut, Delaware, Illinois, Maine, Maryland, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, and Texas) and DC have opened retail choice to both residential and non-residential (commercial and industrial) consumers, while other states provide limited access based on rate classes or electricity demands. See Appendix D for a summary of the availability of retail choice across states.

Further, 14 out of the 17 states have authorized or are actively investigating "Community Choice Aggregation" (CCA) programs, also known as "municipal aggregation," which allows local governments to procure power on behalf of their residents, businesses, and municipal accounts from an alternative supplier while still receiving transmission and distribution service from their existing utility provider. [30,31,32]

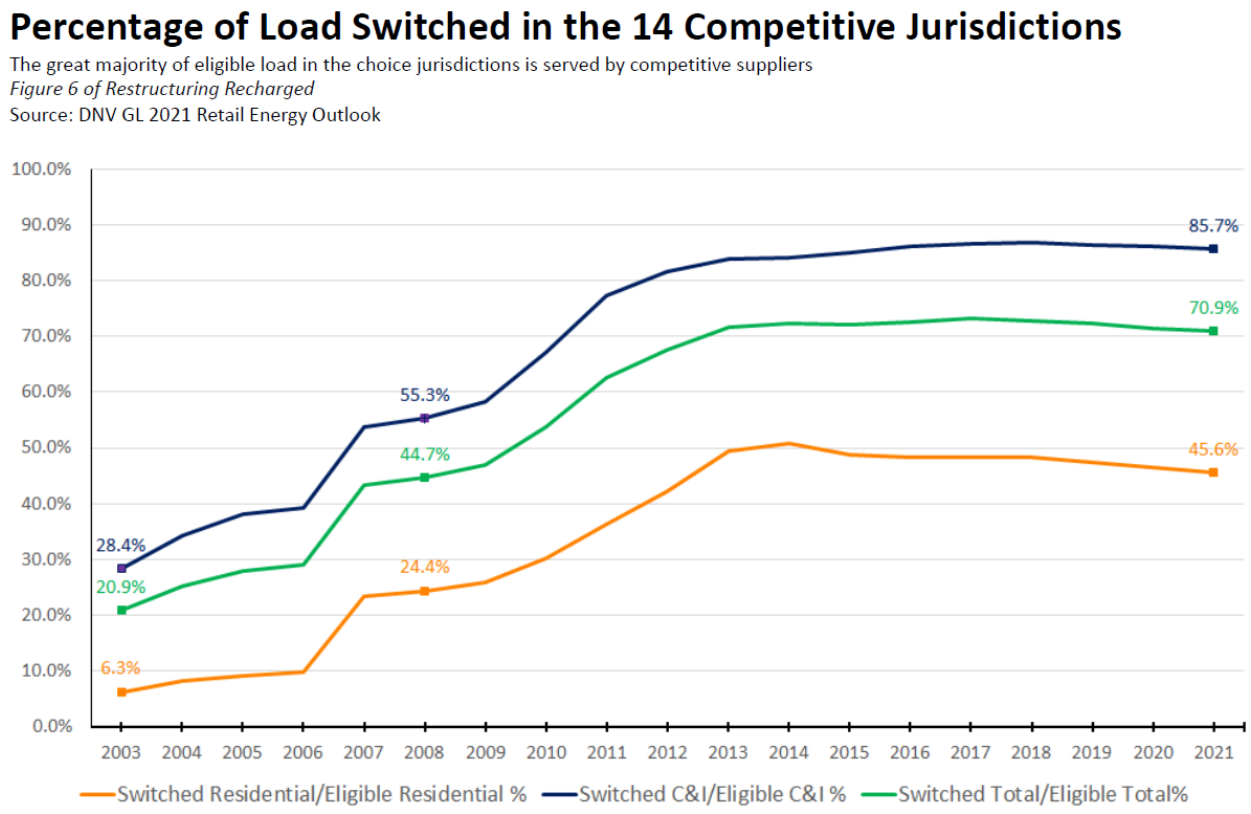
Customer Classes

Retail choice availability also varies by customer class across states. For example, Texas adopted a full retail choice model that requires all residential and non-residential consumers to purchase their electricity from a third-party supplier. On the other hand, states like California only offer retail choice to non-residential consumers in a limited capacity.[33]

Residential and commercial consumers, which consist of individual households and businesses such as retailers and office buildings, represent the two largest consumer segments in the United States, each taking up approximately 37% of the total electricity demand as of 2017.[34] Industrial consumers, which mainly include manufacturing, construction, mining, agriculture, and forestry operations, consume about 26% of the nation's electricity.[35]

Among states that have full retail choice, competitive retail suppliers account for about 22% of retail electricity sales to residential customers of 2021. In comparison, retail suppliers accounted for 58% of sales to commercial customers, and 77% of sales to industrial customers.[36] Figure 2 provides an overview of the growth in retail supply of electricity to each customer class over almost the last two decades, showing the vast majority of commercial and industrial customers, and about half residential customers, have switched to competitive supply over time.

Figure 2[37]



Since industrial consumers have higher demands for electricity and sometimes receive electricity at higher voltages due to the demand of industrial equipment,[38] supplying electricity to industrial consumers is more efficient and less expensive.[39] For residential and commercial consumers, it may cost more per unit of consumption to distribute electricity because it goes through multiple steps of distribution (substations) and uses different power transformers to decrease voltages and deliver safer-to-use electricity to households and businesses.[40] Due to the lower voltage requirements, greater variability in load shape (e.g., consumers use is not consistent and may peak at varied times each day) and seasonal demands (e.g., energy usage often peaks during summer when air conditioning is needed the most),[41,42] the cost to serve residential customers is typically greater than other customer classes, and thus the cost to serve residential consumers tends to be the highest.[43]

Market Structures, Rate-making and Billing

The electric rates charged to customers have historically been set by the state's public utility commissions, based on the utility's cost of service including the generation, transmission, distribution, and admin/customer service functions. In the case of munis and coops, this rate-setting function is normally overseen by an elected or appointed board of directors.[44] In states that have restructured, the public utility commissions still oversee and regulate the utility's rates for the transmission, distribution, and admin/customer service functions. However, rates associated with the generation function are now determined in competitive wholesale markets and passed through in rates to customers. In those states

that *also* allowed retail choice, the retail supplier (or the utility in the case of default service) "sells" the generation service to customers based on their ability to procure generation in wholesale markets.[45]

Depending on the state, charges from the utility company (transmission and distribution) and supplier (generation) may be consolidated on one electricity bill sent by the utility company, consolidated on one bill sent by the retail electricity supplier, or billed separately. In most restructured states, the utility retains the billing function, and includes charges from retail suppliers (or default service) on the bills issued to customers by the utility. As discussed elsewhere in this study, utility control over the billing and administrative function provides a level of control over messaging and contact with the customer that compromises the fairness of the retail supply market, creating a bias among customers to remain with the default service provided by the local utility.

Whether a state has established retail choice or not, the public utility commission (or the muni/co-op board of directors) regulates the metering and billing function of the utility companies, including the collection of customer meter data, processing of that data, using it to develop the charges that show up on customer bills, and formatting and issuing bills and related communications to customers.[46] In many states with retail competition, the utility retains primary responsibility for all of these steps. As discussed elsewhere in this study, this also provides an anticompetitive advantage to the distribution utility by placing access to *all* customer data *only* with the distribution utility. In these cases, the inability to access all customer data on a confidential basis restricts the ability of retail suppliers to understand the usage patterns and characteristics of the consumers in the market and thus unfairly limits the competitive retail suppliers' ability to develop products responsive to consumers' needs.

III. Experience with Retail Choice

A. How to Evaluate Retail Choice Programs

While the original drivers for restructuring focused on driving down costs and increasing accountability through competition, state policies, the energy market and the customers served have undergone significant changes over the last two decades. As a result, the competitive market has evolved to respond to these changes, providing (for example) renewable energy products above state requirements and diversity in products and services based on customer demand.

Given the variety of individual state goals, the framework and regulations for retail choice vary significantly across states, as do the competitive retail supply products offered by suppliers. The products vary in every possible dimension, including contract commencement date and duration, energy product type, price structure and terms, incentives offered, and co-delivery options (e.g., energy efficiency, solar, etc.). These diverse features and the continuously changing components and pricing of retail product offerings make it difficult to compare on a consistent basis outcomes across states, among retail suppliers within a state, or between competitive suppliers and utility default service offerings. *Thus, an effective analysis on the health and success of competitive retail energy markets cannot hinge on price alone*.

The literature related to the analyzing retail choice price outcomes reflects the challenges in developing objective empirical comparisons across suppliers, states, and products. Appendix A contains a summary of academic literature on the price effects of competition (retail, wholesale, or both). Appendix C contains a time series for each retail choice state showing the statewide average price for electricity provided by all retail suppliers versus electricity provided by through utility default service.[47] Two observations stand out based on a review of the price analyses: First, retail choice has demonstrated its ability to drive costs down for electricity consumers over time, relative to default utility supply. Second, it appears that all customer classes have experienced benefits from retail choice, including industrial, commercial, and residential consumers.

Limitations to Retail Choice Studies

It is important, however, to keep in mind that the results of price-specific studies in the literature should be taken with a grain of salt. The analyses are typically weakened by pitfalls that include but are not limited to: (1) aligning on a proper definition of "restructuring" (i.e., different policies are implemented at different times but analyzed in the same manner); (2) conducting a proper comparison of reform prices (i.e., retail choice is very recent in multiple states and examining post-reform prices might not reflect long-term effects); (3) properly addressing the myriad apple-to-orange variations in retail products, contract duration, contract terms, pricing designs, incentives, and other factors; and (4) determining real causation (e.g., literature that analyzes prices but ignores or fails to adequately isolate the effects of retail choice because controlling for other factors is complex).[48]

These pitfalls are further evidenced by the disparity of results that we observe in the literature even when the same states and data points are being considered. For example, publications analyzing the effect of retail choice in Texas with data from 1997 to 2006 presented mixed conclusions on the effect of retail choice to reduce prices for consumers, and generally fail to include considerations related to exogenous factors affecting prices that change over time (e.g., renewable requirements, generation mix and fuel costs, etc.).[49] More recent publications, analyzing data from 2002-2006, and also 2002-2016 were

positive about the effect of retail choice on prices for consumers.[50] The same is true for literature focusing on retail choice nationwide. While some authors have found little evidence of long-term pricing effects of the restructuring of the electric market and low percentage of residential customer participation,[51] some others claim that prices in competitive markets have trended significantly downwards in comparison to non-competitive markets.[52]

Incompatible Comparison of Products

Practitioners often make the mistake of looking for the quarter under the streetlight by focusing only on static prices across varied products. Most often these comparisons fail in relevance because the products compared are diverse in timing and are fundamentally incomparable – products that are structurally different; that are purchased by different classes of consumers with different interests (e.g. "standard" products vs. "clean" products); that have very different contract durations, terms, and procurement approaches; that were purchased at different times with prices set under very different wholesale market conditions; or that compare supplier competitive pricing with utility regulated default service pricing for products procured subject to regulatory standards and schedules. For example, a customer may sign up for a retail product with a higher price per kwh than the utility rate but includes free nights and weekends for home use or free electric vehicle charging. The rate might reflect a higher price, but the customer could experience significant savings based on usage. Another example is when a customer signs up for a 100 percent renewable product that is more expensive than the basic utility rate but includes a percentage of additional voluntary renewable energy credits purchased on behalf of the customer. The customer has chosen to pay incrementally more for the derived value of the societal and environmental benefits. However, reports that focus on price generally fail to take these variations in products into consideration when compared against the basic utility rate.

Insufficiency of Price as a Sole Measure

While by and large the literature demonstrates benefits to consumers from retail choice, there is a wide range of price impacts across studies, and some come to the opposite conclusion for the same group of customers in some states. As noted, studies related to only pricing have to deal with the fundamental heterogeneity in the products being compared across all product attributes, and as a result more often than not fail to establish a reasonable empirical basis to support conclusions regarding whether retail choice in a given state is good or bad for consumers. Moreover, a common drawback in studies to date is that they often focus on a narrow set of products in a narrow geographic range over a narrow time period, and there are essentially no studies that focus on the potential broader effect that competition has on the price of retail electricity for all consumers over the long run. Consequently, the analyses produced to date must be viewed in a specific or relatively narrow sense, and with an understanding of the inherent limitations of such efforts.

Narrow Scope of Metrics

As noted, our analysis of price data and the literature on retail price impacts points to likely price benefits for consumers and demonstrates the ability of retail competition to drive long-run cost benefits for electricity customers. Yet perhaps more importantly, the inability to adequately distinguish important features of the retail products being compared (e.g., comparing prices for basic electricity products with prices that are tailored to customer preferences, such as renewable or zero-carbon electricity) mean that a different type of analysis is needed – one that provides a holistic review of retail choice, focused on the broad set of price and non-price benefits retail choice is designed for, and the evolving value and

potential of retail choice programs. Based on our review of the literature with respect to the purpose, design, history, and experience with retail competition, we find a range objectives that should be considered when evaluating retail choice and determining whether current program designs may warrant adjustment to better achieve the desired outcomes.

Valuable Metrics to Consider

The full range of metrics needed to assess the value of retail competition for purchasers – for consumers as a whole, and for meeting societal efficiency, energy, and climate goals – forms the basis of this review of the U.S. experience with retail choice. We focused in particular on the following metrics, described more fully below: (1) competition, (2) energy market evolution and state climate goals, (3) consumer control, engagement and preferences, (4) long-run consumer costs, (5) education and transparency, and (6) customer service and consumer protection.

Competition – ***Does retail choice expand consumer options for meeting their electricity needs? Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?*** Competition is the ultimate purpose of retail choice programs. The pressure of competition sharpens everyone's pencils – it disciplines the wholesale electricity purchasing practices of all market participants; it puts pressure on regulated utilities, cooperatives, municipalities, competitive retail suppliers, community aggregators and any others serving retail customers to obtain supplies, develop offerings, and deliver electricity products that meet consumers' interests and needs. The purpose of competition is not to achieve a specific price at a specific point in time; rather, it is to create dynamic conditions that continuously push all market participants towards lower prices and greater responsiveness to consumer interests. The most important question, then, is does retail choice increase the number and types of potential suppliers, products and pricing available to electricity consumers? Does the mechanism of retail choice allow for a flexible and varied response to changing consumer preferences, and continuous evolution of pricing and products in a rapidly-changing energy market?

Utility rate structures are governed by utility procurement frameworks and practices that require extensive regulatory scrutiny through a deliberative and adjudicatory process and based on a century of ratemaking precedent that is not well-suited to a rapidly-changing energy market context. While the adjudicatory, evidence-based regulatory process is both necessary and important, it notoriously limits the ability of utilities to create innovative pricing mechanisms and supply products, and introduces a substantial lag between industry changes and their reflection in utility rates. A key retail choice evaluation metric is whether the structure for competition at retail in a given state enables or promotes an adaptable framework for the development of innovative electricity product offerings and flexible energy pricing structures, and whether it is leading to these outcomes more nimbly and completely than would occur in a regulation-only context.

Energy Market Evolution and Climate Goals – ***Do retail energy markets empower companies to evolve with customer demand and state policy goals and requirements? Do retail energy markets accelerate the adoption of state climate goals?*** A key purpose of retail choice at the time of industry restructuring was opening the door to retail suppliers offering products that could evolve quickly and be tailored to the changing interests of consumers (i.e., for 100 percent low-GHG or renewable power) and the changing objectives of state energy and environmental policy (i.e., compliant with state renewable or

clean portfolio standards, renewable/clean options above and beyond state requirements, and/ or supporting GHG policy objectives such as electrification of the heating and transportation sectors).

It is useful to evaluate the experience with retail choice relative to consumer and societal preferences, and perhaps more importantly to consider how to enhance this potential as the industry undergoes rapid transition in the coming decades. Specific to the challenge before the industry, it is useful to consider whether retail energy markets can accelerate state achievement of climate goals by providing products to customers that go beyond simply meeting state clean energy and/or renewable energy portfolio standards, and that encompass a variety of sustainable energy products.

Consumer Control, Engagement and Preferences – ***Do consumers have more control over their usage and products? Are consumers more likely to be active participants and engaged energy users in retail energy markets? Do consumers have options tailored to their unique needs and preferences?*** Consumers want choice. This has been demonstrated time and again in the evolution of all retail products, from coffee to cellphones to credit cards. Choice empowers consumers to engage in learning about product benefits and drawbacks, make purchase decisions that reflect their individual interests and objectives, and switch when their interests change or when the available product set changes. Choice enables consumers to make changes in purchasing behavior and thereby force changes in the products brought to market. As the availability of internet connected smart devices increases, it will be important for customers to be able to take advantage of the full benefit of these products and coordinate and manage their energy use for increased efficiency, savings and use customization. Energy suppliers must keep pace with market advancements by providing tools and resources that leverage customer data to create a seamless process for customer engagement in the integration of smart home technologies and energy use management.

Long-Run Consumer Costs – ***Is retail choice likely to put downward pressure on energy costs to consumers over time?*** Timing is important. Setting aside for the moment the inherent challenges (discussed above) in comparing the prices of varied retail supply products, it is worth recognizing that, like any consumer product, electricity purchases will always look different from prospective and retrospective points of view. Utilities and retail choice providers may lock into their wholesale supply portfolios prices for electricity that look either high or low relative to future market conditions. Thus, utility *and* retail supply products will in retrospect sometimes look high-priced and, at other times, low-priced, relative to changing market circumstances.

The experience over the past year with natural gas prices is an excellent example of the unavoidable consequence of the volatility of wholesale electricity prices and the influence on regional prices of exogenous events (e.g., winter storm Uri or Russian curtailment of energy supplies to Europe). The wholesale contracting and hedging practices of utility default service portfolios and retail suppliers caused some products to look smart and well timed, and others the opposite. Yet the influence of competition supports those market entities that are most capable at managing such risks and volatility over time, ultimately driving down prices for all consumers in the long run. The most important price question associated with retail choice is not whether at a given point in time a utility or competitive supply option looks higher or lower than wholesale prices or other supply options in retrospect. Rather, it is whether or not the pressure of competition at the retail level will lead to lower costs for all consumers in aggregate, and over time, compared to a world without retail competition.

Education and Transparency – ***Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?*** Adding supply options, particularly in an commodity that is formerly regulated and as obscure as electricity supply, has the potential to create a great deal of confusion. And there is evidence that this has been true in this early period of retail choice. The goal of state programs to expand retail choice should be to present alternatives in a clear and transparent way, and by the act of introducing options help inform consumers about those options and about electricity as a commodity. The clear and transparent presentation of information on retail choice and supply options is vital for growth in competition going forward.

Customer Service and Consumer Protection – ***Does and will retail competition meet state requirements and objectives for customer service and consumer protection?*** As with any consumer product, questionable marketing, advertising and customer service practices of some providers in the market can jeopardize the realization of consumer benefits associated with implementation of responsible, fair and equitable competition. This may be particularly true for retail choice, as a relatively new market for an unfamiliar and sometimes confusing commodity, and with many new and smaller entrants. It is important to assess the experience with retail choice from the perspectives of customer service and consumer protection, and to consider adjustments to the state framework for retail choice where needed ensure that any inappropriate or harmful practices are weeded out and prevented going forward.

B. Experience with Retail Choice

It is risky to characterize the U.S. experience with retail choice in a generalized way, since there is such diversity across state retail choice laws, regulations and policies; differences that fundamentally affect the level of supplier participation and the availability, scope and design of electricity product offerings. Nevertheless, the experience amassed over the past couple decades and scores of states clearly shines a spotlight on the competition, long-run cost, consumer education, and consumer/social preference value of competitive retail supply. The experience also highlights some of the growing pains that retail choice – as a new market and new consumer product – has faced along the way, and various ways in which changes in retail competition policy can improve.

Retail choice has introduced and expanded competition in the delivery of electricity to retail customers in all of the states where it is allowed to flourish. This competition has driven product innovation and product diversity, has helped educate consumers about the provision of electricity services and opportunities, has allowed consumers to pursue products that meet their energy and environmental preferences, and has established competitive pressure across all suppliers on the price and terms of retail electricity supply. Finally, in recent years, competition has clearly demonstrated the diverse ways in which retail choice can drive innovation in electricity products and services that can support state climate and energy laws and policy.

The experience with retail choice also highlights two important foci for design improvements across many retail choice states. The first relates to state consumer protections and customer service expectations for retail suppliers. Recent analyses and reports have suggested that some retail suppliers may introduce customer confusion by providing incomplete or confusing information in sales products and pitches,

and/or engage in marketing practices that raise important concerns for states in the area of consumer protection. These allegations warrant strengthening of the state laws, regulations and policies that govern oversight and regulation of retail suppliers, the literature they provide potential customers, and sales practices.

The second area of potential improvement relates to the market and administrative barriers that restrain the ability of retail suppliers to efficiently design products that tailor pricing, terms and products to match societal and consumer preferences. By comparison across states with different approaches, it appears that retail supplier confidential access to customer data and more direct client contact, administrative and billing responsibilities can greatly improve retail electricity supply product options, design, and pricing, and improve transparency and consumer education.

This section summarizes the U.S. experience with retail choice in each categories described in Section III.A. and based on our review of literature related to U.S. and individual state experience with retail choice over the past two decades. Our review of the pricing literature is summarized in Appendix A; a summary of state experience with and current status of retail choice is contained in Appendix B; and a summary of average prices over time for competitive and regulated electricity products in retail states is presented in Appendix C.

Competition

Retail choice has significantly increased the options available to consumers for the purchase of electricity, providing strong competition with the local utility.

Robust competition – In nearly every state in which retail choice was adopted, there is a significant number of competitive suppliers, number of electricity products offered, and the types of pricing structures and contract terms available for selection by consumers to meet their energy needs. For example, the Public Utility Commissions of Texas and Pennsylvania list more than 100 active retail electric providers for their respective territories,[53] while the District of Columbia has around 50 retail electric providers available to consumers.[54]

Prior to retail competition every customer had exactly one supplier – the local utility. There was no competition, but the forces of competition were "approximated" through public utility commission review of utility resource planning and procurement practices and decisions, and in how utilities designed rates to guide efficient consumption. While this approach was (and in states without retail competition, still is) necessary as protection for consumers against the exercise of monopoly control, it has never been considered a perfect, or even particularly good, substitute for competition where the conditions for competition were present.

Accountability – Competition disciplines the wholesale electricity purchasing practices of all market participants; it puts pressure on regulated utilities, cooperatives, municipalities, competitive retail suppliers, community aggregators and any others serving retail customers to obtain supplies, develop offerings, and deliver electricity products that meet consumers' interests and needs. Competition has created an environment where customers can hold the utility accountable by using their power to switch.

Product Variety and Innovation – Retail choice has also provided end-use consumers with new

products that grant them flexibility, diversity, and the power to choose electricity products based on price, risk tolerance, budgeting needs, conservation interests, energy/environmental preferences, and interest in ancillary electricity products (such as solar, EV charging, and battery storage).

While in recent years some investor-owned utilities – with orders or encouragement from state regulators – have offered partly or wholly "green" products, and have created some forms of time-of-use pricing, these regulated "products" are generally limited in scope, and slow to emerge or change.

These offerings do not match the diversity and flexibility that has emerged in competitive suppliers' retail electricity products, nor the ability to quickly translate changing industry circumstances and consumer preferences into new and innovative products. The heavily regulated and adjudicatory processes that investor-owned utilities must navigate to propose or change rates and product offerings is too slow to respond in a timely way to technological change, policy directives, and consumer preferences. Moreover, utility rate design processes run the risk of shifting costs associated with such programs out of the default service rate, creating subsidies that would provide a competitive advantage for default service over competitive supply.

The shopping component of retail choice gives consumers greater control over the price, terms, and source of their electricity.[55] The first degree of freedom for consumers through retail choice provides options that are tailored to meet consumers' budgeting needs and varying tolerance for risk. Suppliers in competitive retail markets offer a multitude of products that adapt quickly to changing industry conditions, and provide options in price structures and terms. For example, in most states, you can find retail supply products that include options for selecting a fixed plan with unlimited energy usage, a fixed price, prices that vary over time or with market indices, and time-of-use (TOU) pricing structures that allow consumers to manage costs through altering discretionary consumption activities (e.g., laundry and EV charging during the evening on nonpeak energy usage periods). There are a multitude of products that suppliers actively seek to improve in the interest of capturing greater market share including products focused on prices, contract durations, pricing structures (fixed, variable, TOU), and product preferences (clean, green, zero-emission).

Varied Terms and Offerings – As with many consumer products in the telecommunications industry and other services, retail suppliers typically offer a mix of contract durations, with or without contract termination costs. Specifically, for some or all of the pricing design options discussed above (i.e., fixed, variable, TOU), consumers often have the option to choose short-term rate contracts (e.g., monthly, six-month) that allow them to choose and switch suppliers as and when needed, or to enroll in select contract terms of longer duration (e.g., one, two, or three years). This empowers customers to evaluate the alternative market products alongside the utility's regulated rates, and to hedge against cost increases. Electrification of heating and transportation will increase consumption variability and overall increase consumers' dependence on electricity; in this context retail choice offers consumers the ability to plan against high usage periods by enrolling in a fixed bill program during periods of expected high usage. The combination of pricing and term alternatives is a hallmark of the retail supply market, one that is effectively not matched in the vast majority of regulated, municipal, or cooperative utility rate designs.

Challenges**:** Competition has blossomed in these early years of retail choice, but has also been restrained and hampered by several regulatory barriers to full competition at retail – in particular,

inequities in access to customer data and access to customers themselves that provide an unfair advantage to the incumbent utilities in capturing retail customer market share. It is reasonable to observe that the regulatory barriers to full retail competition are the result of reasonable regulatory caution; with regulators trying to go slowly at the inception of industry restructuring. Yet there is sufficient experience with and knowledge of different retail competition models to now consider addressing these barriers in the interest of competition.

These barriers to full retail competition result from constraints currently placed on some (but not all) of the retail markets in operation. First, in many states there is inequitable supplier access to information (such as customer consumption data that may only be fully available to the incumbent utility). Second, in many states the incumbent utility retains branding value and customer access, by requiring that all billing be handled by the distribution utility with only limited information from the competitive retail supplier included on the utility-branded monthly bill. While there may have been legitimate reasons for these regulatory structures at the inception of competition, experience shows that these barriers can be lessened to the benefit of competition without adverse outcomes.

Customer Control, Engagement and Preferences

Retail suppliers continuously create and market a wide range of products that are designed to meet consumers non-price preferences, empowering the customer to be more engaged in energy use management tools and product offerings tailored to their specific uses. Gaining familiarity and comfort with choosing their electricity supplier provides customers with the ability to critically examine electricity pricing offers, think about how they use energy in deciding from among retail supply options with different pricing structures, and overall gain more control over their electricity bill and energy costs.

Retail suppliers have demonstrated the ability to quickly design and develop a wide array of products tailored to meet consumer interests and electricity consumption characteristics – a degree and pace of innovation in product design and adaptation that is *at best* exceedingly difficult for regulated utilities to accomplish in their regulated and adjudicatory setting.

As discussed below, the forthcoming pace of change in the electric industry is unprecedented. It will be driven by wholesale changes in the types of power used to meet customer needs (renewables, storage, and distributed resources) and, more importantly, by the growing reliance by customers on electricity not only for light, but for heating, cooling, cooking and transportation. This positions retail choice as a potentially vital component of the industry transition as residential and business consumers increasingly seek ways to *affordably* electrify their homes, businesses, and vehicles, and seek ways to more actively manage and control the cost of greatly expanded electricity consumption to meet all these needs.

Suppliers have already demonstrated the creativity and innovation to support this transition in the types of products developed to meet customer needs. Customer behavior and engagement – empowered by the ability to select from among an evolving set of retail supply products with different generation and consumption alternatives – will play an increasingly important role as we move forward in the transition to an electrified and renewable energy future.

***Challenges*:** The future world of electricity is one in which customers are plugging in cars and heating

and cooling homes (as well as heating water, cooking, and cleaning clothes) with electricity, using increasingly sophisticated energy technologies and appliances. Many homes will also try to manage their now-integrated home and transportation energy costs with solar PV systems, battery storage, and advanced demand management technologies to smooth out and/or time electricity use to manage their overall energy cost burden. Since the inception of restructuring such supply and demand technologies have been conceptual; there is little doubt that they are now becoming reality at an ever-increasing pace.

This significantly increases the importance of the two factors discussed above that have heretofore been the most important structural barriers to full customer engagement and control over energy choice – access to data and access to customers.

As states transitioned from utility-only supply to retail choice, there were valid reasons for state legislatures and public utility commissions to be cautious in how quickly change was introduced. There was a great deal of uncertainty over who would emerge as retail suppliers, what form retail supply products might take, how to avoid inundating consumers with confusing information, how to best educate consumers about retail choice over time, and how to protect consumers' privacy and ensure the continuation of reliable service. Moreover, at the time few states or utilities had broadly adopted the installation of advanced metering infrastructure (AMI) that would provide sufficiently granular data for the development of innovative retail supply options and technologies.

In many respects, we now live in a different world. AMI is widespread and/or in active development and installation in utility service territories. We have two decades of experience with retail suppliers and their market activities and retail supply product designs and product design potential. We far better understand the importance for education of the public of clear and transparent information on retail choice and continuous exposure to retail supply offers. And we have real-world experience with allowing suppliers access to customer data and allowing retail suppliers to be the provider of the integrated electricity bills.

There is abundant data and experience that states can draw on to design how suppliers can be the billing agent and be allowed access to customer meter data without jeopardizing customer privacy, billing clarity and transparency, or customer service. Without removing these barriers, utility control over data and billing will continue to frustrate a level competitive playing field for retail supply, and prevent retail choice from being an effective ally in the industry transition.

Energy Market Evolution and Climate Goals

In more and more states, and supported recently through major federal funding initiatives, the U.S. is carving an aggressive pathway to rapidly reduce fossil fuel use in homes, businesses and vehicles over the next couple decades, with a heavy reliance on electricity-based alternatives. This is particularly true in many or most of the states that have allowed for retail choice. Against this backdrop, it is difficult to overstate how important the role of retail choice and retail competition may be to help states achieve their aggressive decarbonization goals.

Retail energy markets accelerate state achievement of climate goals by providing options to customers that are different than or incremental to state climate-focused policies. In some states, customers are engaged in demand-response initiatives to support grid resilience and the incorporation of more

intermittent resources into the grid. The purchase of voluntary renewable energy credits in the retail market can drive private investments in renewable generation assets; private company commitments to decarbonize in part through the purchase of only renewable or zero-carbon electricity from retail suppliers places upward pressure on the aggressiveness of state renewable portfolio standards and can provide additional private investment opportunities for renewable developers.

Retail suppliers have demonstrated the ability to continuously create and market a wide range of products that are designed to meet consumers non-price preferences in conservation, climate change mitigation, electrification (of transportation and buildings), and a variety of other electricity-related consumer goals. The obvious examples include various products whose electricity generation content is partially or entirely tied to the production of electricity that meets emission (e.g., zero-carbon) or resource (e.g., 100 percent renewable) content goals, above and beyond the obligations the retail supplier must meet due to state renewable portfolio standards (where they exist), and commitments by suppliers to otherwise support climate objectives by purchasing and retiring emission offsets or allowances.

But these are only the tip of the iceberg in terms of the types of retail supply products that currently are, and increasingly will be, developed by the competitive retail market. Some innovative recent products dovetail with climate policy objectives in ways tailored to consumer interests, such as including the installation of a home electric vehicle charging port with the electricity product, and offering TOU or simplified pricing (e.g., “free vehicle charging” or “free nights and weekends”) to help consumers that move to EVs manage the costs associated with keeping vehicles charged. Other retail products may facilitate customer installation of energy efficiency measures, solar generation, energy storage, demand reduction technologies, and/or electric heat pumps. This in turn reduces the need for these programs to be separately funded through distribution utility rates.

Many of these latter examples of innovative retail supply products or supply product incentives are relatively new, they represent one of the most important examples of the need for and societal benefits of retail choice on a going-forward basis. This is particularly true when considering the magnitude and pace of change underway in the energy industry more generally, and the focus specifically on electrification of the building and transportation sectors as fundamental policy measures and objectives in states’ efforts to decarbonize energy supply and use. Policy makers and public utility commissions around the country have tried to engage investor-owned utilities in developing products and rate plans that head in the same direction; but evidence shows that the adjudicatory regulatory processes that govern changes in rates and proposal/approval of utility programs are simply far too slow to facilitate a rapid transition in the electricity sector.

Challenges: The most important challenge with having retail supply help consumers and states meet aggressive climate change mitigation and policy objectives lies in the same barriers to full retail competition discussed above – data and customer access. In particular, as consumers’ electricity demand evolves to include a mix of some or all of vehicle charging, electric heat pumps, solar installations, energy storage, etc., the magnitude and shape of their electricity demand will change in significant and different ways. The load patterns for retail customers are likely to become more heterogeneous, challenging the assignment of customers to specific rate classes and complicating further the degree of cross-subsidization within and across classes of customers.

On the other hand, this is a challenge in the transition that will benefit from competitive innovation and creativity. In order for retail suppliers to be able to efficiently devise different products based on consumers' changing load and end-use portfolios that can help them manage energy costs, the suppliers will need to be able to review usage data and offer products to consumers tailored to their unique usage and preferences. In this sense, access to customer data and responsibility for full billing represent key attributes of a retail choice framework that lines up with consumer and societal objectives around climate change mitigation and energy electrification.

Long-Run Consumer Costs

A key observation from our review of price studies is that essentially none of the analyses we reviewed related to retail supply pricing answers – or seeks to answer – the relevant question from a consumer standpoint, one that is firmly linked to the real rational for moving to retail competition: *Does retail choice put downward pressure on energy costs to consumers over time, through pricing discipline that drives competitive pricing from all suppliers in the market, including competitive suppliers, utilities, and aggregators*? This is a different question than the one most studies seek to answer – i.e., is the average price of product A higher or lower than product B over a specific time period?

We observe from a review of empirical studies and historical average price data (summarized in Appendices A and C, respectively) that from the perspective of price alone, participating business consumers are clearly better off with retail choice than without it, and while the results are a bit more mixed, residential consumers are also more likely than not better off with retail choice than without it. But the results should be taken with a grain of salt: the studies to date represent a mix of methods, contexts and outcomes, and tend to answer limited and sometimes not relevant questions. For example, several of the studies reviewed compare prices without any attempt at identifying causal factors for price differences between vertically integrated and restructured states.

As discussed above, price analyses related to retail choice universally suffer from a range of flaws that reduce the value of their results in assessing whether and to what extent retail choice will provide long-run cost benefits to consumers. They tend to compare results across time periods that are too short, across electricity products that are diverse in pricing structure, contract term, and value-added options, and across incomparable time periods or geographies.

This is not meant as a criticism of the studies – there are legitimate difficulties in trying to establish an apples-to-apples comparison of retail supply pricing when the observed set of retail supply products is highly diverse over the state or region of interest; and/or across limited or discontinuous time periods with unique drivers of electricity prices. But it does support the idea that the correct lens through which to view the success or failure of retail supply must involve the full set of metrics identified in this report, and must take the long view in evaluating the aggregate impacts of introducing competition in retail supply across all classes of customers and over time.

Education and Transparency

With retail choice, consumers are more empowered to choose electricity products and services. But electricity remains challenging and relatively new as a consumer product. It is difficult for those outside the industry to understand the distinctions between competitive supply of electricity and the continued regulated distribution of electricity. Consumers are not used to thinking of electricity as multiple products,

and have many years of familiarity with electricity provided by a single utility company. There is a major consumer familiarity and educational barrier to widespread adoption of competitive supply options, and this has been evident in this early period retail choice.

These factors make it far more likely for consumers to evidence inertia when facing retail choice for the first time. It has been observed that in many states consumers rarely searched for alternative retailers even when there were options are available to them, and when they do search, they tend to attach a brand advantage to the utility that has been their "incumbent" utility electricity provider.[56] For example, in Texas, even four years after deregulation, the incumbent maintained over 60 percent market share even when other competitors were consistently offering lower prices.[57] There have been many ideas and practices put forth to overcome inertia and inherent biases in the selection of electricity providers, but there is much work that remains to be done.

One of the biggest critiques of retail choice is the lack of information and education consumers receive when entering new competitive markets. Lack of information is also a contributing factor to low participation rates in retail choice markets. Many have called for making more information publicly available, including: (1) supplier's historical rates by product, (2) current and historical rates for basic or default service from electric companies, (3) aggregated consumer complaint data for each supplier; (4) a list of all active suppliers in each service territory, (5) all rates charged by each supplier, among others.[58] Even though some of this information is available in most states on state or utility websites that explain retail choice in electricity, the nature of the information provided is highly limited (e.g., containing only price and contract term). The passive nature of the information provided does not sufficiently overcome the lack of consumer recognition that choice is an option, or their reluctance to leave their local utility for supply from a (relatively) unknown entity.

Challenges: It is fair to say that for the majority of states that allow for retail choice, fundamental barriers to true widespread adoption of retail choice remain to a meaningful extent due to some combination of (1) the newness of electricity supply as a retail consumer product, (2) insufficient efforts to inform consumers and actively promote retail choice, and (3) the prevalence of retail competition rules and regulations that preserve (or do not overcome) consumers' biases given their long-running familiarity with the incumbent electric utility as the trusted provider of electricity as a single product, benefiting the utility's provision of default service as the customer's easiest pathway.

At the inception of restructuring, stakeholders debated how to educate consumers about their retail supply options and present information in a way that was a fair as practicable. The efforts put in place at that point in time were a first step; yet if states want retail choice to succeed, the level of effort, information, and outreach must leap forward. States and stakeholders should revisit the structure, format and content of state and utility websites with retail supplier comparison metrics, and explore other pathways to (a) make the ability to select one's retail supplier a commonplace understanding among most or all consumers within each utility's service territory; (2) establish robust transparency and consumer protection requirements for retail supply (discussed further in the next section); (3) ensure that customers by and large no longer feel "safer" or more comfortable with sticking with the distribution utility as a default service supplier; and (3) ensure that consumers gain increasing knowledge about the retail market and become comfortable selecting from among suppliers, and changing suppliers over time.

Customer Service and Consumer Protection

It will be difficult to achieve the goals and benefits of retail competition until or unless all suppliers are equally responsive to consumers, and all consumers become as comfortable with selecting a competitive retail supplier as they are in choosing default service from their local utility. Customer education and guidance is paramount to understand the choices they are being asked to make about their electric retail rate, and to ensure high participation rates. Customer service and consumer protections are thus a vital element in the growth of retail competition; this has been a challenge in some states in recent years. Based on past experiences, it is in states' interests to develop robust "rules of the road," and be vigilant in overseeing and enforcing customer service and consumer protection requirements in the administration of competitive retail access supplier requirements.

There are a number of potential and realized benefits in customer service associated with innovative retail supply offerings. As retail choice suppliers are competing to earn and retain customer base, they actively market electricity as a retail service option, and provide enhanced customer services or perks to consumers often not available through the default service utility, including mobile apps, energy usage monitoring tools, and promotional product offerings that enable customers to pay more attention to energy consumption (e.g., thermostats). In addition, the marketing efforts of retail suppliers can increase the visibility of electricity as a product, and more fully educate consumers about their energy use and the range of opportunities and options for retail supply. It is through retail supplier marketing and retail supplier interaction with customers that choice has the real opportunity to expand and evolve in ways that better reflect the preferences of all customers within a utility service territory and the state as a whole.

On the other hand, retail supplier marketing methods have raised a number of concerns amount states and consumer advocates. In some states consumers have logged diverse and multiple complaints regarding the marketing approaches and strategies of some retail supply companies. Complaints logged by consumers against some retail suppliers include: (1) "slamming," or the practice of switching a consumer to a supplier without their explicit authorization to do so, (2) paying more than default electricity services, without deriving additional value from competitive supply, (3) targeting of vulnerable populations resulting in disproportionately higher participation rates and higher rates charged to lower-income communities with higher percentages of minority households and/or limited English proficiency, (4) being deceived by contracts, such as variable rates that offer low introductory rates, followed by significant increases without warning. In some states consumer advocates have proposed eliminating retail choice for some or all residential customers as the preferred method to address alleged retail supplier deceptive, misleading and/or harmful practices.

While retail supply is not the only industry or consumer product where some participants engage in questionable or harmful sales and marketing activities, particular attention should be focused on their prevalence with respect to the cost and delivery of a product as vitally important as electricity for customers' health and welfare. There are at least three reasons why deceptive, misleading and harmful sales and marketing practices in retail electricity supply warrants heighted attention, strict licensing requirements and compliance oversight, and consequential penalty systems. First, electricity is a basic need, and *energy costs are a non-discretionary expense*, one that represents a disproportionately high portion of the income of low and moderate income consumers. Second, until retail choice is as ubiquitous as cell phone use and cell phone plans, *electricity billing in general and retail electricity choice in particular is confusing*, and highly vulnerable to the development and use of manipulative marketing

information and practices. Third, *there is much to lose from consumer and societal perspectives* if the misleading, deceptive, and harmful practices of some retail suppliers are allowed to poison the water for all, resulting in the severe curtailing or elimination of retail choice.

States have taken notice and have enacted multiple strategies to protect consumers and make sure that any deceptive, misleading or harmful marketing and sales strategies are minimized or eliminated, and to provide regulators tools to take action against bad actors. For example, some states have prohibited service to ratepayers on energy assistance programs or required regular reports on numbers of such customers served by competitive suppliers. In 2016, the New York Public Service Commission issued an order prohibiting service to low-income customers by competitive suppliers. States can also implement a "do not switch" option for consumers to block their accounts from unauthorized switching from basic service.[59]

If retail supply is to continue and play an important role in the energy transition, the consumer protection steps taken to date by states should be viewed as just a starting point. State regulators and consumer advocates, utilities, and the retail supplier community should work together and take aggressive steps to ensure that consumer protection and appropriate customer service become a defining feature of retail supply, not its Achilles heel, while letting retail supply thrive.

Doing away with retail choice as a response to challenges is akin to throwing out the baby with the bath water; there are too many current and potential consumer and societal benefits to flow from healthy retail choice markets for this to be the outcome of isolated practices in a nascent market. U.S. experiences have shown that proper assessment of the impact of retail competition requires a holistic review of at least the following metrics: (1) competition, (2) energy market evolution and state climate goals (3) consumer control, engagement and preferences, (4) long-run consumer costs, (5) education and transparency, and (6) customer service and consumer protection.

C. Case Studies

In this section we focus on the experience with retail choice in Texas and Pennsylvania to highlight the range of concepts, products, services, innovation, and customer freedom and participation that have come with the rollout of competition in these jurisdictions. Additionally, we explore what one to two decades of experience with retail competition suggests for an improved role of retail choice in the years to come, as the industry paces rapidly through many transition that will directly affect electricity supply to retail customers. In the two highlighted states, certain elements of the of the retail market designs have likely resulted in more robust product offerings, enabling stronger competition and accountability. Additionally, we find successful markets tend to be well-regulated, which provides benefits to both consumers and market participants.

Texas

In 1999, Texas passed Senate Bill No. 7, which introduced competitive choice in the retail market for all consumer classes starting in 2002.[60] Texas is the only state that has mandated retail choice for all consumers in the service territories of in-state utilities.[61] Although energy prices in Texas were already low relative to other states, legislators understood the potential product and long-run cost benefits of retail competition, and believed that Senate Bill No. 7 had the potential to help maintain low prices or drive prices even lower. Only about 15 percent of Texans do not participate in retail choice, as they reside in

the service territories of municipally-owned utilities ("munis") and electric cooperatives ("coops" for which retail choice was not mandated.[62]

By 2015 there were 52 different retail suppliers offering residential service, with hundreds of rate options across a variety of plans that varied by product, fuel type, rate design, term, and incentives. For example, products offered in Texas include prepay products, time-of-use plans, fixed rate products, variable rate products, and various products tied to energy or environmental policy interests (e.g., 100 percent renewable plans).[63] In contrast, residential customers served by investor-owned utilities are offered far fewer, if any, choices with respect to pricing or product content options.[64] Some munis offer residential customers a few rate choices, but the range of choices is still extremely limited compared to that offered in the competitive market.[65] In short, the retail market in Texas is highly competitive, has successfully delivered cost benefits to electricity consumers, and has opened the door to a wide range of product offerings that are tailored to consumer preferences and can be adapted quickly to changing consumer interests.

Product Variety

Customers with access to retail choice in Texas can choose from a variety of value-added services. The range of options is wide, and reflects the level of innovation in product design and program offerings that can occur in a well-functioning competitive market for retail supply. These include but are not limited to offers such as joint product delivery (including, e.g., combining electric service delivery and billing with other services such as heating fuel, home security, etc.); provision of energy use information and feedback on ways to reduce costs; energy efficiency measures and technologies with cost sharing; product incentives such as charitable donations, and frequent flier miles, and carbon offset credits; special and varied time-of-use offerings (including specific rate structures and more accessible products such as "free nights and weekends"); and a range of products focused on consumer preferences.

Electric Vehicle Products: TXU's Drive for Free and EV Pass

Simple fixed-rate retail electricity supply with free or half-off charging for customer's electric vehicle

- **Texas residential product**
- **Free charging of your EV from 7:00 pm – 1:00 pm, 7 days per week (energy plus delivery)**
- **Fixed-rate retail electricity supply, 12- or 24-month plans**
- **100% renewable energy**
- **Connects home charger to TXU via mobile app**
- ***EV Pass* program offers 50% off EV charging, at a lower retail electricity supply rate**

"EV Electricity Plans & Resource," TXU energy, available at https://www.txu.com/en/savings-solutions/electric-vehicle-resources.aspx.

The diversity of product offerings over time in Texas does not mean that the provision of electric service is more complicated. For example, many customers prefer more simple, fixed, and/or guaranteed pricing. Some suppliers offer a variety of products that change over time, while others remain focused on basic service at a "no-frills" commodity price.[66] In areas of Texas not open to competition, regulated providers can not match the diversity of product offerings in the competitive market, but do offer some limited value-added services, including primarily energy efficiency funding and availability of sustainability products (primarily at the munis).[67] The range and depth of choices of and differentiation in electricity products in any year and over time is simply far more limited for investor owned utilities, munis and coops compared to what is offered by competitive suppliers.[68]

Long-Run Consumer Costs

As noted earlier, static comparisons of price outcomes across different points in time, different electricity products and pricing structures, and different types of customer groups complicate efforts to clearly ascertain the long-run consumer cost impacts of retail choice. Yet through an analysis that instead tracks changes in prices over time, the evidence in Texas suggests a positive long-run consumer cost influence in retail choice. While initially the prices in retail choice service territories were higher than where choice was not mandated, over time, areas of the state with retail competition experienced a decline in electricity prices while areas without retail competition did not. By 2016, any pricing gap between areas with and without competition had been eliminated.[69] These trends may in part reflect the ability of competitive market dynamics to drive efficiencies in electricity procurement and sales, as residential rates in competitive market areas more accurately reflect rates in the wholesale market, with a declining gap between retail and wholesale rates.[70]

Performance Filings and Complaint Reporting

Every quarter, suppliers are required to submit Performance Measures filings. These filings along with System Benefit Fund reports, and Monthly Bill Comparisons that are prepared by the Utility Commission of Texas ("PUCT") are used to prepare reports on customer choice, and residential market prices for the areas with retail choice.[71] Electric service customer complaints are divided into the following categories by the PUCT: Slamming (unauthorized switch of electric service), Cramming (unauthorized billing charges), Billing, Quality of Service, Discontinued Service, Provision of Service, All Other. After complaints have been resolved, either in favor of the customer or retailer, the information is filtered into a weighted system and displayed as a company rating on the state-managed PowertoChoose website in the form of 1-5 stars next to product offerings.[72] This rating informs customers of the company reputation and increases accountability for retailers operating in the market, incentivizing them to keep their 5-star rating.

The Texas PUC website also publishes customer complaint statistics from the past 6 months, and from August 1, 2022 to January 31, 2023 there were 2,949 complaints.[73] The biggest complaint categories were billing and discontinued service which received 1,751 and 511 complaints respectively. Quality of service has received 0 complaints.[74] As of 2016, in a study conducted by J.D. Power and Associates, Texas ranked the highest in overall satisfaction with retail electric providers.[75]

Experience with Choice

The relative success of retail competition in Texas is notable as it may largely reflect the fundamentally different – and less constrained – form of retail choice, relative to the more restrictive retail supply rules established in nearly all other states. Texas is the only state where retail choice is mandatory. In areas served by retail suppliers, consumers *must* either choose a competitive supplier or be assigned one.[76] As of March 2016, 92 percent of all customers in Texas exercised their right to choose an electricity supplier,[77] and retail choice consumers use roughly three quarters of all electricity sold in the state.[78] In addition, retail suppliers in Texas have access to customer usage history data and can be the direct line of contact with the customer for electricity services. In Texas, the utilities developed a website called "Smart Meter Texas," which is a centralized database that provides customers and authorized market participants with access to energy consumption data. By contrast, other states have customer data siloed by utilities, leaving retailers with disjointed, limited or no access.

The unrestrained availability of retail supply products, close oversight of retail supplier products and practices, level of competition, and direct and consequential level of interaction between consumers and

the retail supply community likely promote a healthy playing field for retail competition in the state, one that includes (1) the informed and flexible tailoring of retail supply products and pricing to the usage profiles of different customer types, (2) continuous direct billing by suppliers and frequent interaction with consumers, (3) a population comfortable with choosing electricity providers and more knowledgeable about the role of suppliers in the provision of electricity services, and (4) continuous pressure on suppliers to achieve market share through competitive pricing offers, innovative and tailored products, and a solid reputation for customer service.

Winter Storm Uri

A disastrous situation in early 2021 highlights the vulnerability of electricity consumers to episodic industry events and in many ways validated the retail competition model from the perspective of consumer value. In February 2021, a series of winter storms hit Texas, resulting in a surge of electricity demand. The weather conditions combined with electric and natural gas infrastructure, market, and other issues led to an energy crisis that resulted in 4.5 million homes losing power.[79] The crisis resulted in hundreds of deaths and colossal financial losses across all consumer classes. One contributing factor to consumers' financial losses was the use of wholesale index electricity pricing plans, which benchmark rates charged to customers against prices in the wholesale electricity market. Wholesale market index rates caused severe price fluctuations for residential customers. In fact, in the wake of the severe and sudden impact of wholesale-indexed retail electricity products on suppliers and consumers in the state, the Texas legislature has since outlawed wholesale index rates.[80] The proposed new rule aims to protect Texans from indexed products and practices that are have the potential to harm consumers, while still allowing for retail choice and competitive electricity pricing for residential customers.[81]

Electric Vehicle Products: Constellation's **Green Electricity Plan**

Simple fixed-rate retail electricity supply sourced by 100% renewable energy

- **Massachusetts residential product**
- **100% renewable supply, almost twice the amount required of all suppliers by the Commonwealth**
- **Long-term, fixed-rate retail electricity supply**
- **Current price almost half the price of default service**

"Residential Energy Plans," Constellation, available at constallation.com.

Retail choice played a critically important role in the Texas crisis from the perspective of retail consumers. While disastrous at the wholesale level, the majority of residential customers in the retail market in Texas were shielded from the impacts of price volatility in the wholesale market. Specifically, approximately 75 percent of retail residential customers in Texas had chosen and were under fixed price retail electricity supply contracts, which successfully shielded them from the extreme price volatility that resulted from the storm and subsequent events.[82] Of the remaining 25 percent, roughly 24 percent were on variable rate plans and only less than 0.5 percent of residential customers were on wholesale index pricing plans. Thus the severe volatility in the wholesale market affected only a minority of residential retail electricity customers

In the aftermath of the energy crisis, analyses determined that customers with access to retail choice incurred a lower average cost per residential customer compared to their non-retail choice counterparts.[83] A residential customer with access to retail choice had an average electricity bill of $86 per month whereas a customer served by an muni or co-op had an average electricity bill of $373 per month.[84]

These outcomes illustrate how retail choice benefitted the majority of residential customers in Texas during and after the crisis by providing opportunities to select fixed-price, or price-stable, rate plans. The 2021 energy crisis may highlight significant risks associated with operation of power systems and wholesale electricity markets during times of severe weather or other episodic events, and raise important issues related to coordination of natural gas and electricity systems, and investment in energy infrastructure winterization.[85] But the experience in Texas during the crisis is unrelated to the existence of robust retail competition in the state. To the contrary, it appears that the availability of diverse products and pricing plans due to retail choice if anything mitigated the impacts of the Winter Storm Uri electricity crisis on retail customers.

Pennsylvania

On December 3, 1996, the Pennsylvania General Assembly passed Act 138, the "Electricity Generation Choice for Customers of Electric Cooperatives Act."[86] The implementation of electric retail choice was enacted because it was deemed to be in the public interest: "Because of advances in electric generation technology and Federal initiatives to encourage greater competition in the wholesale electric market, it is now in the public interest to permit retail customers to obtain direct access to a competitive generation market as long as safe and affordable service is available at levels of reliability that are currently enjoyed by the citizens and businesses of this Commonwealth."[87] Act 138 was designed to enable consumers of electricity in Pennsylvania to benefit from competition in pricing and the delivery of electricity-related products in the Commonwealth; the administration of retail choice is overseen by the Pennsylvania Public Utility Commission (PUC).

Only suppliers licensed by the PUC – and subject to various licensing and reporting requirements – may sell electricity to consumers in Pennsylvania. There are literally hundreds of licensed retail suppliers registered in the state, and in any given year more than a hundred may be active (as compared to 11 regulated utility providers prior to the enactment of retail competition).[88,89]

Product Variety

Retail choice provides consumers with far more product flexibility and more product diversity when selecting from among retail supply options than available only through regulated utility service. Products offered in Pennsylvania include a wide range of product, price, contract durations, and contracting terms. The Pennsylvania Office of Consumer Advocate publishes monthly shopping guides for residential customers to inform their electric rate choices. The monthly shopping guides identifies the following potential rate and product features available through retail supplier offers: whether the rate is fixed vs variable; the structure of offer pricing (e.g., the length of the contract term, the existence of contract provisions that include incentives such as introductory pricing for a set number of months, etc.); the price per kWh offered; what cancellation fees, if any, may be incurred; and whether and to what extent offers include provisions for the delivery of targeted product definitions, such as renewable and/or clean energy. The office also identifies for consumers expected monthly generation and transmission bills under various rates for 500 kWh, 1,000 kWh, and 2,000 kWh levels of use.[90]

In summary, the total number of customer accounts served by retail suppliers in Pennsylvania in 2021 was 27 percent in 2021. The amount of load served by electric generation suppliers increased from 85 million MWhs and 77 million MWhs, in 2019 and 2020 respectively, to 89 million MWhs in 2021. The percentage of load being served increased from 60% in 2019 to 64% in 2021.[91]

Retail suppliers in Pennsylvania offer a wide range of products that vary by price structure, contract term, and electricity product definition. Contract options include purchasing retail supply with varying rates, terms, durations, and rate structures. For example, in 2021 over a million customers opted for flat-rate contract structures, while over half a million selected time-varying rates, including TOU rates, hourly real-time pricing (linked to wholesale market prices), prices that varied by season, and hybrids/variations on all of these structures.[92] Nearly half a million customers opted to sign single-year, fixed term contracts, while the remainder was served under multiple-year contract terms; customers with TOU, hourly, seasonal and hybrid pricing structures were spread across the single and multi-year term lengths.[93]

Customers in Pennsylvania also have access to a variety of electricity product types to meet their energy or environmental preferences. Options include products focused on emissions, varying quantities of renewable resource content (including local Pennsylvania-sourced renewables), and energy efficiency. For example, in 2021, thousands of retail supplier customers signed up for demand response (interruptible) service, and over half a million customers signed up for various clean/green power products.[94]

Electric Vehicle Products: NRG's **Bundled Energy** with **Charitable Contribution**

Fixed-rate and variable-rate retail electricity *and* natural gas supply, with donations

- **Pennsylvania residential product**
- **Bundles the customers energy needs into a single product (gas and electric)**
- **Month-to-month with a three month introductory price**
- **Up-front contribution of $100 to Children's Hospital, *plus* annual contribution equal to one percent of total energy bill**

"Energy Plans," nrg, available at https://www.nrg.com/residential/electricity-plans.html.

Long-Run Consumer Costs

Indications are that retail choice may be helping provide long-run consumer cost benefits in the Commonwealth. From the start of retail choice, Pennsylvania's retail electricity price relative to the U.S. average has continuously declined. Prior to restructuring in 1996, Pennsylvania's electricity price was 15 percent higher than the national average.[95] Following the introduction of retail choice – 20 years ago - prices (relative to the national average) declined to 12 percent higher than the national average in 2022, 4 percent higher in 2008, and finally reaching 0.1 percent lower than the national average in 2015.[96]

The PUC actively seeks to support education of retail consumers through continuous review and posting of retail supplier data and analyses. The PUC has a website geared toward consumer education and providing resources to consumers to engage with retail electric choice (called PA Power Switch). The education component includes landing pages with information for consumers on how and when to switch energy providers, understanding rates and terms, rights and protections, and ways to save energy.[97] In addition to educational information, as discussed above, the site also has a shopping guide for consumers providing information and a monthly update of the rates being offered by service territory.[98]

Consumer Protection and Education

The PUC has a history of imposing strong consumer protections to shield consumers from misleading or deceptive conduct from competitive retailers in the electric retail choice environment. For example,

recognizing that retail supply marketing would or could involve phone and door-to-door marketing campaigns, and in order to mitigate the potential for aggressive marketing efforts to harm consumers, the PUC has established robust standards for marketing agents to follow "[…]to protect public safety and to ensure compliance with all regulations and local ordinances."[99] These standards include background checks, identifying to the customer that the marketing agent works for a competitive supplier and not the local distribution utility, requiring the marketing agent to carry legitimate identification, and notifying the Bureau of Consumer Services (BCS) each day door-to-door marketing will be conducted.[100] Marketing agent behavior and discipline is monitored through the documentation of transactions with customers. Once a power switch sale transaction is completed, the new supplier must complete a verification process with the BCS to confirm that a customer authorized the transfer of customer's account to the new supplier if a marketing agent is involved in the transaction.[101]

In order to ensure the marketing agents follow these standards, the PUC requires licensed suppliers to train their marketing agents with specific training elements. For example, agent training must include the following:

- Laws and regulations governing marketing, consumer protection and door-to-door sales;
- Responsible and ethical sales practices;
- Supplier's products and services;
- Rates, rate structures and payment options;
- Customers' right to rescind and cancel contracts;
- Termination fees for contract cancellation (if applicable);
- Adherence to scripts used in customer or potential customer interactions;
- Proper completion of contract, enrollment documents and disclosures;
- Terms and definitions as found on PaPowerSwitch.com;
- How customers can contact the supplier; and
- Customer confidentiality and protection of information."[102]

Licensed suppliers must keep records on the successful completion of training by their marketing agents for three years.[103] Responsibilities of the competitive licensed supplier in the marketing agent training process include: "[…] monitor[ing] telephonic and door-to-door marketing and sales calls to: (1) evaluate the supplier's training program, (2) ensure that agents are providing accurate and complete information, complying with applicable rules and regulations and providing courteous service to customers."[104] The standards and responsibilities imposed upon the licensed electric suppliers and their marketing agents by the PUC help to ensure that customers are not taken advantage of with sales and marketing in their retail electricity supply shopping experience.

In addition to establishing standards and training around electric rate sales and marketing to customers, the PUC actively participates in and investigates consumer protection programs. Since at least 2016 (the earliest date of available customer rate shopping guides on the Pennsylvania Office of Consumer Advocate web page[105]) there have been three reviews of electricity issues resulting in stricter consumer protection regulations.

First, in 2018, the acting consumer advocate highlighted (among other things) the need to improve the verification process, and to improve language and clarity of standard terms and conditions of offered rate products.[106] As a result, the Commission added further regulations to the Sales & Marketing Regulations for Competitive Suppliers to meet the new standard.[107] In 2020, consumer advocates testified regarding electricity outages, reliability, and preparedness. They asked for improvement in performance of electric utilities that the PUC eventually deemed as "poor" and not meeting set benchmarks.[108] Finally, in 2021,

consumer advocates testified regarding house bill 1789 that requires electric utilities to “unbundle” their indirect costs from their default service rates to ensure that actual costs of providing distribution services are accurately reflected in the charged rates.[109] The bill also eases the process of switching electricity suppliers for the customer. Lastly, the bill requires that the PUC develops training and educational programs for suppliers, as well as testing requirements, and enforcement regulations.[110]

Consumer protection has played a strong role in the electric retail choice environment of Pennsylvania, both to enable continued administration and availability of retail choice for consumers, and to address and improve the consumer experience through institution of rigorous sales and marketing training and standards, and administration of a regulatory mechanism to enable input by consumer advocates and drive change and reform to continue raising the standards of consumer protections in place over time.

IV. Observations and Recommendations

This paper evaluates the purpose, history, and experience with competition in the retail supply of electricity to consumers, reviews existing market/pricing analyses, gauges the health and challenges of existing retail markets, and considers the potentially vital role that retail competition could play in an industry undergoing rapid transition.

The analysis focuses on a broad set of factors needed to assess the full value of retail competition for purchasers, for consumers as a whole, and for meeting societal efficiency, energy, and climate goals. Specifically, we evaluate the history and prospects of retail choice based on the following set of metrics focused on competition, consumers, and energy/climate policy:

- Competition – *Does retail choice expand consumer options for meeting their electricity needs? Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?*
- Energy Market Evolution and Climate Goals – *Do retail energy markets empower companies to evolve with customer demand and state policy goals and requirements? Can retail energy markets accelerate progress in achieving state climate goals?*
- Consumer Control, Engagement and Preferences - *Do consumers have more control over their usage and products? Are consumers more likely to be active participants and engaged energy users in retail energy markets? Do consumers have options tailored to their unique needs and preferences?*
- Long-Run Consumer Costs – *Is retail choice likely to put downward pressure on energy costs to consumers over time?*
- Education and Transparency – *Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?*
- Customer Service and Consumer Protection – *Does and will retail competition meet state requirements and objectives for customer service and consumer protection?*

The following observations with respect to these metrics flow from our review of retail energy markets across all states that have adopted retail choice:

- Competition – In states where markets empower retailers, retail choice has substantially increased the options available to consumers for the purchase of electricity, and has clearly produced a diverse array of products that give electricity consumers the power to choose electricity supply based on price, risk tolerance, budgeting needs, and desired contract terms.
- Energy Market Evolution and Climate Goals – Retail energy markets can accelerate state achievement of climate goals by providing products to customers that go beyond simply meeting state clean energy and/or renewable energy portfolio standards, and that encompass a variety of sustainable energy products. Examples include products that engage customers in demand-response initiatives that support grid reliability and resilience, that enable and help manage the cost of vehicle electrification, and that involve the purchase of renewable generation outside of state requirements. The varied options consumers have to select retail market products with a

renewable and/or "clean" footprint can drive private investments in low- and zero-carbon generation assets.

- Consumer Control, Engagement and Preferences – In states where retailers have access to customer data, retail suppliers continuously create and market a wide range of products that are designed to meet consumers energy cost management and non-price preferences, empowering the customer to be more engaged in energy use management tools and product offerings tailored to their specific interests and uses.
- Long-Run Consumer Costs – Competition for the provision of electricity creates the conditions to lower all customers' costs over time. Evidence from a review of statewide data supports the idea that retail choice can and does deliver long-run cost-reduction benefits in the retail supply of electricity for all customers. Moreover, while a review of the literature focused on the price-only impacts of retail choice reveals a range of methodological challenges, it also supports the idea that all classes of consumers – commercial, industrial and residential – have benefitted from retail choice.
- Education and Transparency – With retail choice, consumers are clearly empowered to choose electricity products and services from among diverse options, are exposed to products that provide a range of ways to think about energy choices, and have opportunities to increase their understanding and knowledge of the supply of electricity. However, in most states, the efforts to-date to fully educate consumers about retail choice and alternative supply options have fallen far short, and this failure to educate all customers remains a significant barrier to realizing the full benefits of competitive retail supply of electricity.
- Customer Service and Consumer Protection – Optionality for customers can strongly support consumer protection. If a customer finds that a service or product falls short of expectations, they can select an alternative supplier. However, some states have logged diverse and multiple complaints regarding the marketing approaches and strategies of some retail supply companies. This is one of the most controversial and challenging elements of retail choice to date. While retail supply is not the only industry or consumer product where some participants engage in questionable or harmful sales and marketing activities, particular attention should be focused on this issue since electricity is a basic need. Successful retail suppliers recognize that providing quality service and continuously improving product offerings is a fundamental requirement to gain the trust of customers and thereby gain market share. But state rules and regulations must evolve to better protect consumers against deceptive advertising and inappropriate marketing practices, and put in place robust requirements for licensed suppliers and consequential penalties for bad actors.

The analysis described in this report points to the following recommendations, based on both the experience with and largely untapped potential of competitive supply of electricity at retail:

First, ***don't throw the baby out with the bathwater***. Retail choice was initiated with supplier licensing rules and regulatory oversight that were in hindsight too light in many states, opening the door to bad actors, deceptive practices, and bad outcomes. But it would be imprudent to eliminate retail choice at this time because of these experiences. Instead, this can and must be improved both (a) to prevent harm to consumers and establish customer service expectations and obligations that align with the importance of a market that delivers an essential good, and (b) to allow retail choice to continue to evolve. Many states have already reacted with revisions to strengthen consumer protection, marketing/advertising, and

customer service requirements on retail suppliers, and these changes appear to work. These moves are appropriate, replicable in other states, and fully aligned with the consumer protection roles of state public utility commissions. In short, the bad experiences some states have had with the actions and predatory practices of some retail suppliers can be effectively ironed out of the framework for retail choice with relatively straightforward changes to the regulatory construct.

Second, states, utilities, and retail suppliers need to ***double down on efforts to increase consumer education and establish familiarity with retail choice***. Competition thrives with active, growing and informed consumer demand. Efforts to-date in most states to inform consumers about the availability and details associated with choosing one's electricity supplier have not been adequate to the task. Texas provides a solid benchmark in this respect – choice was not optional from the get-go, and consumers are now familiar with electricity choice and fully comfortable with choosing (and re-choosing) suppliers.

Finally, with strong consumer protection rules in place, ***consider active steps to level the playing field between distribution utilities providing default service, community aggregators, and retail suppliers***. The principle of competitive retail supply is that a vibrant competitive market of suppliers will drive prices down and maximize the benefits to consumers of electricity purchase decisions. But the flip side of this coin is that the market needs to be truly fair and level across suppliers. In many states, this simply is not the case as incumbent utilities have primary or exclusive access to customer data and billing administration, and these frustrate the purpose and conditions of competition. Some states have taken effective steps to level the playing field – by allowing supplier confidential access to customer data, and by allowing the customer-selected supplier the opportunity to be the point of contact with the customer through billing administration. States should work with stakeholders to develop acceptable and effective steps to level the competitive playing field.

Appendix A: Impact of Competition Pricing Review

Table A1, below, contains a summary of literature on the impact of competition on consumer prices. Reports reviewed span the past seventeen years, and vary significantly in several ways, including: the geography analyzed; the scope of the analysis; whether it focused on industry competition in general or retail competition in particular; data sources used; method of analysis; and focus of the question being asked. Yet the common theme among them is that they all involve an attempt to assess whether or not electricity customers are better or worse off due to competition.

The table describes many of these factors so that the reader can get a sense of the content and approach of the analyses and reports. It also includes a couple columns providing a high-level assessment of the take-aways from the studies – namely, do the results find that all consumers are better off ("positive"), worse off ("negative"), or is there a mix of results ("mixed").

As noted in the report, one of the challenges in reviewing the literature around retail choice outcomes is that there is a great diversity in how studies are conducted, what the focus of the analysis is (geographically, temporally, analytically, and with respect to wholesale and/or retail competition). However, while this prevents drawing absolute conclusions from our review of the academic literature, it is possible to provide a number of observations related to the drawbacks of a myopic focus on retail price comparisons, and high-level observations that flow from the studies that have been done.

First, it is simply very difficult to conduct retail choice price comparisons without introducing the possibility that the analysis is comparing things whose differences may be attributed to something other than the working of competition at retail. Differences may instead have more to do with wholesale changes in industry demand, local or regional fuel mixes, and other events or conditions that are exogenous to the impact of changing from a regulated to a competitive structure. For example, several studies do not investigate the impact of retail choice, they only report prices (or price changes) in states that were restructured versus those that were not, without any attribution or link to causal factors.

Second, the review of the literature strongly supports the idea that the experience with retail choice should be viewed through a wide lens, one not focused on static price comparisons of incomparable products or outcomes without analysis of causation, but rather based on a full array of consumer and policy benefit metrics.

Finally, as can be seen in the table, the results are mixed but are heavily weighted towards a finding based on literature review that retail choice very likely benefits business customers, and at least more likely than not is generating consumer cost benefits for residential customers. Appendix [[C]] contains a simple representation of average prices for electricity between utility default service and retail choice providers for each restructured state over a ten-year period.

Literature Review of Price Outcomes in States With and Without Retail Choice
Sorted Chronologically From Most Recent to Oldest Publish Year

Publication	Publish Year	States	Consumer Class	Methodology	Data Used	Price Outcome	Relevant Publication Excerpts
Rose, Kenneth, et al., "Retail Electricity Market Restructuring and Retail Rates," *United States Association for Energy Economics*, 2022.	2022	49 states (excl. Hawaii)	All	Difference in difference analysis	• State-level panel data. 1990-2019 from the EIA	Mixed	• **Short-Term:** "Restructured states responded to the rapid retail electricity price increases observed during that period of increasing natural gas price with auctions or bidding processes to set the energy component of the retail price." • **Long-Term:** "...we do not find evidence of long-run effects of restructuring on electricity prices between rate classes."
Ros, Agustin J., et al., "Does electricity competition work for residential consumers? Evidence from demand models for default and competitive residential electricity services," *Journal of Regulatory Economics*, 2020.	2020	Illinois	Residential	Literature review Static and dynamic analysis	• Monthly data from four utilities in Illinois from 2011 to 2017	Positive (commercial and industrial) Mixed (residential)	• "[R]etail choice has worked reasonably well and is achieving economic efficiency gains for the larger customer classes....There is no consensus, however, for whether retail choice has 'worked' and is achieving economic efficiency gains for residential and smaller commercial classes of customers." • "I find evidence that customers served by competitive suppliers are sensitive to the regulated default service price," implying that if residential customers pay higher prices for retail electricity, they do so because they have benefitted from it.
Chen, Wei-Ming, "The U.S. electricity market twenty years after restructuring: A review experience in the state of Delaware," *Utilities Policy*, 2019.	2019	Delaware	Residential	Average rate comparison	• State-level panel data (retail rates) from Energy Information Administration (EIA) from 1990-2016. • Retail rates from Delaware Public Service Commission from 2009 to 2016.	Negative	• "[T]his research compares electricity prices and finds that restructured states have higher electricity rates than non-restructured states."
Peter R. Hartley, et al., "Electricity reform and retail pricing in Texas," *Energy Economics*, 2019.	2019	Texas	All	Seemingly unrelated regression	• Monthly aggregated residential electricity bill data from Texas Public Utility Commission (PUCT), 2002-2016	Positive	• "Residential prices were much higher in subsequently competitive than in subsequently non-competitive areas in 2002, declines in areas with retail competition and increases in non-competitive market areas had eliminated the gap by 2016."
Tsai, Chen-Hao and Yi-Lin Tsai, "Competitive Retail Electricity Market Under Continuous Price Regulation," *Energy Policy,* 2018.	2018	Connecticut	Residential	Logarithmic Regression		Positive	• " ...as state regulator[s] continuously lowered rates for Standard Service through wholesale auction, both residential consumers and competitive suppliers were responding. Some residential consumers decided to return to Standard Service, while customers who continued acquiring electricity from competitive suppliers seemed able to found plans with prices lower than Standard Service. Furthermore, we also found that billed prices by competitive suppliers on average were more reflective to the change in Standard Rates, than to the movement of wholesale prices."
Ros, Agustin J., et al., "An Econometric Assessment of Electricity Demand in the United States Using Utility-Specific Panel Data and the Impact of Retail Competition on Prices," *The Energy Journal*, 2017.	2017	Nationwide	All	Literature review Static price models and two-stage least square model	• Panel data covering 72 electricity distribution utilities from 1972-2009 • FERC Form 1 data • Bureau of Labor statistics on price indices	Positive	• "I find that retail electricity is associated with lower deflated electricity prices with the mean total impact being -4.3%, -8.2% and -11.1% for residential, commercial, and industrial customers, respectively and with the impact diminishing over the sample period [1972-2009] for residential customers, remaining relatively constant for commercial customers and increasing for industrial customers."
O'Connor, Philip, "Restructuring Recharged The Superior Performance of Competitive Electricity Markets 2008-2016," *Retail Energy Supply Association*, 2017.	2017	Nationwide	All	Average rate comparison	• State-level panel data. 1990-2016 from the EIA	Positive	• "Weighted average prices in the group of 35 monopoly states have risen inexorably. By contrast, in the 14 competitive markets, commercial and industrial weighted average prices have trended significantly downward as residential prices have flattened."
Hortaçsu, Ali, et al., "Power to Choose? An Analysis of Consumer Inertia in the Residential Electricity Market," *American Economic Journal: Economic Policy*, 2017.	2017	Texas	Residential	Linear probability model using household fixed effects; Benchmark structural model estimated via generalized method of moments	• Monthly data on each of the approximately 192,000 residential meters in TNMP (Texas New Mexico Power) territory from January 2002 until April 2006. For each meter, we have information on the electric retailer used by the household and the electricity consumption for every month.	Positive	• "Although prices varied over time, the incumbent's price was consistently higher than several of the new entrants. This suggests that households could reduce their electricity bills by switching from the incumbent to a new entrant retailer."

Literature Review of Price Outcomes in States With and Without Retail Choice
Sorted Chronologically From Most Recent to Oldest Publish Year

Publication	Publish Year	States	Consumer Class	Methodology	Data Used	Price Outcome	Relevant Publication Excerpts
Su, Xuejuan, "Have customers benefited from electricity retail competition?," *Journal of Regulatory Economics* , 2014.	2014	Nationwide	All	Difference in difference model	• State-level panel data, 1990–2011	None	• "The results suggest that in restructured states, only residential customers have benefited from significantly lower prices but not commercial or industrial customers. Furthermore, this benefit is transitory and disappears in the long run. Overall, retail competition does not seem to deliver lower electricity prices to retail customers across the board or over time."
Kirsch, Laurence D. and Matthew J. Morey, "Retail Rate Impacts of State and Federal Electric Utility Policies," *The Electricity Journal* , 2013.	2013	47 states (excl. Hawaii, Alaska and DC)	All	Ordinary least squares regression	• State-level panel data (retail rates) from Energy Information Administration (EIA) from 1990-2011.	**Positive** (residential) **Negative** (some commercial and industrial)	• "[R]etail access has provided such a rate reduction for residential customers, though this reduction has been relatively small in states that adopted RPS [renewable portfolio standards, i.e., mandates to increase production of renewable energy]." • "Retail access has had no significant impact on commercial and industrial rates in states without RPS, but has significantly raised these rates in states with RPS."
Swadley, Adam and Yucel, Mine, "Did residential electricity rates fall under retail competition? A dynamic panel analysis," *Energy Policy* , 2011.	2011	17 deregulated states	Residential	Dynamic models	• State-level panel data, 1990–2010	**Positive**	• "The effects of a competitive retail electricity market are mixed across states, but generally appear to lower prices in states with high participation rates" due to "an increase in participation rates, price controls, and high shares of hydro in electricity generation."
Trebing, Harry M., "A Critical Assessment of Electricity and Natural Gas Deregulation," *Journal of Economic Issues,* 2008.	2008	California, Maryland, Virginia, Ohio	Residential	Average rate comparison	State-level panel data	**Negative**	• "Over the period 2002 to 2007, electricity prices in regulated states increased 19.4 percent, but for eight deregulated states the expiration of price caps brought about a price increase of 39.7 percent."
Kwoka, John, "Restructuring the U.S. Electric Power Sector: A Review of Recent Studies," *Review of Industrial Organization* , July 25, 2008.	2008	Nationwide	All	Literature review		None	• This article has documented significant methodological deficiencies in ten studies examining the effect of restructuring the U.S. Electric Power Sector, and thus rendering these studies' conclusions, of which eight show positive impact and two show negative impact, questionable. • "[There is] little reliable and convincing evidence that consumers are better off as a result of the restructuring of the U.S. electric power industry."
Lien, Jeff, "Electricity Restructuring: What Has Worked, What Has Not, and What is Next," *Department of Justice: Economic Analysis Group Discussion Paper* , 2008.	2008	Nationwide	All	Average rate comparison and literature review		**Positive**	• "The evidence simply does not support critics' claims that there have been dramatic price increases in restructured states relative to states that have maintained more traditional forms of regulation." • "Studies suggest that overall, consumers have benefitted from industry restructuring...All of these studies are in agreement that rising fuel costs are largely responsible for recent increases in electricity prices."
Joskow, Paul, "Markets for power in the United States: An interim assessment," *The Energy Journal* , 2006.	2006	Nationwide	All	Average rate comparison and regressions	State-level panel data, 1998–2004	**Positive**	• "[T]he measured effect is that retail competition reduces retail prices on the order of 5–10% at the means of the sample."
Zarnikau, J., & Whitworth, D,. "Has electric utility restructuring led to lower electricity prices for residential customers in Texas," *Energy Policy* , 2006.	2006	Texas	Residential	Seemingly unrelated regression	Texas panel data, 1998–2004	**Negative**	• "Residential electricity costs for consumers at a typical (1000 kWh per month) consumption level have increased at a greater rate in the areas of Texas offering retail choice than in the areas of the State where retail competition has not been introduced." • "[W]hile savings were realized in 2002 from a mandated reduction in base rates, any claims of overall savings in residential electricity costs for the years 2003 and 2004 would be highly suspect."
Apt, Jay, "Competition Has Not Lowered U.S. Industrial Electricity Prices," *The Electricity Journal* , 2005.	2005	Nationwide	Industrial	Regression		**Mixed**	• "Previous studies have shown that significant price reductions resulted from deregulation in airlines, trucking, railroads, and natural gas. Retail electricity price data from 1990 through 2003 show no such benefit to industrial customers."

Appendix B: State Summaries

Retail Choice Summary: *California*

Summary: Retail choice in California was adopted in 1996 with the enactment of AB 1890. After 2001, the amount of load available for Direct Access program was capped and only a limited set of non-residential customers have been allowed to enroll in the program through a lottery system. Residential customers have access to Community Choice Aggregation ("CCA"), which aggregates cities, counties, and other qualifying governmental entities. If CCA is available, residents are automatically enrolled unless they opt out. Customers have the option to receive a consolidated utility bill.[1] On average, retail choice electricity prices have been lower than utilities'.[2]

Data/ Metric	Assessment	Comment
Competition – ***Does retail choice expand consumer options for meeting their electricity needs?***	• Has increased electricity supply options; there are 37 CCA or Retail Power Marketer suppliers and the market is competitive • Number of Participants in 2021: Residential- 4,024,910; Commercial- 2,817; Industrial-22,663 • Residential retail choice participation has grew from just 2% in 2015 to 30% in 2021.[3] • Includes fixed and variable pricing options • Includes TOU rates[4] • There has been diversity in suppliers and products over time	• Market entry and the number of suppliers and diversity of products could be greater, and is limited by the non-residential customer participation cap and limited residential customer participation through CCA

Long-Run Consumer Costs – ***Is retail choice likely to put downward pressure on energy costs to consumers over time?***	• Competition disciplines pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers)
	• Utilities still retain a dominant market position since customer participation is limited, however retail supplier pricing is consistently lower than utilities' over time[5]
		• Greater competition can result in even greater competitive pressures to reduce costs across all suppliers
		• Greater competition can be promoted through the following additional design elements for retail choice:
		  ○ Broader access to retail choice
		  ○ equal access across utilities and suppliers to customer usage data
		  ○ State, utility, and supplier actions to improve customer awareness
		  ○ More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence

Product Flexibility and Diversity – ***Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?***	• There is product flexibility and diversity among retail suppliers • Product designs include variation in price, contract term, variable vs. fixed pricing, TOU pricing	• "Supplier shopping" websites could be adapted to better capture the value-added elements of retail supplier offers, rather than only price and term • Providing suppliers full access to customer data will encourage more tailored and higher-value options • Enabling consolidated billing would increase supply product design flexibility
Consumer and Societal Preference – ***Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?***	• The state has established highly aggressive, climate laws, policies, and targets, including clean and renewable resource policies, and building/transportation electrification goals with the Renewable Portfolio Standard which sets a goal of producing a minimum of 60% of its electricity via clean energy sources by 2030[6] • Retail suppliers in the state have offered a *wide* range of retail products consistent with state policy goals: clean and green electricity; energy efficiency and demand response products; rebates for energy use control apps and technologies (e.g., NEST thermostats);[7] rebates and incentives for all electric vehicles[8] • Retail suppliers have demonstrated greater flexibility and innovation than utilities in designing policy-focused products	• Participation of retail suppliers may be key in quickly developing products to help drive consumer uptake of new technologies • Supplier access to customer data and consolidated billing will be needed for designing innovative retail products that enable electrification, customer usage timing and control, and drive new technology uptake • Consolidated billing for all retail supply options would enable suppliers to offer simple, understandable products to consumers (e.g., "free nights and weekends," and "free electrical vehicle charging")
Education and Transparency – ***Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?***	• There is meaningful knowledge of RC among commercial/industrial customers, but, limited understanding of retail choice among residential customers	• Customer education is key to promoting competition • State and utility websites could be improved to better describe all elements of competitive supplier offers (rather than just price, term) • Additional marketing standards and marketing efforts among states, utilities, and suppliers could improve customer knowledge and uptake • States should ensure clear, consistent and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies
Customer Service and Consumer Protection – ***Does and will retail competition meet state requirements and objectives for customer service and consumer protection?***	• CCA has successfully established consumer protections for retail choice	• State should continue to monitor retail supplier product marketing practices • State should consider expanding customer protections if it adopts greater expansion of retail choice to residential customers

Retail Choice Summary: *Connecticut*

Summary: Retail choice has existed in Connecticut since 1998 with the passage of Public Act Bo.98-28.[9] The legislation required Connecticut's two electric utility companies—Eversource and United Illuminating Company—to unbundle their generation services from their businesses to compete with newly formed retail suppliers. All customers have access to retail choice.

Data/ Metric	Assessment	Comment
Competition – ***Does retail choice expand consumer options for meeting their electricity needs?***	• Has increased electricity supply options; there are 36 suppliers and the market is competitive • Number of Participants in 2021: Residential- 247,320; Commercial- 60,265; Industrial-1,024 • Includes fixed and variable pricing options[10] • There has been diversity in suppliers and products over time	• Market entry and the number of suppliers and diversity of products could be greater, and is likely limited by the following: o Presence of utility default supply without a clear equivalence in terms of name recognition, customer contact o Suppliers do not have equivalent access to data as utility default provider or the option of consolidated billing
Long-Run Consumer Costs – ***Is retail choice likely to put downward pressure on energy costs to consumers over time?***	• Competition likely disciplining pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers) • Utilities still retain a dominant market position with retail choice participation dropping from a peak of 42% in 2013 to 24% in 2021.[11] Retail supplier and utility pricing varies similarly over time, and have generally been within 12 percent on an annual basis[12]	• Greater competition can result in even greater competitive pressures to reduce costs across all suppliers • Greater competition can be promoted through the following additional design elements for retail choice: o equal access across utilities and suppliers to customer usage data o State, utility, and supplier actions to improve customer awareness o More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence
Product Flexibility and Diversity – ***Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?***	• There is significant product flexibility and diversity among retail suppliers • Product designs include variation in price, contract term, variable vs. fixed pricing, product discounts and incentives[13]	• "Supplier shopping" websites could be adapted to better capture the value-added elements of retail supplier offers, rather than *only* price and term • Providing suppliers full access to customer data will encourage more tailored and higher-value options • Enabling consolidated billing would increase supply product design flexibility
Consumer and Societal Preference – ***Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?***	• The state has established highly aggressive climate laws, policies, and targets, including clean and renewable resource policies—Connecticut sets a Renewable Portfolio Standard (RPS) that requires electric providers to offset a specified percentage or amount of the energy they generate or sell by purchasing renewable energy credits (RECs) from renewable sources. As of 2021, all electricity sold must include at least 30.5% of RECs.[14] • Retail suppliers in the state have offered a full range of retail products consistent with state policy goals: clean and green electricity; incentives and rebates for EV chargers and charging;[15] energy efficiency and demand response products; free energy use control apps and technologies (e.g., NEST thermostats)[16] • Retail suppliers have demonstrated far greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers may be key in quickly developing products to help drive consumer uptake of new technologies • Supplier access to customer data and consolidated billing will be needed for designing innovative retail products that enable electrification, customer usage timing and control, and drive new technology uptake • Consolidated billing would enable suppliers to offer simple, understandable products to consumers (e.g., "free nights and weekends," and "free electrical vehicle charging")
Education and Transparency – ***Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?***	• There are examples or allegations of misleading, confusing, and/or inaccurate information being provided by retail suppliers to current and potential customers such as slamming,[17] phone harassment,[18] or purportedly fixed rates unexpectedly becoming variable[19]	• States should ensure clear, consistent and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies • Customer education is key to promoting competition • State and utility websites could be improved to better describe all elements of competitive supplier offers (rather than just price, term) • Additional marketing standards and marketing efforts among states, utilities, and suppliers could improve customer knowledge and uptake
Customer Service and Consumer Protection – ***Does and will retail competition meet state requirements and objectives for customer service and consumer protection?***	• State has established aggressive consumer protections for retail choice – for example Connecticut's Consumer Counsel releases regular consumer alerts, detailing reliable databases for consumers to compare prices and simplifying regulations, as well as encouraging consumers to periodically check supplier rates[20] • Where retail suppliers intentionally sow confusion or engage in harmful or misleading marketing activities, it has damaged consumer confidence in retail choice, to the detriment of competition	• State should review and, if necessary, strengthen retail supplier requirements regarding marketing, consumer protection, and customer service obligations • These could include, for example, requirements related to what salespeople can and can't say, and what standard information must be provided to every potential customer • State could establish stronger penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Retail Choice Summary: *Delaware*

Summary: Retail choice has existed in Delaware since 1999. All customers have access to retail choice, and residential retail choice participation has remained relatively constant at around 5%.[21]

Data/ Metric	Assessment	Comment
Competition – ***Does retail choice expand consumer options for meeting their electricity needs?***	• Has increased electricity supply options; there are 41 suppliers and the market is competitive • Number of Participants in 2021: Residential- 31,570; Commercial- 8,505; Industrial-233 • Includes fixed and variable pricing options[22] • There has been diversity in suppliers and products over time	• Market entry and the number of suppliers and diversity of products could be greater, and is likely limited by the following: ○ Presence of utility default supply without a clear equivalence in terms of name recognition, customer contact • Suppliers do not have equivalent access to data as utility default provider

Long-Run Consumer Costs – ***Is retail choice likely to put downward pressure on energy costs to consumers over time?***	• Competition may be disciplining pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers)
	• Utilities still retain a dominant market position even though retail supplier pricing has been lower than utility pricing over time, by about 22 percent on an annual basis
		• Greater competition can result in even greater competitive pressures to reduce costs across all suppliers
		• Greater competition could be promoted through the following additional design elements for retail choice:
		  ○ equal access across utilities and suppliers to customer usage data
		  ○ State, utility, and supplier actions to improve customer awareness
		  ○ More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence

Product Flexibility and Diversity – ***Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?***	• There is product flexibility and diversity among retail suppliers • Product designs include variations in price, contract term, variable vs. fixed pricing, TOU pricing, product discounts and incentives[23]	• "Supplier shopping" websites could be adapted to better capture the value-added elements of retail supplier offers, rather than *only* price and term • Providing suppliers full access to customer data will encourage more tailored and higher-value options • Enabling consolidated billing would increase supply product design flexibility
Consumer and Societal Preference – ***Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?***	• The state has established climate laws, policies, and targets, including clean and renewable resource policies, and building/transportation electrification goals. Renewable Energy Assistance Program has been established and supports renewable development.[24] • Retail suppliers in the state have offered a range of retail products consistent with state policy goals: clean and green electricity; energy efficiency and demand response products;[25] • Retail suppliers have demonstrated greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers may be key in quickly developing products to help drive consumer uptake of new technologies • Supplier access to customer data and consolidated billing will be needed for designing innovative retail products that enable electrification, customer usage timing and control, and drive new technology uptake • Consolidated billing would enable suppliers to offer simple, understandable products to consumers (e.g., "free nights and weekends," and "free electrical vehicle charging")
Education and Transparency – ***Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?***	• Relatively low residential participation rates point to a lack of awareness of the availability of retail choice offerings	• Customer education is key to promoting competition • State and utility websites could be improved to better describe all elements of competitive supplier offers (rather than just price, term) • Additional marketing standards and marketing efforts among states, utilities, and suppliers could improve customer knowledge and uptake • States should ensure clear, consistent, and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies
Customer Service and Consumer Protection – ***Does and will retail competition meet state requirements and objectives for customer service and consumer protection?***	• There have been allegations of third parties imitating retail suppliers engaging in harmful marketing activities and misleading consumers[26] • Where retail suppliers intentionally sow confusion or engage in harmful or misleading marketing activities, it has likely damaged consumer confidence in retail choice, to the detriment of competition	• State should review and, if necessary, strengthen retail supplier requirements regarding marketing, consumer protection, and customer service obligations • These could include, for example, requirements related to what salespeople can and can't say, and what standard information must be provided to every potential customer • State should establish meaningful penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Retail Choice Summary: *Illinois*

Summary: Retail choice has existed in Illinois since 1999 and was made available to all large commercial customers by May 2002. However, it wasn't until 2008 when residential customers switched from their utilities to retail choice suppliers.[27] Customers can also participate in retail choice through community aggregation—Illinois Power Agency Act (IPAA) allows municipalities and counties aggregation, but IPAA is only available in certain counties.[28]

Data/ Metric	Assessment	Comment
Competition – ***Does retail choice expand consumer options for meeting their electricity needs?***	• Has increased electricity supply options greatly; there are 84 suppliers, and the market is competitive • Number of Participants in 2021: Residential- 1,610,491; Commercial-196,398; Industrial-2,978 • Includes fixed and variable pricing options[29] • There has been much growth in suppliers and products over time	• Efforts to expand competition in the state should seek to further address the prevalence of utility default supply without a clear equivalence for retail supply in terms of name recognition, customer contact • Suppliers do not have equivalent access to data as utility default provider or the option of consolidated billing

Long-Run Consumer Costs – ***Is retail choice likely to put downward pressure on energy costs to consumers over time?***	• Competition disciplines pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers)
	• Utilities still retain a dominant market position. However, between 2009 and 2013, Illinois had one of the highest growth rates in retail customer choice among residential customers.[30] Retail supplier pricing is significantly lower than utility pricing over time, and has generally been about 30 percent lower on an annual basis[31]
		• Greater competition can result in even greater competitive pressures to reduce costs across all suppliers
		• Greater competition can be promoted through the following additional design elements for retail choice:
		  ○ Equal access across utilities and suppliers to customer usage data
		  ○ State, utility, and supplier actions to improve customer awareness
		  ○ More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence

Product Flexibility and Diversity – ***Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?***	• There is significant product flexibility and diversity among retail suppliers • Product designs include variation in price, contract term, variable vs. fixed pricing, product discounts and incentives[32]	• "Supplier shopping" websites could be adapted to better capture the value-added elements of retail supplier offers, rather than only price and term • Providing suppliers full access to customer data will encourage more tailored and higher-value options • Enabling consolidated billing would increase supply product design flexibility
Consumer and Societal Preference – ***Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?***	• The state has established meaningful climate laws, policies, and targets, including clean and renewable resource policies[33] • Retail suppliers in the state have offered a significant range of retail products consistent with state policy goals, e.g.: clean and green electricity;[34] energy efficiency and demand response products;[35] • Retail suppliers have demonstrated somewhat greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers may be key in quickly developing products to help drive consumer uptake of new technologies • Supplier access to customer data and consolidated billing will be needed for designing innovative retail products that enable electrification, customer usage timing and control, and drive new technology uptake • Consolidated billing would enable suppliers to offer simple, understandable products to consumers (e.g., "free nights and weekends," and "free electrical vehicle charging")
Education and Transparency – ***Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?***	• State's aggressive promotion of retail choice has increased all customers' awareness of options in the market • There are examples or allegations of misleading, confusing, and/or inaccurate information being provided by retail suppliers to current and potential customers[36]	• Customer education is key to promoting competition • State and utility websites could be improved to better describe all elements of competitive supplier offers (rather than just price, term) • Additional marketing standards and marketing efforts among states, utilities, and suppliers could improve customer knowledge and uptake • States should ensure clear, consistent and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies
Customer Service and Consumer Protection – ***Does and will retail competition meet state requirements and objectives for customer service and consumer protection?***	• State has established strong consumer protections for retail choice – for example laws prohibiting switching customers' suppliers without the customer's authorization.[37] Ratings for all suppliers are also available on the centralized retail choice[38] • Where retail suppliers intentionally sow confusion or engage in harmful or misleading marketing activities, it likely has damaged consumer confidence in retail choice, to the detriment of competition	• States should review and, if necessary, strengthen retail supplier requirements regarding marketing, consumer protection, and customer service obligations • These could include, for example, requirements related to what salespeople can and can't say, and what standard information must be provided to every potential customer • States should establish meaningful penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Retail Choice Summary: *Maine*

Summary: Retail choice has existed in Maine since 2000, and all customers have access to retail choice.[39] Residential retail choice participation has remained relatively similar over time, with less than 10% of residential customers participating in retail choice in Maine.[40]

Data/ Metric	Assessment	Comment
Competition – ***Does retail choice expand consumer options for meeting their electricity needs?***	• Has increased electricity supply options significantly there are 54 suppliers and the market is competitive • Number of suppliers and products offered (year): • Number of Participants (year): Residential- 1,337,184; Commercial-172,772; Industrial-1,055; • Includes variable vs. fixed pricing options[41] • There has been *some* diversity in suppliers and products over time	• Market entry and the number of suppliers and diversity of products could be greater, and is likely limited by the presence of utility default supply without a clear equivalence in terms of name recognition, customer contact, and inequitable access to customer data

Long-Run Consumer Costs – ***Is retail choice likely to put downward pressure on energy costs to consumers over time?***	• Competition likely disciplining pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers)
	• Utilities still retain a dominant market position, however retail supplier pricing is consistently lower than utility pricing over time, and have generally been lower by about 10 percent on an annual basis[42]
		• Greater competition can result in even greater competitive pressures to reduce costs across all suppliers
		• Greater competition can be promoted through the following additional design elements for retail choice:
		  ○ equal access across utilities and suppliers to customer usage data
		  ○ State, utility, and supplier actions to improve customer awareness
		  ○ More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence

Product Flexibility and Diversity – ***Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?***	• There is product flexibility and diversity among retail suppliers • Product designs include variation in price, variable vs. fixed pricing, and contract term	• "Supplier shopping" websites could be adapted to better capture the value-added elements of retail supplier offers, rather than *only* price and term • Providing suppliers full access to customer data will encourage more tailored and higher-value options
Consumer and Societal Preference – ***Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?***	• The state has established modest climate laws, policies, and targets, including clean and renewable resource policies[43] • Retail suppliers in the state have offered a significant range of retail products consistent with state policy goals such as clean and green electricity[44] • Retail suppliers have demonstrated somewhat greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers may be key in quickly developing products to help drive consumer uptake of new technologies • Supplier access to customer data and consolidated billing will be needed for designing innovative retail products that enable electrification, customer usage timing and control, and drive new technology uptake • Consolidated billing should enable suppliers to offer simple, understandable products to consumers (e.g., "free nights and weekends," and "free electrical vehicle charging")
Education and Transparency – ***Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?***	• Participation points to a lack of widespread awareness of or appreciation for retail choice and retail products in the state	• State and utility websites could be improved to better describe all elements of competitive supplier offers (rather than just price, term) • Additional marketing standards and marketing efforts among states, utilities, and suppliers could improve customer knowledge and uptake • States should ensure clear, consistent and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies
Customer Service and Consumer Protection – ***Does and will retail competition meet state requirements and objectives for customer service and consumer protection?***	• There have been allegations of retail suppliers engaging in harmful marketing activities such as slamming[45] • Where retail suppliers intentionally sow confusion or engage in harmful or misleading marketing activities, it likely has damaged consumer confidence in retail choice, to the detriment of competition	• State could review and, if necessary, strengthen retail supplier requirements regarding marketing, consumer protection, and customer service obligations • These could include, for example, requirements related to what salespeople can and can't say, and what standard information must be provided to every potential customer • State could increase penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Retail Choice Summary: *Maryland*

Summary: Retail choice has existed in Maryland since 2000. Under the Electric Choice Act, all retail electric customers of investor-owned utilities (IOUs) in the State were given the opportunity to choose their electricity supplier. As of 2021, about 20% of residential consumers participate in retail choice in Maryland.[46]

Data/ Metric	Assessment	Comment
Competition – *Does retail choice expand consumer options for meeting their electricity needs?*	• Has increased electricity supply options greatly; there are 78 suppliers, and the market is competitive • Number of suppliers and products offered (year): • Number of Participants (year): Residential- 403,998; Commercial- 91,210; Industrial-1,503 • Includes fixed and variable pricing options[47] • There has been significant diversity in suppliers and products over time	• Competition is strong but greater customer participation could improve the degree of retail competition. This may require continued work to address the dominance of utility default supply, and achieve a clear equivalence in terms of name recognition, customer contact for all suppliers • Suppliers do not have equivalent access to data as utility default provider or the option of consolidated billing

Long-Run Consumer Costs – *Is retail choice likely to put downward pressure on energy costs to consumers over time?*	• Competition is likely disciplining pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers)
	• Utilities still retain a dominant market position. Yet retail supplier pricing has been lower than utility pricing over time, and has generally been about 10 percent lower on an annual basis[48]
		• Greater competition can result in even greater competitive pressures to reduce costs across all suppliers
		• Greater competition can be promoted through the following additional design elements for retail choice:
		  ○ equal access across utilities and suppliers to customer usage data
		  ○ State, utility, and supplier actions to improve customer awareness
		  ○ More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence

Product Flexibility and Diversity – *Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?*	• There is significant product flexibility and diversity among retail suppliers • Product designs include variation in price, contract term, variable vs. fixed pricing, product discounts and incentives[49]	• "Supplier shopping" websites could be adapted to better capture the value-added elements of retail supplier offers, rather than *only* price and term • Providing suppliers full access to customer data will encourage more tailored and higher-value options • Enabling consolidated billing would increase supply product design flexibility
Consumer and Societal Preference – *Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?*	• The state has established aggressive climate laws, policies, and targets, including clean and renewable resource policies. Maryland's Renewable Portfolio Standard (RPS) was established in 2004 and has set a requirement that by 2030 suppliers must procure at least 50 percent of electricity from renewable energy sources[50] • Retail suppliers in the state have offered a wide range of retail products consistent with state policy goals, e.g.: clean and green electricity; energy efficiency and demand response products[51] • Retail suppliers have demonstrated greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers may be key in quickly developing products to help drive consumer uptake of new technologies • Supplier access to customer data and consolidated billing will be needed for designing innovative retail products that enable electrification, customer usage timing and control, and drive new technology uptake • Consolidated billing would enable suppliers to offer simple, understandable products to consumers (e.g., "free nights and weekends," and "free electrical vehicle charging")
Education and Transparency – *Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?*	• State's aggressive promotion of retail choice has greatly increased all customers' awareness of options in the market • There are examples or allegations of misleading, confusing, and/or inaccurate information being provided by retail suppliers to current and potential customers[52]	• Customer education is key to promoting competition • State and utility websites could be improved to better describe all elements of competitive supplier offers (rather than just price, term) • Additional marketing standards and marketing efforts among states, utilities, and suppliers could improve customer knowledge and uptake • States should ensure clear, consistent and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies
Customer Service and Consumer Protection – *Does and will retail competition meet state requirements and objectives for customer service and consumer protection?*	• There have been examples of retail suppliers engaging in harmful marketing activities such as misrepresentation of early termination fees[53] • Where retail suppliers intentionally sow confusion or engage in harmful or misleading marketing activities, it likely has damaged consumer confidence in retail choice, to the detriment of competition	• State should review and, if necessary, strengthen retail supplier requirements regarding marketing, consumer protection, and customer service obligations • These could include, for example, requirements related to what salespeople can and can't say, and what standard information must be provided to every potential customer • State could consider increasing penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Retail Choice Summary: *Massachusetts*

Summary: Retail choice has existed in Massachusetts since 1998 for all customers. Residential consumers also have access to choice aggregation through the Municipal Aggregation Program. However, in 2019 the Attorney General called for an end to the individual residential electric supply market. Aggregation currently represents about 19% of the 2.4m residential customers in Massachusetts. They also represent nearly half of the just over 900,000 Massachusetts residential customers that are presently with competitive suppliers.[54]

Data/ Metric	Assessment	Comment
Competition – ***Does retail choice expand consumer options for meeting their electricity needs?***	• Has increased electricity supply options significantly; there are 54 suppliers and the market is competitive • Number of participants in 2021: Residential- 1,337,184 ; Commercial-172,772 ; Industrial-1,055 • Includes fixed and variable pricing options[55] • There has been significant diversity in suppliers and products over time	• Competition is strong but greater customer participation could improve the degree of retail competition. This may require continued work to address the dominance of utility default supply, and achieve a clear equivalence in terms of name recognition, customer contact for all suppliers • Suppliers do not have equivalent access to data as utility default provider or the option of consolidated billing

Long-Run Consumer Costs – ***Is retail choice likely to put downward pressure on energy costs to consumers over time?***	• Competition may be disciplining pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers)
	• Utilities still retain a dominant market position. However, retail supplier pricing has been lower than utility pricing over time, and has generally been about 10 percent lower on an annual basis[56]
		• Greater competition can result in even greater competitive pressures to reduce costs across all suppliers
		• Greater competition can be promoted through the following additional design elements for retail choice:
		  ○ equal access across utilities and suppliers to customer usage data
		  ○ State, utility, and supplier actions to improve customer awareness
		  ○ More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence

Product Flexibility and Diversity – ***Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?***	• There is significant product flexibility and diversity among retail suppliers • Product designs include variation in price, contract term, variable vs. fixed pricing, product discounts and incentives[57]	• "Supplier shopping" websites could be adapted to better capture the value-added elements of retail supplier offers, rather than only price and term • Providing suppliers full access to customer data will encourage more tailored and higher-value options • Enabling consolidated billing would increase supply product design flexibility
Consumer and Societal Preference – ***Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?***	• The state has established aggressive climate laws, policies, and targets, including clean and renewable resource policies, and building/transportation electrification goals.[58] • Retail suppliers in the state have offered a significant range of retail products consistent with state policy goals e.g. clean and green electricity; free EV chargers and charging; energy efficiency and demand response products[59] • Retail suppliers have demonstrated greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers may be key in quickly developing products to help drive consumer uptake of new technologies • Supplier access to customer data and consolidated billing will be needed for designing innovative retail products that enable electrification, customer usage timing and control, and drive new technology uptake • Consolidated billing would enable suppliers to offer simple, understandable products to consumers (e.g., "free nights and weekends," and "free electrical vehicle charging")
Education and Transparency – ***Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?***	• A long history of retail choice along with community aggregation has increased customers' awareness of options in the market, with over 49% of residential retail choice participation rate[60] • There are examples or allegations of misleading, confusing, and/or inaccurate information being provided by retail suppliers to current and potential customers in lower income households[61]	• Customer education is key to promoting competition • State and utility websites could be improved to better describe all elements of competitive supplier offers (rather than just price, term) • Additional marketing standards and marketing efforts among states, utilities, and suppliers could improve customer knowledge and uptake • States should ensure clear, consistent and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies
Customer Service and Consumer Protection – ***Does and will retail competition meet state requirements and objectives for customer service and consumer protection?***	• There have been allegations of retail suppliers engaging in harmful marketing activities, and targeting low-income households[62] • Where retail suppliers intentionally sow confusion or engage in harmful or misleading marketing activities, it has likely damaged consumer confidence in retail choice, to the detriment of competition	• State could review and, if necessary, strengthen retail supplier requirements regarding marketing, consumer protection, and customer service obligations • These could include, for example, requirements related to what salespeople can and can't say, and what standard information must be provided to every potential customer • State could establish meaningful penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Retail Choice Summary: *Michigan*

Summary: Retail choice has existed in Michigan since 2002. However, only commercial/industrial customers have access to retail choice, and they're subject to a 10% cap on retail supplied electricity.[63]

Data/ Metric	Assessment	Comment
Competition – ***Does retail choice expand consumer options for meeting their electricity needs?***	• Has increased electricity supply options somewhat; there are 9 suppliers and the market is competitive • Number of Participants in 2021: Commercial- 4,221; Industrial-355 • Includes fixed and variable pricing options[64] • here has been some diversity in suppliers and products over time	• Competition is not as strong as other states due to the limited allowed field for retail choice in the state. Greater allowance of customer participation would improve the degree of retail competition.
Long-Run Consumer Costs – ***Is retail choice likely to put downward pressure on energy costs to consumers over time?***	• Competition may be disciplining pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers) • Utilities retain a dominant market position given participation limits	• Greater competition can result in even greater competitive pressures to reduce costs across all suppliers • Greater competition could be promoted through expanding access to retail choice, actions to make customers aware, and ensuring retail supplier access to data and billing
Product Flexibility and Diversity – ***Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?***	• There is some product flexibility and diversity among retail suppliers • Product designs include variation in price, contract term, variable vs. fixed pricing[65]	• "Supplier shopping" websites could be adapted to better capture the value-added elements of retail supplier offers, rather than *only* price and term • Providing suppliers full access to customer data will encourage more tailored and higher-value options • Enabling consolidated billing would increase supply product design flexibility
Consumer and Societal Preference – ***Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?***	• The state has established meaningful climate laws, policies, and targets, including clean and renewable resource policies, and building/transportation electrification goals.[66] • Retail suppliers have demonstrated somewhat greater flexibility and innovation in designing products	• Expanding access to retail supply could help in developing products to help drive consumer uptake of new technologies that would help the state achieve energy and climate policy objectives
Education and Transparency – ***Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?***	• There is knowledge of retail choice among commercial/industrial customers, but limited understanding of retail choice among residential customers	• Expanding access would require significant efforts to educate consumers about their options
Customer Service and Consumer Protection – ***Does and will retail competition meet state requirements and objectives for customer service and consumer protection?***	• No meaningful concerns regarding consumer protections due to lack of access	• State would want to ensure strong customer service and consumer protection requirements if access is allowed to expand, particularly in the residential sector

Retail Choice Summary: ***New Hampshire***

Summary: Retail choice has existed in New Hampshire since 1998 and was introduced over time in different utility service territories. Although competitive suppliers can provide service in restructured areas, most residential customers continue to receive default energy service by their utility.[67]

Data/ Metric	Assessment	Comment
Competition – ***Does retail choice expand consumer options for meeting their electricity needs?***	• Retail choice has increased electricity supply options somewhat; there are 25 suppliers, and the market is competitive • Number of Participants in 2021: Residential- 87,778; Commercial- 28,467; Industrial-510 • Includes fixed and variable pricing options[68] • Includes TOU rates[69] • There has been some diversity in suppliers and products over time	• Competition is moderate; greater customer participation could improve the degree of retail competition. This may require continued work to address the dominance of utility default supply, and achieve a clear equivalence in terms of name recognition, customer contact for all suppliers • Suppliers do not have equivalent access to data as utility default provider or the option of consolidated billing

Long-Run Consumer Costs – ***Is retail choice likely to put downward pressure on energy costs to consumers over time?***	• Competition may be disciplining pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers) to some extent
	• Utilities still retain a dominant market position. However, retail supplier pricing has been lower than utility pricing over time and has generally been about 20 percent lower on an annual basis.[70]
		• Greater competition could result in even greater competitive pressures to reduce costs across all suppliers
		• Greater competition can be promoted through dedicated efforts to expand retail choice, and address the following additional design elements:
		  ○ equal access across utilities and suppliers to customer usage data
		  ○ State, utility, and supplier actions to improve customer awareness
		  ○ More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence

Product Flexibility and Diversity – ***Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?***	• There is some product flexibility and diversity among retail suppliers • Product designs include variation in price, contract term, variable vs. fixed pricing, TOU pricing, product discounts and incentives[71]	• "Supplier shopping" website should capture the value-added elements of retail supplier offers, rather than only price and term • Providing suppliers full access to customer data will encourage more tailored and higher-value options • Enabling consolidated billing would increase supply product design flexibility
Consumer and Societal Preference – ***Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?***	• The state has some clean and renewable resource policies, and building/transportation electrification goals.[72] • Retail suppliers in the state have offered a range of retail products consistent with state policy goals e.g.: clean and green electricity; efficiency and demand response products[73] • Retail suppliers have demonstrated somewhat greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers with a greater degree of retail choice participation could help the state achieve clean energy goals, particularly if it was facilitated through allowing greater Supplier access to customer data and consolidated billing
Education and Transparency – ***Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?***	• There is strong knowledge of RC among commercial/industrial customers, but limited understanding of retail choice among residential customers	• Customer education is key to promoting competition • State and utility websites could be improved to better describe all elements of competitive supplier offers (rather than just price, term) • Additional marketing standards and marketing efforts among states, utilities, and suppliers could improve customer knowledge and uptake • State should ensure clear, consistent and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies
Customer Service and Consumer Protection – ***Does and will retail competition meet state requirements and objectives for customer service and consumer protection?***	• State has established successful consumer protections for retail choice – for example setting a clear and understandable Retail Choice Bill of Rights[74] • Where retail suppliers intentionally sow confusion or engage in harmful or misleading marketing activities, it likely has damaged consumer confidence in retail choice, to the detriment of competition	• State could review and, if necessary, strengthen retail supplier requirements regarding marketing, consumer protection, and customer service obligations • These could include, for example, requirements related to what salespeople can and can't say, and what standard information must be provided to every potential customer • States should establish meaningful penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Retail Choice Summary: *New Jersey*

Summary: Retail choice has existed in New Jersey since 1999 for all customers.[75] Residential customers also have access to retail choice through their municipal or county energy aggregation program.[76] However, only about 10% of residential customers participate in retail choice in New Jersey.[77]

Data/ Metric	Assessment	Comment
Competition – ***Does retail choice expand consumer options for meeting their electricity needs?***	• Has increased electricity supply options significantly; there are 89 suppliers and the market is competitive[78] • Number of Participants in 2021: Residential- 333,370; Commercial-119,687; Industrial-895[79] • Includes fixed and variable pricing options[80] • There has been much diversity in suppliers and products over time	• Competition is solid but greater customer participation could improve the degree of retail competition. This may require continued work to address the dominance of utility default supply, and achieve a clear equivalence in terms of name recognition, customer contact for all suppliers • Suppliers do not have equivalent access to data as utility default provider or the option of consolidated billing

Long-Run Consumer Costs – ***Is retail choice likely to put downward pressure on energy costs to consumers over time?***	• Competition is likely disciplining pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers)
	• Utilities still retain a dominant market position, even though retail supplier pricing is on average lower than utility pricing, and has generally been lower by about 13 percent on an annual basis[81]
		• Greater competition can result in even greater competitive pressures to reduce costs across all suppliers
		• Greater competition can be promoted through the following additional design elements for retail choice:
		  ○ equal access across utilities and suppliers to customer usage data
		  ○ State, utility, and supplier actions to improve customer awareness
		  ○ More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence

Product Flexibility and Diversity – ***Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?***	• There is some product flexibility and diversity among retail suppliers • Product designs include variation in price, contract term, variable vs. fixed pricing[82]	• "Supplier shopping" websites could be adapted to better capture the value-added elements of retail supplier offers, rather than *only* price and term • Providing suppliers full access to customer data will encourage more tailored and higher-value options • Enabling consolidated billing would increase supply product design flexibility
Consumer and Societal Preference – ***Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?***	• The state has established climate laws, policies, and targets, including clean and renewable resource policies, and building/transportation electrification goals.[83] • Retail suppliers in the state have offered a significant range of retail products consistent with state policy goals, e.g.: clean and green electricity[84] • Retail suppliers have demonstrated somewhat greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers may be key in quickly developing products to help drive consumer uptake of new technologies • Supplier access to customer data and consolidated billing will be needed for designing innovative retail products that enable electrification, customer usage timing and control, and drive new technology uptake • Consolidated billing would enable suppliers to offer simple, understandable products to consumers (e.g., "free nights and weekends," and "free electrical vehicle charging")
Education and Transparency – ***Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?***	• There is meaningful knowledge of RC among commercial/industrial customers, but less understanding of retail choice among residential customers	• Customer education is key to promoting competition • State and utility websites could be improved to better describe all elements of competitive supplier offers (rather than just price, term) • Additional marketing standards and marketing efforts among states, utilities, and suppliers could improve customer knowledge and uptake • States should ensure clear, consistent and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies
Customer Service and Consumer Protection – ***Does and will retail competition meet state requirements and objectives for customer service and consumer protection?***	• *State has established aggressive and successful consumer protections for retail choice – for example, all utilities must report Price to Compare on the bill—utility's average cost of electricity*[85] • Where retail suppliers intentionally sow confusion or engage in harmful or misleading marketing activities, it *likely has* damaged consumer confidence in retail choice, to the detriment of competition	• States should review and, if necessary, strengthen retail supplier requirements regarding marketing, consumer protection, and customer service obligations • These could include, for example, requirements related to what salespeople can and can't say, and what standard information must be provided to every potential customer • States should establish meaningful penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Retail Choice Summary: *New York*

Summary: Retail choice has existed in New York since 1998 for all customers,[86] though in 2016, the New York Public Service Commission issued an order prohibiting service to low-income residential customers by competitive suppliers.[87] The same year, the Commission also established a Community Choice Aggregation program for residential and non-residential consumers to participate in retail choice through their municipalities.[88] As of 2021, almost 50% of residential customers in New York participate in retail choice directly or through aggregation.[89]

Data/ Metric	Assessment	Comment
Competition – Does retail choice expand consumer options for meeting their electricity needs?	• Has increased electricity supply options greatly; there are 83 suppliers, and the market is competitive • Number of participants in 2021: Residential- 905,274; Commercial-233,255; Industrial-2,254 • Includes fixed and variable pricing options[90] • There has been much diversity in suppliers and products over time	• Competition is strong but greater customer participation could continue to improve the degree of retail competition. This may require continued work to address the prevalence of utility default supply, and achieve a clear equivalence in terms of name recognition, customer contact for all suppliers • Competition would likely be enhanced if suppliers were granted equivalent access to data as utility default service provider and the option of consolidated billing

Long-Run Consumer Costs – Is retail choice likely to put downward pressure on energy costs to consumers over time?	• Competition is disciplining pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers)
	• Utilities still retain a meaningful portion of the market, though retail supplier pricing has been lower than utility pricing over time, and has generally been lower by about 20 percent on an annual basis[91]
		• Greater competition can result in even greater competitive pressures to reduce costs across all suppliers
		• Greater competition can be promoted through the following additional design elements for retail choice:
		  ○ equal access across utilities and suppliers to customer usage data
		  ○ State, utility, and supplier actions to improve customer awareness
		  ○ More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence

Product Flexibility and Diversity – Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?	• There is substantial product flexibility and diversity among retail suppliers • Product designs include variation in price, contract term, variable vs. fixed pricing, product discounts and incentives[92]	• "Supplier shopping" websites could be adapted to better capture the value-added elements of retail supplier offers, rather than only price and term • Providing suppliers full access to customer data will encourage more tailored and higher-value options • Enabling consolidated billing would increase supply product design flexibility
Consumer and Societal Preference – Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?	• The state has established highly aggressive climate laws, policies, and targets, including clean and renewable resource policies, and building/transportation electrification goals,[93] and distributed resource policies • Retail suppliers in the state have offered a full range of retail products consistent with state policy goals, e.g.: clean and green electricity; energy efficiency and demand response products[94] • Retail suppliers have demonstrated greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers may be key in helping New York quickly develop products to help drive consumer uptake of new technologies • Supplier access to customer data and consolidated billing will be needed for designing innovative retail products that enable electrification, customer usage timing and control, and drive new technology uptake • Consolidated billing would enable suppliers to offer simple, understandable products to consumers (e.g., "free nights and weekends," and "free electrical vehicle charging")
Education and Transparency – Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?	• State's aggressive promotion of retail choice and experience over time has increased customers' awareness of options in the market	• Customer education is key to promoting competition • State and utility websites could be improved to better describe all elements of competitive supplier offers (rather than just price, term) • Additional marketing standards and marketing efforts among states, utilities, and suppliers could improve customer knowledge and uptake • States should ensure clear, consistent and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies
Customer Service and Consumer Protection – Does and will retail competition meet state requirements and objectives for customer service and consumer protection?	• State has established aggressive and successful consumer protections for retail choice – for example The Commission's December 2019 Order which provides further requirements on transparency of pricing, value-added services, and marketing practices[95] or prohibiting service to low-income residential customers[96] • Where retail suppliers intentionally sow confusion or engage in harmful or misleading marketing activities, it likely has damaged consumer confidence in retail choice, to the detriment of competition	• State could review and, if necessary, strengthen retail supplier requirements further regarding marketing, consumer protection, and customer service obligations • These could include, for example, requirements related to what salespeople can and can't say, and what standard information must be provided to every potential customer • States should establish meaningful penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Retail Choice Summary: *Ohio*

Summary: Retail choice has existed in Ohio since 2001 for all customers, though in various stages. Only after 2008 could consumers fully directly purchase electricity from retail suppliers.[97] Customers can also participate in retail choice through their Community Choice Aggregation programs.[98]

Data/ Metric	Assessment	Comment
Competition – Does retail choice expand consumer options for meeting their electricity needs?	• Community aggregation and retail choice has increased electricity supply options greatly; there are 99 suppliers and the market is competitive • Number of Participants in 2021: Residential- 1,987,507; Commercial-272,112; Industrial-4,492 • Includes fixed and variable pricing options[99] • There has been much diversity in suppliers and products over time	• Competition is strong but greater customer participation could improve the degree of retail competition. This may require continued work to address the prevalence of utility default supply, and achieve a clear equivalence in terms of name recognition, customer contact for all suppliers • Suppliers do not have equivalent access to data as utility default provider or the option of consolidated billing

Long-Run Consumer Costs – Is retail choice likely to put downward pressure on energy costs to consumers over time?	• Competition is likely disciplining pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers)
	• Utilities don't retain a dominant market position and retail supplier pricing is consistently lower than utility pricing, and has generally been lower by about 20 percent on an annual basis[100]
		• Greater competition can result in even greater competitive pressures to reduce costs across all suppliers
		• Greater competition can be promoted through the following additional design elements for retail choice:
		  ○ equal access across utilities and suppliers to customer usage data
		  ○ State, utility, and supplier actions to improve customer awareness
		  ○ More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence

Product Flexibility and Diversity – Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?	• There is substantial product flexibility and diversity among retail suppliers • Product designs include variation in price, contract term, variable vs. fixed pricing, product discounts and incentives[101]	• "Supplier shopping" websites could be adapted to better capture the value-added elements of retail supplier offers, rather than only price and term • Providing suppliers full access to customer data will encourage more tailored and higher-value options • Enabling consolidated billing would increase supply product design flexibility
Consumer and Societal Preference – Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?	• The state has established climate laws, policies, and targets, including clean and renewable resource policies[102] • Retail suppliers in the state have offered a wide range of retail products consistent with state policy goals, e.g. clean and green electricity; energy efficiency and demand response products[103] • Retail suppliers have demonstrated greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers may be key in quickly developing products to help drive consumer uptake of new technologies • Supplier access to customer data and consolidated billing could help with designing innovative retail products that enable electrification, customer usage timing and control, and drive new technology uptake • Consolidated billing would enable suppliers to offer simple, understandable products to consumers (e.g., "free nights and weekends," and "free electrical vehicle charging")
Education and Transparency – Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?	• State's aggressive promotion of retail choice has increased customers' awareness of options in the market	• Customer education is key to promoting competition • State and utility websites could be improved to better describe all elements of competitive supplier offers (rather than just price, term) • Additional marketing standards and marketing efforts among states, utilities, and suppliers could improve customer knowledge and uptake • States should ensure clear, consistent and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies
Customer Service and Consumer Protection – Does and will retail competition meet state requirements and objectives for customer service and consumer protection?	• State has established aggressive and successful consumer protections for retail choice – for example in 2021 House Bill 128 revised utility service laws which included provisions to ensure fair ESPs and that the electric suppliers do not charge residential customers more than 10 cents per bill—a change from 85 cents prior[104] • Where retail suppliers intentionally sow confusion or engage in harmful or misleading marketing activities, it likely has damaged consumer confidence in retail choice, to the detriment of competition	• States should periodically review and, if necessary, strengthen retail supplier requirements regarding marketing, consumer protection, and customer service obligations • These could include, for example, requirements related to what salespeople can and can't say, and what standard information must be provided to every potential customer • States should establish meaningful penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Retail Choice Summary: *Oregon*

Summary: Retail choice has existed in Oregon since 2001 for non-residential customers only.[105] However, in 2019 a bill was introduced to give residential customers access to retail choice through Community Choice Aggregation.[106]

Data/ Metric	Assessment	Comment
Competition – Does retail choice expand consumer options for meeting their electricity needs?	• Has modestly increased electricity supply options; there are 5 suppliers and the market is competitive • Number of Participants in 2021: Commercial- 161; Industrial-22 • Includes fixed and variable pricing options[107] • There has been some diversity in suppliers and products over time	• Limited allowance for retail choice has restricted supply competitiveness; greater choice access could significantly increase market competitiveness

Long-Run Consumer Costs – Is retail choice likely to put downward pressure on energy costs to consumers over time?	• Competition may be disciplining pricing of retail electricity supply products somewhat from suppliers (i.e., utilities and retail suppliers)
	• Utilities still retain a dominant market position due to participation limits. However non-residential retail supplier pricing has been lower than utility pricing over time, and has generally been lower by about 30 percent on an annual basis
		• Greater competition would result in even greater competitive pressures to reduce costs across all suppliers
		• Greater competition can be promoted through greater access and through the following additional design elements for retail choice:
		  ○ equal access across utilities and suppliers to customer usage data
		  ○ State, utility, and supplier actions to improve customer awareness
		  ○ More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence

Product Flexibility and Diversity – Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?	• There is some product flexibility and diversity among retail suppliers • Product designs include variation in price, contract term, variable vs. fixed pricing[108]	• Allowing greater retail access is step one to improve product flexibility and diversity • Providing suppliers full access to customer data will encourage more tailored and higher-value options • Enabling consolidated billing would increase supply product design flexibility
Consumer and Societal Preference – Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?	• The state has established meaningful climate laws, policies, and targets, including clean and renewable resource policies, and building/transportation electrification goals.[109] • Retail suppliers in the state have offered a significant range of retail products consistent with state policy goals, e.g. clean and green electricity[110] • Retail suppliers have demonstrated somewhat greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers could be key in quickly developing products to help drive consumer uptake of new technologies needed to meet the state's energy and climate policy goals • Supplier access to customer data and consolidated billing will be needed for designing innovative retail products that enable electrification, customer usage timing and control, and drive new technology uptake • Consolidated billing would enable suppliers to offer simple, understandable products to consumers (e.g., "free nights and weekends," and "free electrical vehicle charging")
Education and Transparency – Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?	• Limited by lack of retail access. Growing with new aggregation option.	• Customer education is key to promoting competition • Additional marketing standards and marketing efforts among state, utilities, and suppliers could improve customer knowledge and uptake • State could ensure clear, consistent and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies if or as necessary with expanded access
Customer Service and Consumer Protection – Does and will retail competition meet state requirements and objectives for customer service and consumer protection?	• Role of community aggregators will likely define the degree and nature of customer service	• If retail access expanded further, state could review and, if necessary, strengthen retail supplier requirements regarding marketing, consumer protection, and customer service obligations • If retail access expanded further, state could establish meaningful penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Retail Choice Summary: *Pennsylvania*

Summary: Retail choice has existed since 1996 when Pennsylvania signed the Electric Generation Customer Choice and Competition Act, which introduced retail choice for all customers.[111] As of 2021, less than 10% of residents participated in retail choice. Pennsylvania allows suppliers to issue consolidated bills and the Pennsylvania Office of Consumer Advocate publishes monthly shopping guides for residential customers to further inform their electric rate choices. Retail choice prices are on average significantly lower than utility prices.[112]

Data/ Metric	Assessment	Comment
Competition – Does retail choice expand consumer options for meeting their electricity needs?	• Has increased electricity supply options greatly and as of February 2021, there are currently 460 suppliers, and the market is competitive[113] • Number of Participants in 2021: Residential- 263,204; Commercial-1,010,734; Industrial-26,263[114] • Includes fixed and variable pricing options, and TOU rates[115] • There has been diversity in suppliers and products over time	• Competition is strong but greater customer participation could improve the degree of retail competition. This may require continued work to address the dominance of utility default supply, and achieve a clear equivalence in terms of name recognition, customer contact for all suppliers • Suppliers do not have equivalent access to data as utility default provider or the option of consolidated billing.

Long-Run Consumer Costs – Is retail choice likely to put downward pressure on energy costs to consumers over time?	• Competition is disciplining pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers)
	• Utilities still retain a dominant market position even though retail choice prices are on average significantly lower than utility prices.[116]
		• Greater competition can be promoted through the following additional design elements for retail choice:
		  ○ Equal access across utilities and suppliers to customer usage data
		  ○ State, utility, and supplier actions to improve customer awareness
		  ○ More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence

Product Flexibility and Diversity – Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?	• There is substantial product flexibility and diversity among retail suppliers • Product designs include variation in contract term, variable vs. fixed pricing, TOU pricing[117]	• "Supplier shopping" websites could be adapted to better capture the value-added elements of retail supplier offers, rather than only price and term • Providing suppliers full access to customer data will encourage more tailored and higher-value options • Enabling consolidated billing would increase supply product design flexibility
Consumer and Societal Preference – Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?	• The state has established climate laws, policies, and targets, including clean and renewable resource policies such as the Alternative Energy Portfolio Standard a minimum requirement of 18% of green energy content. The state offers loans, grants, and other renewable energy programs to help suppliers meet this goal.[118] • Retail suppliers in the state have offered a significant range of retail products consistent with state policy goals clean and green electricity deals across all products—this resulted in energy accounts growing by 17% from 2017 to 2021[119] • Retail suppliers have demonstrated greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers may be key in quickly developing products to help drive consumer uptake of new technologies • Supplier access to customer data and consolidated billing will be needed for designing innovative retail products that enable electrification, customer usage timing and control, and drive new technology uptake • Consolidated billing would enable suppliers to offer simple, understandable products to consumers (e.g., "free nights and weekends," and "free electrical vehicle charging")
Education and Transparency – Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?	• The prevalence of retail choice over time and state and supplier educational and marketing efforts have significantly increased consumers' knowledge of retail choice options	• Customer education is key to promoting competition • State and utility websites could be improved to better describe all elements of competitive supplier offers (rather than just price, term) • Additional marketing standards and marketing efforts among states, utilities, and suppliers could improve customer knowledge and uptake • States should ensure clear, consistent and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies
Customer Service and Consumer Protection – Does and will retail competition meet state requirements and objectives for customer service and consumer protection?	• State has established aggressive and successful consumer protections for retail choice – for example setting high and robust standards such as training or documentation requirements for marketing agents that engage in door-to-door marketing[120] • Where retail suppliers intentionally sow confusion or engage in harmful or misleading marketing activities, it likely has damaged consumer confidence in retail choice, to the detriment of competition	• States should continue to review and, when necessary, strengthen retail supplier requirements regarding marketing, consumer protection, and customer service obligations • These could include, for example, requirements related to what salespeople can and can't say, and what standard information must be provided to every potential customer • States should establish meaningful penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Retail Choice Summary: *Rhode Island*

Summary: Retail choice has existed in Rhode Island since 1996 for all customers.[121] In May 2023, Rhode Island will launch Community Choice Aggregation program where customers will have access to retail choice through their municipal aggregation. [122] As of 2021, about 10% of residential customers in Rhode Island participate in retail choice.[123]

Data/ Metric	Assessment	Comment
Competition – Does retail choice expand consumer options for meeting their electricity needs?	• Has increased electricity supply options; • There are 24 suppliers and the market is competitive • Number of Participants in 2021: Residential- 37,892; Commercial-14,042; Industrial-227 • Includes fixed and variable pricing options[124] • There has been diversity in suppliers and products over time	• Competition is strong but greater customer participation could improve the degree of retail competition. This may require continued work to address the dominance of utility default supply, and achieve a clear equivalence in terms of name recognition, customer contact for all suppliers • Suppliers do not have equivalent access to data as utility default provider or the option of consolidated billing

Long-Run Consumer Costs – Is retail choice likely to put downward pressure on energy costs to consumers over time?	• Competition is disciplining pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers)
	• Utilities still retain a fairly dominant market position. However retail supplier pricing has been lower than utility pricing over time, and has generally been lower by about 15 percent on an annual basis[125]
		• Greater competition can result in even greater competitive pressures to reduce costs across all suppliers
		• Greater competition can be promoted through the following additional design elements for retail choice:
		  ○ equal access across utilities and suppliers to customer usage data
		  ○ State, utility, and supplier actions to improve customer awareness
		  ○ More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence

Product Flexibility and Diversity – Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?	• There is product flexibility and diversity among retail suppliers • Product designs include variation in price, contract term, variable vs. fixed pricing, product discounts and incentives[126]	• "Supplier shopping" websites could be adapted to better capture the value-added elements of retail supplier offers, rather than only price and term • Providing suppliers full access to customer data will encourage more tailored and higher-value options • Enabling consolidated billing would increase supply product design flexibility
Consumer and Societal Preference – Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?	• The state has established aggressive climate laws, policies, and targets, including clean and renewable resource policies, and building/transportation electrification goals.[127] • Retail suppliers in the state have offered a significant range of retail products consistent with state policy goals, e.g., clean and green electricity; energy efficiency and demand response products[128] • Retail suppliers have demonstrated somewhat greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers may be key in quickly developing products to help drive consumer uptake of new technologies • Supplier access to customer data and consolidated billing will be needed for designing innovative retail products that enable electrification, customer usage timing and control, and drive new technology uptake • Consolidated billing would enable suppliers to offer simple, understandable products to consumers (e.g., "free nights and weekends," and "free electrical vehicle charging")
Education and Transparency – Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?	• There is meaningful knowledge of RC among commercial/industrial customers, but only moderate understanding of retail choice among residential customers	• Customer education is key to promoting competition • State and utility websites could be improved to better describe all elements of competitive supplier offers (rather than just price, term) • Additional marketing standards and marketing efforts among states, utilities, and suppliers could improve customer knowledge and uptake • States should ensure clear, consistent and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies
Customer Service and Consumer Protection – Does and will retail competition meet state requirements and objectives for customer service and consumer protection?	• State has established strong consumer protections for retail choice – for example standardizing billing formats to ease customer confusion and strict contract documentation standards[129] • Where retail suppliers intentionally sow confusion or engage in harmful or misleading marketing activities, it likely has damaged consumer confidence in retail choice, to the detriment of competition	• States should continue to review and, if necessary, strengthen retail supplier requirements regarding marketing, consumer protection, and customer service obligations • These could include, for example, requirements related to what salespeople can and can't say, and what standard information must be provided to every potential customer • States should establish meaningful penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Retail Choice Summary: ***Virginia***

Summary: Retail choice has existed in 2001 for all customers.[130] However, it wasn't until 2004 when all retail customers were permitted to purchase energy from any supplier. In 2007, the General Assembly determined that there weren't enough competition and ended full retail choice and added the following stipulations: only consumers whose demands exceed 5 MW can purchase from retail suppliers, two individual non-residential customers can petition to combine their demands to meet the 5 MW threshold, any customer, regardless of consumer class, can purchase 100% renewable energy from retail suppliers if their utility company does not already use 100% renewable.[131]

Data/ Metric	Assessment	Comment
Competition – Does retail choice expand consumer options for meeting their electricity needs?	• Has increased electricity supply options a bit; there are 8 suppliers and the market is competitive • Number of Participants in 2021: Residential-0 ; Commercial- 4,578; Industrial-21[132] • Includes fixed and variable pricing options • There has been some diversity in suppliers and products over time	• Competition is not particularly strong, and would require greatly expanding retail choice access, continued work to address the dominance of utility default supply, and achieve a clear equivalence in terms of name recognition, customer contact for all suppliers • Suppliers do not have equivalent access to data as utility default provider or the option of consolidated billing

Long-Run Consumer Costs – Is retail choice likely to put downward pressure on energy costs to consumers over time?	• Competition may be disciplining pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers)
	• Utilities still retain a dominant market position due to lack of residential consumer participation
		• Greater competition would result in even greater competitive pressures to reduce costs across all suppliers
		• Greater competition can be promoted through the following additional design elements for retail choice:
		  ○ equal access across utilities and suppliers to customer usage data
		  ○ State, utility, and supplier actions to improve customer awareness
		  ○ More consistent control and equal enforcement of consumer protection and equal access laws/regulations to improve customer confidence

Product Flexibility and Diversity – Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?	• There is some product flexibility and diversity among retail suppliers • Product designs include variation in price, contract term, variable vs. fixed pricing	• Meaningful product flexibility and diversity would require significant expansion of true retail supply to all customers
Consumer and Societal Preference – Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?	• The state has established few climate laws, policies, and targets, including clean and renewable resource policies, and building/transportation electrification goals.[133] • Retail suppliers in the state have offered a range of retail products consistent with state policy goals e.g., clean and green electricity[134] • Retail suppliers have demonstrated somewhat greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers may be key in quickly developing products to help drive consumer uptake of new technologies, but this would require an expansion of retail choice • Supplier access to customer data and consolidated billing would be needed for designing innovative retail products that enable electrification, customer usage timing and control, and drive new technology uptake • Consolidated billing would enable suppliers to offer simple, understandable products to consumers (e.g., "free nights and weekends," and "free electrical vehicle charging")
Education and Transparency – Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?	• There is meaningful knowledge of RC among commercial/industrial customers, but limited understanding of retail choice among residential customers	• Customer education would be vital if the state were to expand retail choice access
Customer Service and Consumer Protection – Does and will retail competition meet state requirements and objectives for customer service and consumer protection?	• Lack of true access means this is not a significant issue yet	• If retail access granted, state would need to review and strengthen retail supplier requirements regarding marketing, consumer protection, and customer service obligations • These could include, for example, requirements related to what salespeople can and can't say, and what standard information must be provided to every potential customer • State would want to establish meaningful penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Retail Choice Summary: *Texas*

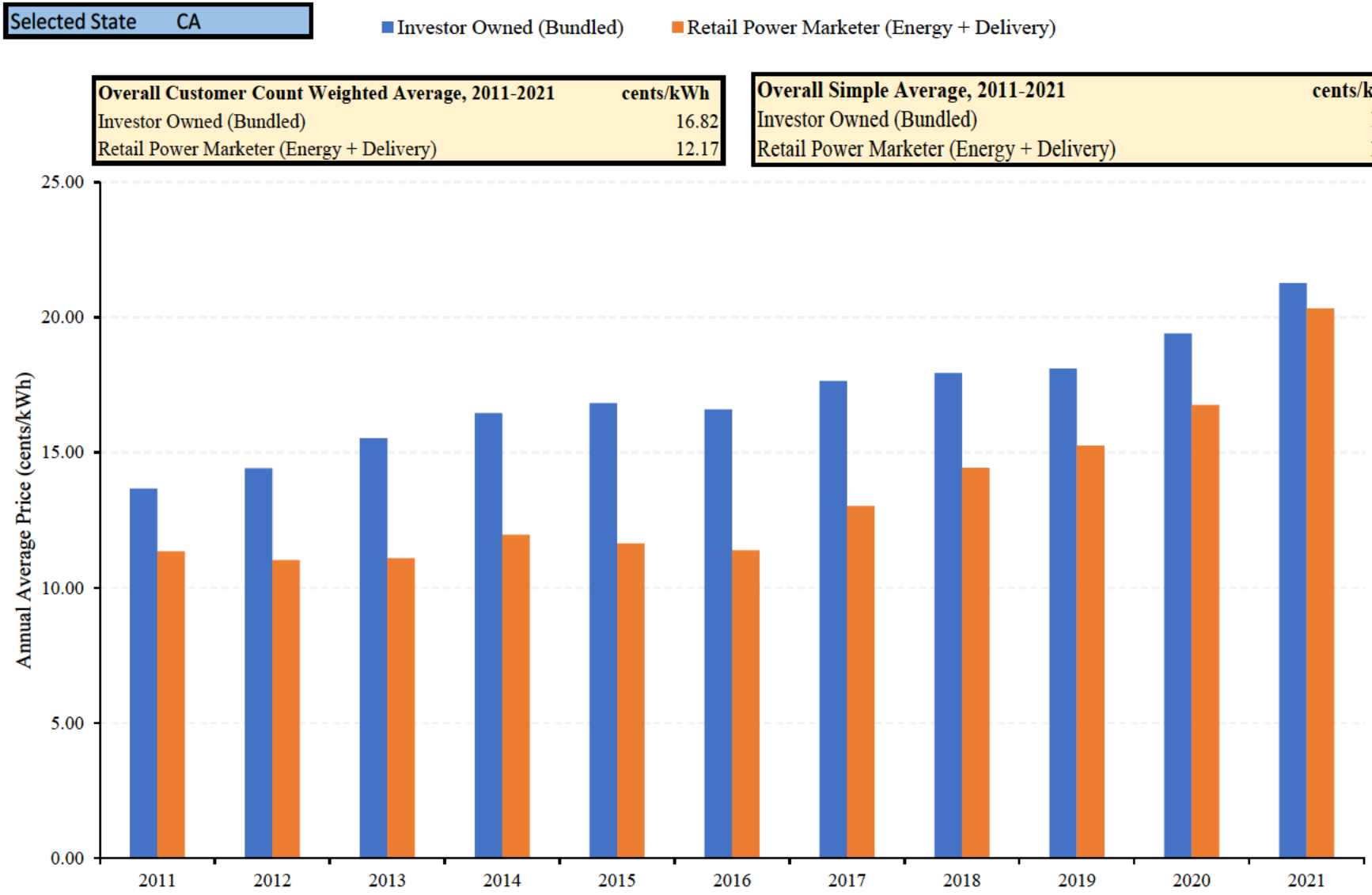
Summary: In 1995, Texas legislation introduced competition at the wholesale level.[135] In 1999, legislation was passed mandating full retail choice by January 2002.[136] The Electric Reliability Council of Texas (ERCOT) is an independent system operator (ISO) that supplies power to 90 percent of the state of Texas. In the areas operated by ERCOT, participation is retail choice is mandatory—customers must either choose a competitive supplier or be assigned one. As a result, 75% of load is competitive-choice customers.[137] Texas allows suppliers to issue consolidated bills.[138] Retail and utility supply prices are comparable.

Data/ Metric	Assessment	Comment
Competition – Does retail choice expand consumer options for meeting their electricity needs?	• Retail choice has increased electricity supply options greatly; there are 174 suppliers, and the market is competitive[139] • Includes fixed and variable pricing options. • Includes TOU rates[140] • There has been much diversity in suppliers and products over time[141] • Number of Participants in 2021: Residential- 6,614,852; Commercial- 793,524; Industrial- 214,668[142]	• Competition is strong.
Long-Run Consumer Costs – Is retail choice likely to put downward pressure on energy costs to consumers over time?	• Competition is disciplining pricing of retail electricity supply products from all suppliers (i.e., utilities and retail suppliers) • Utilities do not retain a dominant market position: about 85% of Texans participate in retail choice[143] • Retail supplier prices have over time been about the same as regulated entities[144]	• Mandatory competition in Texas has resulted in strong long-run prospects for minimizing consumer costs
Product Flexibility and Diversity – Does and will retail competition expand the flexibility and diversity/optionality of electricity supply options?	• There is substantial product flexibility and diversity among retail suppliers • Product designs include variation in price, contract term, variable vs. fixed pricing, TOU pricing, product discounts and incentives. Retail choice customers are offered carbon offset credits, home security value-added services or energy information and feedback[145]	• Conditions in the state are good for continued product diversity and flexibility
Consumer and Societal Preference – Can retail competition support innovative product development responsive to rapidly-changing consumer preferences and state policy objectives?	• The state has established some climate laws, policies, and targets. For example, Texas imposes a renewable energy portfolio standard of 5,800 MW.[146] As a result, all electricity possesses minimum renewable content of about 5%[147] • Retail suppliers in the state have offered a significant range of retail products consistent with state policy goals for example, clean and green electricity;[148] rebates for EV chargers and charging;[149] energy efficiency and demand response products; free energy use control apps and technologies (e.g., NEST thermostats)[150] • Retail suppliers have demonstrated greater flexibility and innovation in designing policy-focused products	• Participation of retail suppliers may be key in quickly developing products to help drive consumer uptake of new technologies • Suppliers are well poised to help the state achieve any new climate or energy policies
Education and Transparency – Does and will retail competition increase consumers' knowledge and understanding of options for electricity service, and does retail choice meet state requirements and objectives for product clarity and transparency?	• Retail choice is mandatory under state law in the part of the state operated by the Electric Reliability Council of Texas (ERCOT) and there is significant customer awareness of options in the market[151] • There are still some examples or allegations of misleading, confusing, and/or inaccurate information being provided by retail suppliers to current and potential customers. From August 1, 2022 to January 31, 2023 there were 2949 complaints. The biggest complaint categories were billing and discontinued service which received 1751 and 511 complaints respectively. However, quality of service has received 0 complaints[152]	• Customer education is key to promoting competition • State and utility websites could be improved to better describe all elements of competitive supplier offers (rather than just price, term) • Additional marketing standards and marketing efforts among states, utilities, and suppliers could improve customer knowledge and uptake • States should ensure clear, consistent, and accurate presentation of information by suppliers through more explicit retail supplier regulations and policies
Customer Service and Consumer Protection – Does and will retail competition meet state requirements and objectives for customer service and consumer protection?	• Following Winter Storm Uri,[153] wholesale indexed products[154] which caused the highest price fluctuations for residential customers were seen as unfair, misleading, and deceptive. As a result, all indexed products, and practices have been outlawed in Texas since December 2021[155] • Where retail suppliers intentionally sow confusion or engage in harmful or misleading marketing activities, it likely has damaged consumer confidence in retail choice, to the detriment of competition	• States should review and, if necessary, strengthen retail supplier requirements regarding marketing, consumer protection, and customer service obligations • These could include, for example, requirements related to what salespeople can and can't say, and what standard information must be provided to every potential customer • States should establish meaningful penalties and/or licensing implications for retail suppliers that violate consumer protection and consumer service requirements

Appendix C: State Price Results: Retail Supply vs. Default Service

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State	CA



Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	16.82
Retail Power Marketer (Energy + Delivery)	12.17

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	17.08
Retail Power Marketer (Energy + Delivery)	13.48

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State	CT

Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	19.18
Retail Power Marketer (Energy + Delivery)	16.93

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	18.97
Retail Power Marketer (Energy + Delivery)	16.97

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State DE

Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	12.80
Retail Power Marketer (Energy + Delivery)	8.47

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	12.81
Retail Power Marketer (Energy + Delivery)	8.53

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State IL

Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	10.82
Retail Power Marketer (Energy + Delivery)	8.40

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	10.71
Retail Power Marketer (Energy + Delivery)	8.22

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State MA

Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	18.18
Retail Power Marketer (Energy + Delivery)	17.29

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	18.72
Retail Power Marketer (Energy + Delivery)	16.43

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State MD

Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	12.87
Retail Power Marketer (Energy + Delivery)	10.82

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	12.88
Retail Power Marketer (Energy + Delivery)	10.83

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State ME

Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	15.10
Retail Power Marketer (Energy + Delivery)	12.12

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	14.10
Retail Power Marketer (Energy + Delivery)	11.82

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State MI

Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	11.89
Retail Power Marketer (Energy + Delivery)	6.75

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	11.88
Retail Power Marketer (Energy + Delivery)	6.74

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State	NH

Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	17.80
Retail Power Marketer (Energy + Delivery)	13.98

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	17.88
Retail Power Marketer (Energy + Delivery)	13.55

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State NJ

Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	14.61
Retail Power Marketer (Energy + Delivery)	12.65

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	14.60
Retail Power Marketer (Energy + Delivery)	12.67

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State NY

Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	17.30
Retail Power Marketer (Energy + Delivery)	14.00

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	17.31
Retail Power Marketer (Energy + Delivery)	13.93

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State OH

Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	11.06
Retail Power Marketer (Energy + Delivery)	8.81

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	11.16
Retail Power Marketer (Energy + Delivery)	8.79

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State OR

Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	9.59
Retail Power Marketer (Energy + Delivery)	5.93

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	9.57
Retail Power Marketer (Energy + Delivery)	5.98

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State PA

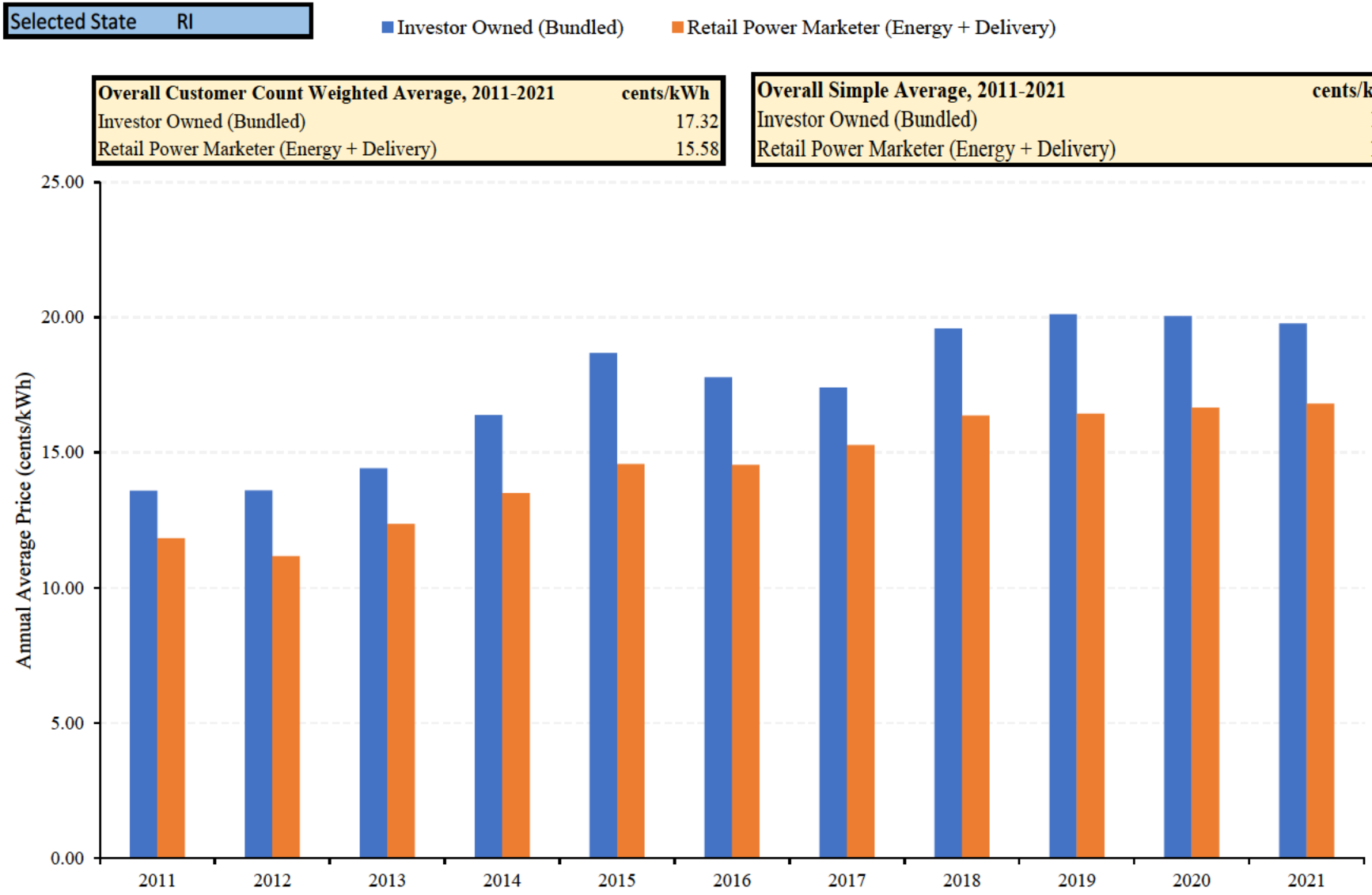
Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	12.35
Retail Power Marketer (Energy + Delivery)	8.85

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	12.35
Retail Power Marketer (Energy + Delivery)	8.84

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State	RI



Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	17.32
Retail Power Marketer (Energy + Delivery)	15.58

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	17.40
Retail Power Marketer (Energy + Delivery)	14.50

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Annual Average All Customer (Residential + Commercial +Industrial) Electricity Price by Retail Choice State, Investor Owned vs. Retail Power Marketer, 2011 - 2021

Selected State VA

Overall Customer Count Weighted Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	8.98
Retail Power Marketer (Energy + Delivery)	6.22

Overall Simple Average, 2011-2021	cents/kWh
Investor Owned (Bundled)	8.98
Retail Power Marketer (Energy + Delivery)	6.26

Source: Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

Appendix D: State Retail Choice Programs

Region	State	Access to Retail Competition	Description
West	California	Limited	Non-residential customers have limited access through a lottery system, subject to a load cap. Residential customers only have access through choice aggregation.[1]
Northeast	Connecticut	Full	Residential and non-residential customers have access to retail competition.[2]
Northeast	Delaware	Full	Residential and non-residential customers have access to retail competition.[3]
Midwest	Illinois	Full	Residential and non-residential customers have access to retail competition.[4]
Northeast	Maine	Full	Residential and non-residential customers have access to retail competition.[5]
Northeast	Maryland	Full	Residential and non-residential customers have access to retail competition.[6]
Northeast	Massachusetts	Limited	Non-residential customers have access to retail competition.[7]
Midwest	Michigan	Limited	Non-residential customers have limited access to retail competition, subject to the limit that no more than 10 percent of the incumbent utility's sales may take service from a retail supplier. Residential customers do not have access to retail competition.[8]
Northeast	New Hampshire	Full	Residential and non-residential customers have access to retail competition.[9]
Northeast	New Jersey	Full	Residential and non-residential customers have access to retail competition.[10]
Northeast	New York	Full	Residential and non-residential customers have access to retail competition.[11]
Midwest	Ohio	Full	Residential and non-residential customers have access to retail competition.[12]
West	Oregon	Limited	Non-residential customers have access to retail competition. Residential customers do not have access.[13]
Northeast	Pennsylvania	Full	Residential and non-residential customers have access to retail competition.[14]
Northeast	Rhode Island	Full	Residential and non-residential customers have access to retail competition.[15]
South	Texas	Full	Residential and non-residential customers have access to retail competition.[16]
South	Virginia	Limited	Only consumers whose demands exceed 5 MW can purchase from retail suppliers. Two individual non-residential customers can petition to combine their demands to meet the 5 MW threshold. In addition, any customer, regardless of consumer class, can purchase 100% renewable energy from retail suppliers if their utility company does not already use 100% renewable.[17]

Appendix E: Endnotes

Endnotes to the Main Report

[1] Penn, Ivan, "Why Are Energy Prices So High? Some Experts Blame Deregulation." New York Times, Jan 4, 2023, available at https://www.nytimes.com/2023/01/04/business/energy-environment/electricity-deregulation-energy-markets.html.
[2] Downing, James, "After a Quarter Century Industry Experts Still Split on Restructuring," RTO Insider, Jan 16, 2023, available at https://www.rtoinsider.com/articles/31446-after-quarter-century-industry-experts-split-restructuring.
[3] "2020 Energy Primer: A Handbook for Energy Market Basics," FERC; Joskow, Paul L., "Restructuring, Competition and Regulatory Reform in the U.S. Electricity Sector"
[4] PJM, "Market for Electricity," available at https://learn.pjm.com/electricity-basics/market-for-electricity.
[5] "Electricity Regulation in the US: A Guide", The Regulatory Assistance Project, March 2011, pp. 9-10, 13, 23; "Electricity Markets: A Primer for State Legislators," National Conference of State Legislatures, available at https://www.raponline.org/wp-content/uploads/2016/05/rap-lazar-electricityregulationintheus-guide-2011-03.pdf
[6] In addition to IOUs, munis, and co-ops, customers in several states are served by the four federal power authorities (the Bonneville Power Administration, the Southwestern Power Administration, the Southeastern Power Administration, and the Western Area Power Administration) or the Tennessee Valley Authority, which operates similarly to the federal power authorities. The Simon retail properties at issue in this case are not located in any of these service territories. See "Electricity Regulation in the US: A Guide", The Regulatory Assistance Project, March 2011, p. 12; "Federal Power Marketing Administrations Operate Across Much of the U.S.," U.S. Energy Information Administration, June 12, 2013 available at https://www.eia.gov/todayinenergy/detail.php?id=11651; "TVA at a Glance," Tennessee Valley Authority, available at https://www.tva.com/about-tva/tva-at-a-glance.
[7] "Electricity Regulation in the US: A Guide", The Regulatory Assistance Project, March 2011, pp. 11, 24; "Electricity Markets: A Primer for State Legislators," National Conference of State Legislatures, available at https://www.raponline.org/wp-content/uploads/2016/05/rap-lazar-electricityregulationintheus-guide-2011-03.pdf
[8] "Electricity Regulation in the US: A Guide", The Regulatory Assistance Project, March 2011, pp. 10-11; "Electricity Markets: A Primer for State Legislators," National Conference of State Legislatures, available at https://www.raponline.org/wp-content/uploads/2016/05/rap-lazar-electricityregulationintheus-guide-2011-03.pdf
[9] Lave, Lester et al., "Rethinking Electricity Deregulation," The Electricity Journal, October 2004, at p.13.
[10] Lave, Lester et al., "Rethinking Electricity Deregulation," The Electricity Journal, October 2004, at p.13.
[11] In states where retail choices have yet to be implemented, utility distribution companies still operate under the vertically-integrated structure, where the utilities provide all the generation, transmission, and distribution for consumers in their franchised service territories. Retail consumers must buy electricity from the state-designated utilities and the franchised monopolies have the legal obligation to supply and plan for the needs of all retail customers and to make electricity available at prices approved by state regulatory commissions. The setting of electric rates for retail customers is regulated by the state's PUC (for IOUs) or is overseen by an elected or appointed board of directors (for munis and co-ops). "Electricity Regulation in the US: A Guide", The Regulatory Assistance Project, March 2011, pp. 23, 25; Joskow, Paul L., "Restructuring, Competition and Regulatory Reform in the U.S. Electricity Sector"
[12] Lave, Lester et al., "Rethinking Electricity Deregulation," The Electricity Journal, October 2004, Figure 1, at p.14.
[13] Hogan, William, "Electricity Market Restructuring: Reforms of Reforms," Journal of Regulatory Economics, 2002, at p. 105.
[14] Hogan, William, "Electricity Market Restructuring: Reform of Reforms," Journal of Regulatory Economics, 2002, at p. 105.
[15] "The Federal Energy Regulatory Commission (FERC) and its state counterparts together administer a comprehensive regulatory scheme that includes control over market entry, rate schedules, location of facilities, and standards of service. This pervasive market intervention may be justified, in part, byfat that the retail distribution of electric power is a natural monopoly." Cohen, Matthew, "Efficiency and Competition in the Electric-Power Industry", The Yale Law Journal, p. 1511.

[16] "[T]hus some [electricity companies] must now tell their customers that the current-dollar cost of a kilowatt-hour will treble by 1985, and that two-thirds of that increase will be capital charged for new plants." Lovins, Amory B., Energy Strategy: The Road Not Taken?, Foreign Affairs, 1976, p. 71.
[17] "The current problem of investor-owned utilities is that [w]ith a guaranteed market and cost coverage, they have been encouraged to overinvest in capital-intensive electric generators (…) [W]hy not try the free market and allow consumers to buy from the most efficient investor-owned utilities, rather than the regulated monopoly supplier?" "Investor-owned Utilities Led Astray by the Regulatory Process," The New York Times, June 27, 1983, p. 2.
[18] Before 1969, AT&T and its seven regional Bell companies monopolized the U.S. telecommunication industry and was the only choice that the consumer had for phone services. In 1974, AT&T was sued by MCI Communications Corporation for restraint of trade and was forced to divest itself from all regional Bell companies in 1984. The deregulation of the telecommunication industry pertains to relaxing ownership rules, and eventually became open to competition which encouraged market players to set competitive rates for costumers and arguably led to new innovations. "What We Can Learn from the History of Deregulation: US Telecommunications," Direct Energy
[19] "Industry 101 | International Aspects: Deregulation of Energy Market in the United Kingdom," RedClay
[20] "Glossary," FERC, available at [https://www.ferc.gov/industries-data/market-assessments/overview/glossary.
[21] United States of America Federal Energy Regulatory Commission 75 FERC 61,080, Order 888, April 24, 1996, available at https://www.ferc.gov/sites/default/files/2020-05/rm95-8-00w.txt.
[22] "California's Failed Electric Power Industry Reforms," National Bureau of Economic Research, December 2001, No. 12, available at https://www.nber.org/digest/dec01/californias-failed-electric-power-industry-reforms.
[23] "Rhode Island Utility Restructuring Act (1996)," State of Rhode Island Office of Energy Resources, available at https://energy.ri.gov/heating-cooling/fossil-fuels/learn-about-natural-gas/rhode-island-utility-restructuring-act-1996.
[24] "The New Hampshire Retail Competition Pilot Program and the Role of Green Marketing," National Renewable Energy Laboratory, November 1997, p. 1, available at https://www.nrel.gov/docs/legosti/old/23446.pdf.
[25] In 2000, electricity rates in the Northeast were roughly 50% above the national average, while those in the Midwest and Northwest were below average. Klitgaard, Thomas and Reddy, Rekha, "Lowering Electricity Prices through Deregulation," Current Issues in Economics and Finance, December 2000, p.1. To a large extent, the states that moved to retail competition were those that already experienced some of the highest electricity prices in the U.S. While there was some feeling that utility management and operations were to blame, in reality geographical, fuel availability, and policy factors – many of which did not recede with retail competition – were and remain important drivers of electricity prices in these states.
[26] "[T]he introduction of competition in the electric generation market will encourage innovation, efficiency, and improved service from all market participants, and will enable reductions in the cost of regulatory oversight […] [[C]ompetitive markets in generation should (i) provide electricity suppliers with the incentive to operate efficiently, (ii) open markets for new and improved technologies, (iii) provide electricity buyers and sellers with appropriate price signals, and (iv) improve public confidence in the electric utility industry." Industry Restructuring Act, Chapter 164, Act 1997, Commonwealth of Massachusetts, available at https://malegislature.gov/Laws/SessionLaws/Acts/1997/Chapter164. "The efficiency of electric markets depends both upon the competitiveness of supply and upon the price-responsiveness of the demand for service. Therefore […] all classes of the electricity customers of electric utilities should have access to and be able to voluntarily use real-time pricing and other price-response and demand-response mechanisms. Including cost-effective renewable resources and demand-response resources in a diverse electricity supply portfolio will reduce long-term direct and indirect costs to consumers by decreasing environmental impacts and by avoiding or delaying the need for new generation, transmission, and distribution infrastructure." Public Utilities Act, 220 ILC S 5, Sec. 13-802, Illionis General Assembly, available at https://www.ilga.gov/legislation/ilcs/ilcs4.asp?ActID=1277&ChapterID=23&SeqStart=35800000&SeqEnd=40900000.
[27] "Retail electricity choice was implemented in the hope that increased competition would result in lower prices, improved service, and innovative product offerings." "An Introduction to Retail Electricity Choice in

the United States," 21st Century Power Partnership, available at https://www.nrel.gov/docs/fy18osti/68993.pdf, p.1.
[28] Joskow, Paul L., "Restructuring, Competition and Regulatory Reform in the U.S. Electricity Sector"
[29] "An Introduction to Retail Electricity Choice in the United States," 21st Century Power Partnership, available at https://www.nrel.gov/docs/fy18osti/68993.pdf, p.1.
[30] CCAs are authorized in the states of California, Illinois, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Rhode Island, and Virginia. Arizona, Colorado, Connecticut, and Michigan are actively investigating in establishing CCAs. "Community Choice Aggregation," United States Environmental Protection Agency, November 21, 2022, available at https://www.epa.gov/green-power-markets/community-choice-aggregation.
[31] "Community Choice Aggregation," United States Environmental Protection Agency, November 21, 2022, available at https://www.epa.gov/green-power-markets/community-choice-aggregation.
[32] CCA programs are considered an option for communities that seek: (1) more local control over their electricity sources, (2) more green power than the default utility offers, and/or (3) lower electricity pricing. CCA programs aim to expand consumer choices and empower communities to negotiate for better rates and choose alternative energy sources from competitive suppliers. Depending on the state and jurisdiction, residents in areas with CCA may be automatically enrolled in retail choice with the option to "opt-out," or they may need to make the active choice to "opt-in" to the program. CCA programs can also contribute to higher residential participation in retail choice in some states. For example, in Ohio, 47 percent of residential customers are served by retail suppliers and about two-thirds of residential participation is through aggregation. In California, CCA is the only source for residential consumers to participate in retail choice. If CCA is available in local jurisdictions, residents are automatically enrolled unless they opt out of the CCA as their provider and return to the IOU.
[33] "Retail Electric Rates in Deregulated and Regulated States," American Public Power Association, April 2019, p. 2.
[34] "2020 Energy Primer: A Handbook for Energy Market Basics," FERC; EIA, Electric Annual Sales by Sector for 2017 (Jun. 2018), https://www.eia.gov/electricity/data.php#sales.
[35] In addition to residential, commercial, and industrial consumers, transportation systems account for less than 1 percent of electricity demand. "2020 Energy Primer: A Handbook for Energy Market Basics," FERC; EIA, Electric Annual Sales by Sector for 2017 (Jun. 2018), https://www.eia.gov/electricity/data.php#sales.
[36] Calculated based on EIA electricity sales data. *See* "Historical State Data," *U.S. Energy Information Administration*, October 14, 2022, available at https://www.eia.gov/electricity/data/state/.
[37] From Retail Energy Supply Association.
[38] Sajip, Jahnavi, "Which Are the Advantages of Higher Voltage in Electrical Installations?," Nearby Engineers, May 7, 2019, available at https://www.ny-engineers.com/blog/advantages-of-higher-voltage-in-electrical-installations, p. 3.
[39] "Electricity Explained," U.S. Energy Information Administration, April 20, 2022, available at https://www.eia.gov/energyexplained/electricity/prices-and-factors-affecting-prices.php, p. 3.
[40] "How Power is Delivered to Your Home," Central Alabama Electric Cooperative, available at https://caec.coop/electric-service/how-power-is-delivered-to-your-home/.
[41] "2020 Energy Primer: A Handbook for Energy Market Basics," FERC.
[42] "2020 Energy Primer: A Handbook for Energy Market Basics," FERC.
[43] "Electricity Explained," U.S. Energy Information Administration, April 20, 2022, available at https://www.eia.gov/energyexplained/electricity/prices-and-factors-affecting-prices.php, p. 3.
[44] "Electricity Regulation in the US: A Guide", The Regulatory Assistance Project, March 2011, pp. 23, 25; "Electricity Markets: A Primer for State Legislators," National Conference of State Legislatures, available at https://www.ncsl.org/research/energy/electricity-markets-a-primer-for-state-legislators.aspx.
[45] "Electricity Regulation in the US: A Guide", The Regulatory Assistance Project, March 2011, pp. 10, 13; "What FERC Does," FERC, available at https://www.ferc.gov/about/what-ferc/what-ferc-does.
[46] See e.g. Pennsylvania PUC, "Issues, Laws & Regulations," available at https://www.puc.pa.gov/filing-resources/issues-laws-regulations/; Vermont PUC, "Net-Metering," available at https://puc.vermont.gov/electric/net-metering#:~:text=The%20Public%20Utility%20Commission%20regulates%20the%20construction%20and,terms%20and%20conditions%20of%20net-metering%20service.%20Useful%20Links.
[47] Appendix C does not include Texas because Texas does not have a default service.

[48] Kwoka, John, “Restructuring the U.S Electric Power Sector: A Review of Recent Studies,” Review of Industrial Organization Vol. 32, No. 3/4, May 2008, pp. 168-171.
[49] Zarnikau, J., & Whitworth, D,. "Has electric utility restructuring led to lower electricity prices for residential customers in Texas," Energy Policy, 2006. *See also*, Puller, Steven L. and Jeremy West, “Efficient Retail Pricing in Electricity and Natural Gas Markets,” The American Economic Review, 2013.
[50]Hortaçsu, Ali, et al., "Power to Choose? An Analysis of Consumer Inertia in the Residential Electricity Market," American Economic Journal: Economic Policy, 2017. *See also*, Hartley, Peter R., et al., "Electricity reform and retail pricing in Texas," Energy Economics, 2019.
[51] Rose, Kenneth, et al., "Retail Electricity Market Restructuring and Retail Rates," *United States Association for Energy Economics*, 2022., See also, Kirsch, Laurence D. and Matthew J. Morey, “Retail Rate Impacts of State and Federal Electric Utility Policies,” *The Electricity Journal*, 2013.
[52] O'Connor, Philip, "Restructuring Recharged the Superior Performance of Competitive Electricity Markets 2008-2016," Retail Energy Supply Association, 2017. *See also*, Ros, Agustin J., et al., “An Econometric Assessment of Electricity Demand in the United States Using Utility-Specific Panel Data and the Impact of Retail Competition on Prices,” *The Energy Journal,* 2017.
[53] https://www.puc.texas.gov/industry/electric/directories/rep/alpha_rep.aspx. https://www.papowerswitch.com/shop-for-electricity/list-of-suppliers/#
[54] “Approved Suppliers,” DC Power Connect, available at https://dcpowerconnect.com/approved-suppliers/.
[55] “Benefits of REPs, *EnergySage*, available at: https://www.energysage.com/other-clean-options/retail-energy-providers/reps-benefits/.
[56] Hortaçsu, Ali, Seyed Ali Madanizadeh, and Steven L. Puller, “Power to Choose? An Analysis of Consumer Inertia in the Residential Electricity Market,” American Economic Journal: Economic Policy 2017, 9(4): 192–226, p. 192.
[57] Hortaçsu, Ali, Seyed Ali Madanizadeh, and Steven L. Puller, “Power to Choose? An Analysis of Consumer Inertia in the Residential Electricity Market,” American Economic Journal: Economic Policy 2017, 9(4): 192–226, p. 224.
[58] Baldwin, Susan M., “Are Consumers Benefiting from Competition? An Analysis of the Individual Residential Electric Supply Market in Massachusetts,” *Massachusetts Attorney General’s Office*, March 2018, available at: https://documents.pub/document/are-consumers-benefiting-from-competition-list-of-appendices-appendix-es1-experience.html?page=1, pp. 42–43.
[59] Baldwin, Susan M., “Are Consumers Benefiting from Competition? An Analysis of the Individual Residential Electric Supply Market in Massachusetts,” *Massachusetts Attorney General’s Office*, March 2018, available at: https://documents.pub/document/are-consumers-benefiting-from-competition-list-of-appendices-appendix-es1-experience.html?page=1, p. 45.
[60] Texas Senate Bill No. 7, “An Act Relating to Electric Utility Restructuring,” Section 39.001(b).
[61] “Electricity retail choice is mandated in Texas and growing in three States,” EIA, Maru 18, 2011, available at https://www.eia.gov/todayinenergy/detail.php?id=1430
[62] Chariot Energy, “A Complete List of the Deregulated Cities in Texas,” available at https://chariotenergy.com/chariot-university/deregulated-cities-in-texas/#:~:text=Today%2C%20approximately%2085%25%20of%20Texans%20live%20in%20a,including%20big%20cities%20like%20Austin%20and%20San%20Antonio; Public Utility Commission of Texas, “Municipally-Owned Electric Utilities and Electric Cooperatives FAQs,” available at https://www.puc.texas.gov/consumer/facts/faq/muni.aspx.
[63] Zarnikau, Jay and Varun Rai, “Retail Competition, Advanced Metering Investments, and Product Differentiation: Evidence from Texas,” *Future of Utilities – Utilities of the Future*, 2016, pp. 153–173, at pp. 160–161.
[64] Zarnikau, Jay and Varun Rai, “Retail Competition, Advanced Metering Investments, and Product Differentiation: Evidence from Texas,” *Future of Utilities – Utilities of the Future*, 2016, pp. 153–173, at p. 161.
[65] Zarnikau, Jay and Varun Rai, “Retail Competition, Advanced Metering Investments, and Product Differentiation: Evidence from Texas,” *Future of Utilities – Utilities of the Future*, 2016, pp. 153–173, at p. 161.
[66] Zarnikau, Jay and Varun Rai, “Retail Competition, Advanced Metering Investments, and Product Differentiation: Evidence from Texas,” *Future of Utilities – Utilities of the Future*, 2016, pp. 153–173, at pp. 162–167.

[67] Zarnikau, Jay and Varun Rai, "Retail Competition, Advanced Metering Investments, and Product Differentiation: Evidence from Texas," *Future of Utilities – Utilities of the Future*, 2016, pp. 153–173, at p. 167.
[68] Zarnikau, Jay and Varun Rai, "Retail Competition, Advanced Metering Investments, and Product Differentiation: Evidence from Texas," *Future of Utilities – Utilities of the Future*, 2016, pp. 153–173, at p. 167.
[69] Hartley, Peter, R., Kenneth B. Medlock III, Olivera Jankovska, "Electricity Reform and Retail Pricing in Texas," *Energy Economics*, January 2019, at p. 10.
[70] Hartley, Peter, R., Kenneth B. Medlock III, Olivera Jankovska, "Electricity Reform and Retail Pricing in Texas," *Energy Economics*, January 2019, at p. 2.
[71] Public Utility Commission of Texas, "Report Cards on Retail Competition and Summary of Market Share Data," available at https://www.puc.texas.gov/industry/electric/reports/rptcard/default.aspx.
[72] Public Utility Commission of Texas, "Power to Choose," available at https://www.powertochoose.org/.
[73] Public Utility Commission of Texas, "Customer Complaint Statistics," available at https://www.puc.texas.gov/consumer/electricity/customercomplaintstats.aspx.
[74] Public Utility Commission of Texas, "Customer Complaint Statistics," available at https://www.puc.texas.gov/consumer/electricity/customercomplaintstats.aspx.
[75] J.D. Power, "Residential Customers Resistant to Changing Retail Electric Providers as Price Gap Closes," available at https://www.jdpower.com/business/press-releases/jd-power-2016-retail-electric-provider-residential-customer-satisfaction.
[76] U.S. Energy Information Administration, "Electricity retail choice is mandated in Texas and growing in three States," available at https://www.eia.gov/todayinenergy/detail.php?id=1430.
[77] "Report to the 85th Texas Legislature – Scope of Competition in Electric Markets in Texas," *Public Utility Commission of Texas*, January 2017, at p. 1, available at: https://ftp.puc.texas.gov/public/puct-info/industry/electric/reports/scope/2017/2017scope_elec.pdf.
[78] "Quick Facts," *ERCOT*, November 2016, at p. 1, available at: https://www.ercot.com/files/docs/2016/11/18/ERCOT_Quick_Facts_111816.pdf.
[79] Busby, Joshua, et al., "Cascading risks: Understanding the 2021 winter blackout in Texas," Energy Research & Social Science 77, 2021, available at https://doi.org/10.1016/j.erss.2021.102106, p. 1.
[80] Public Utility Commission of Texas, "Order adopting amendments to 16 TAC §25.43, 25.471, 25.475, 25.479, and 25.498 and New 16 TAC §25.499 as approved at the December 16, 2021 open meeting," available at https://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.43/51830adt.pdf.
[81] Public Utility Commission of Texas, "Order adopting amendments to 16 TAC §25.43, 25.471, 25.475, 25.479, and 25.498 and New 16 TAC §25.499 as approved at the December 16, 2021 open meeting," available at https://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.43/51830adt.pdf.
[82] G. Sharman, J. Merola, "Beyond Texas—Evaluating Customer Exposure to Energy Price Spikes: A Case Study of Winter Storm Uri, February 2021," available at https://www.nrg.com/assets/documents/energy-policy/Energy_Choice_Protecting_Customers.pdf.
[83] G. Sharman, J. Merola, "Beyond Texas—Evaluating Customer Exposure to Energy Price Spikes: A Case Study of Winter Storm Uri, February 2021," NRG, available at https://www.nrg.com/assets/documents/energy-policy/Energy_Choice_Protecting_Customers.pdf; *see also*, "Retail Choice and Winter Storm Uri: What really happened?" Retail Energy Supply Association, February 23, 2021, available at https://www.resausa.org/retail-choice-and-winter-storm-uri-what-really-happened/; "The Timeline and Events of the February 2021 Texas Electric Grid Blackouts," The University of Texas at Austin Energy Institute, July 2021, available at https://interchange.puc.texas.gov/Documents/51825_5_1138886.PDF.
[84] G. Sharman, J. Merola, "Beyond Texas—Evaluating Customer Exposure to Energy Price Spikes: A Case Study of Winter Storm Uri, February 2021," available at https://www.nrg.com/assets/documents/energy-policy/Energy_Choice_Protecting_Customers.pdf.
[85] These issues are documented in reports issued by the Public Utilities Commission in response to other winter freezes, such as the 1989 storm that resulted in near loss of the entire electric grid, as well as another freeze in 2011 that prompted a recommendation for investment in winter reliability practices. Since then, Texas has passed a law requiring the Public Utility Commission to submit a report any time it found the need to protect consumers from changes in winterization techniques or incoming severe weather conditions. "Electric Utility Response to the Winter Freeze of December 21 to December 23,

1989," Public Utility Commission of Texas, November 1990, available at https://lrl.texas.gov/scanned/archive/1990/15303.pdf; Texas Senate Bill No. 1133, 2011.
[86] Associations Code (15 PA.C.S.) and Public Utility Code (66 PA.C.S.) – Amend, Act of Dec. 3, 1996, P.L. 802, No. 138, Session of 1996, No. 1996-138, *Pennsylvania General Assembly*, December 3, 1996, available at: https://www.legis.state.pa.us/cfdocs/legis/LI/uconsCheck.cfm?txtType=HTM&yr=1996&sessInd=0&smthLwInd=0&act=0138.
[87] Associations Code (15 PA.C.S.) and Public Utility Code (66 PA.C.S.) – Amend, Act of Dec. 3, 1996, P.L. 802, No. 138, Session of 1996, No. 1996-138, *Pennsylvania General Assembly*, December 3, 1996, available at: https://www.legis.state.pa.us/cfdocs/legis/LI/uconsCheck.cfm?txtType=HTM&yr=1996&sessInd=0&smthLwInd=0&act=0138.
[88] "Licensed Suppliers," *Pennsylvania Public Utility Commission*, February 9, 2023, available at: https://www.puc.pa.gov/electricity/electric-companies-suppliers/licensed-suppliers/?&page=1
[89] "Retail Electricity Choice Activity Report 2021," *Pennsylvania Public Utility Commission*, January 2023. Hereafter "2021 Activity Report." See p. 1, noting there were 113 active electric generation suppliers in 2021.
[90] "A Residential Consumer's Electric Shopping Guide," *Pennsylvania Office of Consumer Advocate*, available at: https://www.oca.pa.gov/electric-shopping-guide-archive/.
[91] "2021 Activity Report, p. 2.
[92] "2021 Activity Report, p. 22.
[93] "2021 Activity Report, pp. 22, 25.
[94] "2021 Activity Report, p. 25.
[95] Simeone, Christina and John Hanger, "A Case Study of Electric Competition Results in Pennsylvania," Kleinman Center for Energy Policy, University of Pennsylvania, October 28, 2016, p. 26, available at: https://kleinmanenergy.upenn.edu/wp-content/uploads/2020/08/A-Case-Study-of-Electric-Competition-Results-in-Pennsylvania_0_0-1.pdf.
[96] Simeone, Christina and John Hanger, "A Case Study of Electric Competition Results in Pennsylvania," Kleinman Center for Energy Policy, University of Pennsylvania, October 28, 2016, p. 26, available at: https://kleinmanenergy.upenn.edu/wp-content/uploads/2020/08/A-Case-Study-of-Electric-Competition-Results-in-Pennsylvania_0_0-1.pdf.
[97] "About Switching Electric Suppliers in PA," *PA Power Switch*, available at: https://www.papowerswitch.com/about-switching-electricity/.
[98] "A Residential Consumer's Electric Shopping Guide," *Pennsylvania Office of Consumer Advocate*, available at: https://www.oca.pa.gov/electric-shopping-guide-archive/.
[99] "Re: Guidance on Residential Supplier Marketing Regulations," *Pennsylvania Public Utilities Commission*, available at: https://www.puc.pa.gov/pcdocs/1747958.pdf.
[100] "Re: Guidance on Residential Supplier Marketing Regulations," *Pennsylvania Public Utilities Commission*, available at: https://www.puc.pa.gov/pcdocs/1747958.pdf.
[101] "Re: Guidance on Residential Supplier Marketing Regulations," *Pennsylvania Public Utilities Commission*, available at: https://www.puc.pa.gov/pcdocs/1747958.pdf.
[102] "2018 Supplier Workshop, Chapter 111Residential Supplier Marketing Regulations," *Pennsylvania Public Utility Commission*, January 31, 2018, pp. 18-19, available at: https://www.puc.pa.gov/Electric/pdf/OCMO/PPT-Supplier_Workshop013118-Chapter111.pdf.
[103] "2018 Supplier Workshop, Chapter 111Residential Supplier Marketing Regulations," *Pennsylvania Public Utility Commission*, January 31, 2018, p. 20, available at: https://www.puc.pa.gov/Electric/pdf/OCMO/PPT-Supplier_Workshop013118-Chapter111.pdf.
[104] "2018 Supplier Workshop, Chapter 111Residential Supplier Marketing Regulations," *Pennsylvania Public Utility Commission*, January 31, 2018, pp. 21-22, available at: https://www.puc.pa.gov/Electric/pdf/OCMO/PPT-Supplier_Workshop013118-Chapter111.pdf.
[105] "A Residential Consumer's Electric Shopping Guide," *Pennsylvania Office of Consumer Advocate*, available at: https://www.oca.pa.gov/electric-shopping-guide-archive/.
[106] Office of Consumer Advocate, "Testimony of Tanya J. McCloskey Regarding Sales and Marketing Practices of Competitive Retail Suppliers," available at https://www.oca.pa.gov/wp-content/uploads/Testimony-of-Tanya-McCloskey-Re.-Competitive-Supplier-Advertising-and-Marketing-Practices-00251725x97486-1.pdf.

[107] Pennsylvania Public Utility Commission, “PUC Stresses Sales & Marketing Regulations for Competitive Suppliers; Reaffirms Commitment to Disclosure, Integrity of PA’s Retail Energy Markets,” available at https://www.puc.pa.gov/press-release/2019/puc-stresses-sales-marketing-regulations-for-competitive-suppliers-reaffirms-commitment-to-disclosure-integrity-of-pa-s-retail-energy-markets.
[108] Office of Consumer Advocate, “Testimony of Tanya J. McCloskey Regarding Electricity Outages, Reliability, Preparedness,” available at https://www.oca.pa.gov/wp-content/uploads/Testimony-of-Tanya-McCloskey-Senate-Democratic-Committee-00297265x97486-1.pdf.
[109] Office of Consumer Advocate, “Testimony of Patrick M. Cicero Regarding HB1789,” (H.B. No. 1788, 2021), available at https://www.oca.pa.gov/wp-content/uploads/Testimony-of-Patrick-Cicero-Re-HB1789.pdf.
[110] Office of Consumer Advocate, “Testimony of Patrick M. Cicero Regarding HB1789,” (H.B. No. 1788, 2021), available at https://www.oca.pa.gov/wp-content/uploads/Testimony-of-Patrick-Cicero-Re-HB1789.pdf.

Endnotes to Appendix B

[1] California Public Utilities Commission, “Community Choice Aggregation--Consumer Information,” available at https://www.cpuc.ca.gov/consumer-support/consumer-programs-and-services/electrical-energy-and-energy-efficiency/community-choice-aggregation-and-direct-access-/consumer-information-on-ccas---frequently-asked-questions.

[2] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

[3] U.S. Energy Information Agency, “Residential retail electric choice participation rate has leveled off since 2019,” available at https://www.eia.gov/todayinenergy/detail.php?id=55820

[4] EcoWatch, “Compare California Electricity Rates,” available at https://www.ecowatch.com/electricity/rates/ca.

[5] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

[6] California Public Utilities Commission, “Renewables Portfolio Standard (RPS) Program,” available at https://www.cpuc.ca.gov/rps/.

[7] PG&E, “Save more with smart thermostats,” available at https://www.pge.com/en_US/residential/save-energy-money/savings-solutions-and-rebates/rebates-by-product/smart-thermostats/smart-thermostats.page.

[8] Drive Clean California, “Incentive Search,” available at https://driveclean.ca.gov/search-incentives.

[9] Public Act No. 98-28, “AN ACT CONERNING ELECTRIC RESTRUCTURING,” available at https://www.cga.ct.gov/ps98/act/pa/1998pa-00028-r00hb-05005-pa.htm, §§ 2.16-244, 4; McCarthy, Kevin, “Electric Deregulation Timetable,” Office of Legislative Research, June 10, 2022, available at https://www.cga.ct.gov/2002/olrdata/et/rpt/2002-R-0541.htm.

[10] Energize Connecticut, “Rate Board,” available at https://energizect.com/rate-board/compare-energy-supplier-rates?customerClass=1206&monthlyUsage=2000&planTypeEdc=1191.

[11] U.S. Energy Information Agency, “Residential retail electric choice participation rate has leveled off since 2019,” available at https://www.eia.gov/todayinenergy/detail.php?id=55820.

[12] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

[13] Energize Connecticut, “Rebates and Incentives, “ available at https://energizect.com/rebates-and-incentives.

[14] Connecticut Official State Website, “Connecticut Renewable Portfolio Standard,” available at https://portal.ct.gov/PURA/RPS/Renewable-Portfolio-Standards-Overview

[15] Eversource, “Connecticut Electric Vehicle (EV) Charging Program,” available at https://www.eversource.com/content/docs/default-source/save-money-energy/ct-ev-program-guide-resi.pdf?sfvrsn=a72baf62_0#:~:text=The%20Connecticut%20EV%20Charging%20Program%20%28%E2%80%9Cthe%20Program%E2%80%9D%29%20offers,your%20participation%20and%20look%20forward%20to%20supporting%20you.

[16] Energize Connecticut, “Rebates and Incentives,” available at https://energizect.com/rebates-and-incentives.

[17] “CT Electricity Supplier Faces $14K Fine for ‘Slamming’,” Hartford Business Journal, December 15, 2015, available at https://www.hartfordbusiness.com/article/ct-electricity-supplier-faces-14k-fine-for-slamming.

[18] Gregory Hladky, “State Urged to Probe Abusive Electricity Suppliers,” Hartford Courant, January 31, 2017, available at https://www.courant.com/news/connecticut/hc-call-to-probe-abusive-electric-suppliers-20170130-story.html.

[19] “Malboy Bans Variable Electricity Rates,” Hartford Business Journal, June 23, 2015, available at https://www.hartfordbusiness.com/article/malloy-bans-variable-electricity-rates.

[20] State of Connecticut Consumer Counsel, “OCC Fact Sheet: In Support of Increased Consumer Protection for the Residential Retail Choice Electric Supply Market,” January 30, 2020, available at https://portal.ct.gov/-/media/OCC/OCC-Fact-SheetRetail-SupplyJan-2020FINAL.docx.

[21] U.S. Energy Information Agency, “Residential retail electric choice participation rate has leveled off since 2019,” available at https://www.eia.gov/todayinenergy/detail.php?id=55820.
[22] See, e.g. Xoom Energy, “Residential Service Plans,” available at https://xoomenergy.com/en/residential/delaware.
[23] See, e.g. Resident Energy, “Rebates,” available at https://residentsenergy.com/what-we-do/faq/.
[24] Division of Climate, Coastal and Energy, “Renewable Energy Assistance Program,” available at https://dnrec.alpha.delaware.gov/climate-coastal-energy/renewable/assistance/.
[25] See, e.g. Direct Energy, “View Plans,” available at https://www.directenergy.com/delaware/electricity-plans#plan-grid.
[26] Delaware Public Division of the Public Advocate, “PSC and DPA Investigate Misleading Electric Supplier Marketing Practices,” available at https://publicadvocate.delaware.gov/2020/08/28/psc-and-dpa-investigate-misleading-electric-supplier-marketing-practices/.
[27] Direct Energy, “The History of Deregulation in Illinois,” available at https://www.directenergy.com/learning-center/illinois-history-deregulation.
[28] Plug In Illinois, “Municipal Aggregation,” available at https://www.pluginillinois.org/MunicipalAggregation.aspx.
[29] Plug In Illinois, “Compare Offers,” available at https://plugin.illinois.gov/your-available-choices/offers-begin.html.
[30] U.S. Energy Information Agency, “Electricity residential retail choice participation has declined since 2014 peak,” available at https://www.eia.gov/todayinenergy/detail.php?id=37452.
[31] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[32] See, e.g. Plug In Illinois, “Compare Offers,” available at https://plugin.illinois.gov/your-available-choices/offers.html?said=2.
[33] Illinois Commerce Commission, “Renewable Energy Access Plan,” available at https://www.icc.illinois.gov/informal-processes/Renewable-Energy-Access-Plan.
[34] Plug In Illinois, “Green Products,” available at https://plugin.illinois.gov/municipal-aggregation/green-products.html.
[35] See, e.g. Plug In Illinois, “Compare Offers,” available at https://plugin.illinois.gov/your-available-choices/offers.html?said=2.
[36] Plug In Illinois, “Retail Electric Suppliers Complaint Summary,” available at https://plugin.illinois.gov/consumer-protections/customer-complaint-statistics/complaint-summary.html.
[37] Plug In Illinois, “Consumer Protections,” available at https://plugin.illinois.gov/consumer-protections.html.
[38] Plug In Illinois, “Retail Electric Suppliers Complaint Summary,” available at https://plugin.illinois.gov/consumer-protections/customer-complaint-statistics/complaint-summary.html.
[39] Maine Office of the Public Advocate, “Frequently Asked Questions,” available at https://www.maine.gov/meopa/electricity/frequently-asked-questions.
[40] U.S. Energy Information Agency, “Residential retail electric choice participation rate has leveled off since 2019,” available at https://www.eia.gov/todayinenergy/detail.php?id=55820.
[41] Maine Office of the Public Advocate, “Electric Supply,” available at https://www.maine.gov/meopa/electricity/electricity-supply
[42] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[43] Maine Office of the Public Advocate, “Community Solar,” available at https://www.maine.gov/meopa/electricity/community_solar
[44] See, e.g. Clearview Energy, “Living Green,” available at https://www.clearviewenergy.com/living-green/.
[45] Maine Office of the Public Advocate, “Consumer Protections,” available https://www.maine.gov/meopa/electricity/electricity-supply#SixThings.
[46] U.S. Energy Information Agency, “Residential retail electric choice participation rate has leveled off since 2019,” available at https://www.eia.gov/todayinenergy/detail.php?id=55820.
[47] MD Electric Choice, “FAQ,” available at https://www.mdelectricchoice.com/faq/.
[48] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[49] MD Electric Choice, “Compare Offers,” available at https://www.mdelectricchoice.com/shop/?kwh=&utility=292.

[50] Maryland Public Service Commission, “Renewable Energy,” available at https://www.psc.state.md.us/electricity/renewable-energy/.
[51] MD Electric Choice, “Compare Offers,” available at https://www.mdelectricchoice.com/shop/?kwh=&utility=292.
[52] See, e.g. Maryland Public Service Commission, “FY2022 Compliant Data,” available at https://www.psc.state.md.us/wp-content/uploads/Supplier-3-Report-FY22-complete.pdf.
[53] See, e.g. Maryland Public Service Commission, “FY2022 Compliant Data,” available at https://www.psc.state.md.us/wp-content/uploads/Supplier-3-Report-FY22-complete.pdf.
[54] Littlechild, Stephen, “The regulation of retail competition in US residential electricity markets,” February 28, 2018.
[55] Energy Switch Massachusetts, “Frequently Asked Questions,” available at https://energyswitchma.gov/#/faq/restructuredmarketfaq.
[56] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[57] Energy Switch Massachusetts, “Go Shopping,” available at https://energyswitchma.gov/#/compare/4/1/01001//.
[58] Massachusetts Department of Energy Resources, “Massachusetts Energy Rebates and Incentives,” available at https://www.mass.gov/guides/massachusetts-energy-rebates-incentives.
[59] Energy Switch Massachusetts, “Go Shopping,” available at https://energyswitchma.gov/#/compare/4/1/01001//.
[60] U.S. Energy Information Agency, “Residential retail electric choice participation rate has leveled off since 2019,” available at https://www.eia.gov/todayinenergy/detail.php?id=55820.
[61] Office of Attorney General, “Competitive Supply,” available at https://www.mass.gov/competitive-electric-supply.
[62] Office of Attorney General, “Competitive Supply,” available at https://www.mass.gov/competitive-electric-supply.
[63] Michigan Public Service Commission, “Electric Customer Choice,” available at https://www.michigan.gov/mpsc/consumer/electricity/choice.
[64] See, e.g. Alpena Power Company, “Rate Book for Electric Service,” available at https://www.alpenapower.com/wp-content/uploads/2014/09/alpena9cur.pdf.
[65] See, e.g. Alpena Power Company, “Rate Book for Electric Service,” available at https://www.alpenapower.com/wp-content/uploads/2014/09/alpena9cur.pdf.
[66] Michigan Public Service Commission, “Renewable Energy,” available at https://www.michigan.gov/mpsc/consumer/electricity/renewable-energy.
[67] New Hampshire Public Utilities Commission, “Electric,” available https://www.puc.nh.gov/Electric/electric.htm.
[68] Energy New Hampshire, “Shop for Electric Rates,” available at https://www.energy.nh.gov/engyapps/ceps/shop.aspx.
[69] See, e.g. Unitil, “Time-of-Use Rates NH Electric,” available at https://unitil.com/time-of-use.
[70] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[71] Energy New Hampshire, “Shop for Electric Rates,” available at https://www.energy.nh.gov/engyapps/ceps/shop.aspx.
[72] New Hampshire Department of Energy, “Renewable Energy,” available at https://www.energy.nh.gov/renewable-energy.
[73] Energy New Hampshire, “Shop for Electric Rates,” available at https://www.energy.nh.gov/engyapps/ceps/shop.aspx.
[74] New Hampshire Electric Co-op, “Retail Choice Bill of Rights,” available at https://www.nhec.com/rates-tariffs/billing-rights/.
[75] NJ Power Switch, “Know Your Rights,” available at https://nj.gov/njpowerswitch/rights/.
[76] NJ Aggregation, “County Energy Aggregation,” available at https://www.njaggregation.us/program_info.html.
[77] U.S. Energy Information Agency, “Residential retail electric choice participation rate has leveled off since 2019,” available at https://www.eia.gov/todayinenergy/detail.php?id=55820.
[78] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.

[79] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[80] NJ Power Switch, “How To Shop For Energy,” available at https://nj.gov/njpowerswitch/shop/.
[81] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[82] NJ Power Switch, “How To Shop For Energy,” available at https://nj.gov/njpowerswitch/shop/.
[83] Department of Environmental Protection, “Energy Incentives,” available at https://www.nj.gov/dep/aqes/bes-incentives.html.
[84] See, e.g. Ambient Energy, “Electric Service Plans,” available at https://customer.ambitenergy.com/enrollee/X80PW2NF/energy/services.
[85] NJ Energy Switch, “The Price to Compare,” available at https://nj.gov/njpowerswitch/shop/compare/index.html.
[86] New York Public Service Commission, “Competitive Opportunities in the Electric Industry,” available at https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BB4208B9E-DC5D-42E1-AD04-A374D83D1B99%7D#:~:text=Choice%20of%20electric%20suppliers%20became%20available%20to%20all,the%20annual%205%20percent%20decreases.%20Sept.%201%2C%201998.
[87] New York Public Service Commission, “At a session of the Public Service Commission held in the City of New York on December 15, 2016,” available at https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7b1803241A-06B8-4B4C-96CA-F6B7C1D64A16%7d.
[88] Department of Public Service, “Community Choice Aggregation Program”
[89] U.S. Energy Information Agency, “Residential retail electric choice participation rate has leveled off since 2019,” available at https://www.eia.gov/todayinenergy/detail.php?id=55820.
[90] Department of Public Service, “About Power to Choose”
[91] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[92] NYS Power to Choose, “Search for Energy Offers,” available at https://documents.dps.ny.gov/PTC/home.
[93] U.S. Energy Information Agency, “New York State Profile and Energy Estimates,” available at https://www.eia.gov/state/?sid=NY.
[94] See, e.g. NYS Power to Choose, “Found 61 Electric Offers in ZIP Code 11211,” available at https://documents.dps.ny.gov/PTC/zipcode/11211
[95] Department of Public Service, “MATTER 15-02754 - In the Matter of Examining the Potential Benefits of Retail Competition for Long Island Electric Customers,” available at https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={7B3B2332-1E86-44FE-B317-4B697BC5464C}.
[96] New York ublic Service Commission, “Competitive Opportunities in the Electric Industry,” available at https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BB4208B9E-DC5D-42E1-AD04-A374D83D1B99%7D#:~:text=Choice%20of%20electric%20suppliers%20became%20available%20to%20all,the%20annual%205%20percent%20decreases.%20Sept.%201%2C%201998.
[97] The Ohio Manufacturers’ Association, “Ohio’s Journey to Electricity Competition,” available at https://www.ohiomfg.com/communities/energy/ohios-journey-to-electricity-competition/.
[98] Public Utilities Commission of Ohio, “Ohio customer choice activity,” available at https://puco.ohio.gov/utilities/electricity/resources/ohio-customer-choice-activity.
[99] Energy Choice Ohio, “Glossary of Terms,” available at https://energychoice.ohio.gov/Pages/Glossary%20of%20Terms.aspx
[100] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[101] See, e.g. Energy Choice Ohio, “Apples to Apples Comparison Chart,” available at https://energychoice.ohio.gov/ApplesToApplesComparision.aspx?Category=Electric&TerritoryId=9&RateCode=1.
[102] Ohio Public Utilities Commission, “Ohio’s renewable energy portfolio standard,” available at https://puco.ohio.gov/utilities/electricity/resources/ohio-renewable-energy-portfolio-standard/ohios-renewable-energy-portfolio-

standard#:~:text=Ohio%20law%20contains%20a%20renewable%20energy%20portfolio%20standard,incremental%20percentage%20requirements%20for%20renewable%20energy%2C%20through%202026.
[103] See, e.g. Energy Choice Ohio, “Apples to Apples Comparison Chart,” available at https://energychoice.ohio.gov/ApplesToApplesComparision.aspx?Category=Electric&TerritoryId=9&RateCode=1.
[104] H.B. No. 128, 2021.
[105] S.B. No. 1149, 1999.
[106] H.B. No. 2852, 2019.
[107] S.B. No. 1149, 1999.
[108] See, e.g. Portland General Electric, “Market Based Pricing,” available at https://portlandgeneral.com/about/info/pricing-plans/market-based-pricing
[109] Oregon Department of Energy, “Renewable Energy,” available at https://www.oregon.gov/energy/energy-oregon/Pages/Renewable-Energy.aspx
[110] See, e.g. Portland General Electric, “Market Based Pricing,” available at https://portlandgeneral.com/about/info/pricing-plans/market-based-pricing
[111] “Pennsylvania Celebrates 25 Years of Retail Energy Choice,” Retail Energy Supply Association, February 16, 2021, available at https://www.resausa.org/pennsylvania-celebrates-25-years-of-retail-energy-choice/.
[112] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[113] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[114] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[115] “What is time of use?,” PA Power Switch, available at: https://www.papowerswitch.com/understanding-rates/time-of-use/.
[116] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[117] “A Residential Consumer’s Electric Shopping Guide,” Pennsylvania Office of Consumer Advocate, available at: https://www.oca.pa.gov/electric-shopping-guide-archive/.
[118] PA Energy Ratings, “Pennsylvania Green Energy Requirements,” available at https://www.paenergyratings.com/resources/pennsylvania-green-energy-requirements.
[119] “A Residential Consumer’s Electric Shopping Guide,” Pennsylvania Office of Consumer Advocate, available at: https://www.oca.pa.gov/electric-shopping-guide-archive/. See also, “Retail Electricity Choice Activity Report 2021,” Pennsylvania Public Utility Commission, 2023, p. 29, available at: https://www.puc.pa.gov/media/2203/retail-elec-choice-report-21draft11622-communications-edits-with-covers-011323.pdf.
[120] “Re: Guidance on Residential Supplier Marketing Regulations,” Pennsylvania Public Utilities Commission, available at: https://www.puc.pa.gov/pcdocs/1747958.pdf
[121] Rhode Island Office of Energy Resources, “Learn About Electricity,” available at https://energy.ri.gov/resources/electric/learn-about-electricity
[122] Business Wire, “Rhode Island Communities Announce Launch of First-Ever Electricity Aggregation Programs,” available at https://www.businesswire.com/news/home/20220922005697/en/Rhode-Island-Communities-Announce-Launch-of-First-Ever-Electricity-Aggregation-Programs.
[123] U.S. Energy Information Agency, “Residential retail electric choice participation rate has leveled off since 2019,” available at https://www.eia.gov/todayinenergy/detail.php?id=55820.
[124] See, e.g., Empower Rhode Island, “Suppliers for Residential Customers,” available at https://www.ri.gov/app/dpuc/empowerri/rate_card
[125] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[126] See, e.g., Empower Rhode Island, “Suppliers for Residential Customers,” available at https://www.ri.gov/app/dpuc/empowerri/rate_card
[127] Rhode Island Office of Energy Resources, “Renewable Energy Standard,” available at https://energy.ri.gov/heating-cooling/fossil-fuels/learn-about-natural-gas/renewable-energy-standard-2004.
[128] See, e.g., Empower Rhode Island, “Suppliers for Residential Customers,” available at https://www.ri.gov/app/dpuc/empowerri/rate_card

[129] RICR.815.30.05.2.
[130] "§ 56-577. Schedule for transition to retail competition; Commission authority; exemptions; pilot programs," Virginia Electric Utility Regulation Act, available at https://law.lis.virginia.gov/vacode/56-577/.
[131] "§ 56-577. Schedule for transition to retail competition; Commission authority; exemptions; pilot programs," Virginia Electric Utility Regulation Act, available at https://law.lis.virginia.gov/vacode/56-577/.
[132] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[133] Virginia Energy, "Clean Energy," available at https://www.energy.virginia.gov/renewable-energy/RenewableEnergy.shtml.
[134] See, e.g., Dominion Energy, "Renewable Energy Programs," available at https://www.dominionenergy.com/virginia/renewable-energy-programs.
[135] S.B. No. 319, 1995.
[136] S.B. No. 7, 1999.
[137] ERCOT, "Fact Sheet," March 2023 available at https://www.ercot.com/files/docs/2022/02/08/ERCOT_Fact_Sheet.pdf
[138] Texas offers utility consolidated bills where customers receive a single consolidated bill from their utility that also includes their supplier charges. See R Street Institute, "Supplier Consolidated Billing," available at https://www.rstreet.org/research/supplier-consolidated-billing/
[139] EIA data.
[140] Excel Energy, "Texas Time of Use Rate," available at https://www.xcelenergy.com/staticfiles/xe responsive/Marketing/TX-Time-of-use-rate-FAQ.pdf.
[141] V. Rai, J. Zarnikau, "Retail Competition, Advanced Metering Investments, and Product Differentiation: Evidence from Texas," The University of Texas at Austin, 2016.
[142] EIA data.
[143] Chariot Energy, "A Complete List of the Deregulated Cities in Texas," available at https://chariotenergy.com/chariot-university/deregulated-cities-in-texas; Public Utility Commission of Texas, "Municipally-Owned Electric Utilities and Electric Cooperatives FAQs," available at https://www.puc.texas.gov/consumer/facts/faq/muni.aspx.
[144] Annual Electric Power Industry Report, Form EIA-861, available at https://www.eia.gov/electricity/data/eia861/.
[145] V. Rai, J. Zarnikau, "Retail Competition, Advanced Metering Investments, and Product Differentiation: Evidence from Texas," The University of Texas at Austin, 2016.
[146] S.B. No. 20, 2005.
[147] V. Rai, J. Zarnikau, "Retail Competition, Advanced Metering Investments, and Product Differentiation: Evidence from Texas," The University of Texas at Austin, 2016.
[148] V. Rai, J. Zarnikau, "Retail Competition, Advanced Metering Investments, and Product Differentiation: Evidence from Texas," The University of Texas at Austin, 2016.
[149] Texas Department of Transportation, "EV charging stations," available at https://www.txdot.gov/discover/ev-charging-stations.html.
[150] Texas Electricity Ratings, "Texas Electricity Plans Featuring Free Smart Home Thermostats from Nest and Ecobee," available at https://www.texaselectricityratings.com/electric-plans/free-nest-thermostat.
[151] U.S. Energy Information Administration, "Electricity residential retail choice participation has declined since 2014 peak," available at https://www.eia.gov/todayinenergy/detail.php?id=37452.
[152] Public Utility Commission of Texas, "Consumer Complain Statistics," available at https://www.puc.texas.gov/consumer/electricity/customercomplaintstats.aspx.
[153] Winter Storm Uri hit Texas in February 2021, and resulted in at least 246 deaths and colossal financial losses across all customer classes
[154] Wholesale indexed rate electricity plans are plans are directly tied to the wholesale market electricity prices.
[155] Public Utility Commission of Texas, "Order adopting amendments to 16 TAC §25.43, 25.471, 25.475, 25.479, and 25.498 and New 16 TAC §25.499 as approved at the December 16, 2021 open meeting," available at https://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.43/51830adt.pdf.

Endnotes to Appendix D

[1] "Community Choice Aggregation and Direct Access," *California Public Utilities Commission*, available at https://www.cpuc.ca.gov/consumer-support/consumer-programs-and-services/electrical-energy-and-energy-efficiency/community-choice-aggregation-and-direct-access-
[2] "Choose an Electric Supplier – Information for Customers," *Connecticut Public Utilities Regulatory Authority*, available at https://portal.ct.gov/PURA/Electric/Choose-a--Supplier---Information-for-Customers; "Compare Energy Supplier Rates," *EnergizeCT.com*, available at https://energizect.com/rate-board/compare-energy-supplier-rates.
[3] "Customer Electric Choice," *Delaware Public Service Commission*, available at https://depsc.delaware.gov/customer-electric-choice/.
[4] "What Are Your Choices?," *Plug in Illinois – Power of Choice*, available at https://www.pluginillinois.org/WhatAreYourChoices.aspx.
[5] "Electricity Supply," *Maine Office of the Public Advocate*, available at https://www.maine.gov/meopa/electricity/electricity-supply.
[6] "You Have a Choice," *Maryland Public Service Commission*, available at https://www.psc.state.md.us/electricity/choice/.
[7] "An Act Relative to Protecting Residential Electric Customers," *Massachusetts Bill Senate Docket 880*, 2019, available at https://malegislature.gov/Bills/190/S880.pdf.
[8] "Electric Customer Choice," *Michigan Public Service Commission*, available at https://www.michigan.gov/mpsc/consumer/electricity/choice.
[9] "Choosing an Energy Supplier," *New Hampshire Public Utilities Commission*, available at https://www.puc.nh.gov/Consumer/Choosing%20an%20Energy%20Supplier.html.
[10] "Shop for Energy Suppliers," *New Jersey Board of Public Utilities*, available at https://www.nj.gov/bpu/commercial/shopping.html.
[11] "About Power to Choose," *New York Department of Public Service*, available at https://dps.ny.gov/about-power-choose.
[12] "Energy Choice Ohio," *Energy Choice Ohio*, available at https://energychoice.ohio.gov/.
[13] "What is Direct Access," *Oregon Public Utility Commission*, available at https://www.oregon.gov/puc/utilities/Pages/Direct-Access.aspx.
[14] "PA Power Switch," *PA Power Switch – Pennsylvania Public Utility Commission*, available at https://www.papowerswitch.com/.
[15] "Competitive Energy Suppliers – Q&A and Updates," *Rhode Island Public Utilities Commission*, available at https://ripuc.ri.gov/utility-information/electric/competitive-energy-suppliers-qa-and-updates.
[16] "FAQs," *Power to Choose*, available at http://www.powertochoose.com/en-us/Content/Resource/FAQ.
[17] "§ 56-577. Schedule for transition to retail competition; Commission authority; exemptions; pilot programs," Virginia Electric Utility Regulation Act, available at https://law.lis.virginia.gov/vacode/56-577/.