COMMENTS
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A9

Annual

Baseline

Assessment of

Choice in

Canada and the

United

States

2012
ABACCUS

2012 ABACCUS: An Assessment of Restructured Electricity Markets
Distributed Energy Financial Group LLC
December 2012

DeFG

Contact

The ABACCUS Report is sponsored by the retail energy providers listed in Appendix C. The views expressed here are those of the author and do not necessarily represent the positions of sponsoring companies.

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Executive Summary[1]

The *Annual Baseline Assessment of Choice in Canada and the United States* (ABACCUS) is a scorecard that tracks U.S. states' and Canadian provinces' progress in restructuring electricity markets. Electricity restructuring refers to the reform of the electric industry and the creation of market opportunities and new rules that determine how service providers and entrepreneurs sell electricity and energy services to retail consumers. About one-third of the states and provinces of North America have taken steps to restructure, and they are at different stages of reform. Different paths are being taken to achieve the complementary goals of lowering energy costs, providing greater retail choices and more innovation to consumers, and the maintaining the reliability of electricity delivery.

Retail energy providers in North America continue to roll out new electric service offerings to residential consumers. The number of active retailers is rising in several jurisdictions. There appears to be a renewed sense of determination by retail energy providers to expand their presence in these markets, possibly in response to efforts by regulators to reform the market rules, reduce barriers to entry and raise public awareness. There also appears to be an improved understanding by retail energy providers of residential consumers' preferences, based on their experiences with consumer preferences in jurisdictions with significant activity.

A dynamic interaction is occurring among retail consumers, retail energy providers and policy makers. A broader base of residential consumers has a better understanding of retail electricity shopping. Retail energy providers are increasing their marketing efforts and government agencies are continuing to raise awareness and educate consumers. U.S. states and Canadian provinces have improved the opportunities for stakeholders in retail electricity markets by making changes to the market design and regulations. Retail energy providers are invigorated. Though the existing market structures and rules are not ideal, retail energy providers are not willing to miss the existing opportunities.

According to the ABACCUS scoring methodology, Texas is the competitive residential electricity market leader for the sixth consecutive year. Nine other states and provinces have achieved significant levels of market activity and switching in the residential sector. These include Alberta, Connecticut, Illinois, Maine, Maryland, Massachusetts, New York, Ohio and Pennsylvania. Two of these—Illinois and Massachusetts—have relied to a significant degree on municipal aggregation; Ohio has relied almost exclusively on municipal aggregation.

Texas is also the market leader for the sixth consecutive year in offering opportunities to commercial and industrial (C&I) consumers, but the gap with other states is much smaller. Twelve other jurisdictions—Alberta, Connecticut, Delaware, District of Columbia, Illinois, Maine, Maryland, Massachusetts, New Jersey, New York, Ohio, and Pennsylvania—have strong ABACCUS scores and have achieved significant levels of market activity and switching. C&I consumers can negotiate customized energy service solutions and contract terms. The largest consumers are very sophisticated in their business dealings. Their experience allows them to ensure that the contract reflects the values they prefer. These businesses acquire electricity in the same manner they do other goods and services, reflecting their risk tolerance and taking into account their in-house energy management expertise.

There is agreement that very large electricity consumers understand electricity, know what they want and know how to get it. There is an assumption—inappropriate, we contend—that small consumers do not understand electricity and do not know how to purchase it. Too many electric industry stakeholders

[1] An executive summary with charts and tables is available in presentation format. Go to www.defgllc.com.

have a habit of describing the electric industry in commodity terms. We believe the language of the electric commodity is limiting and detrimental to reform of retail electricity markets. There is an assumption that consumers just want the electricity commodity, not the end-use services involving energy. Thus there is an emphasis on insulating small consumers, rather than expanding their choices. Small consumers have a great deal of information about their personal preferences for electric service. Small consumers are sophisticated retail purchasers. This report places confidence in small consumers and emphasis on individual consumer choice, product differentiation, and retail energy service innovation.

Customization of energy contracts is one of many values that are facilitated through electricity restructuring. Four related benefits of electricity restructuring are described:

- Engaging consumers with innovative choices,
- Growing the local economy,
- Supporting businesses in global markets, and
- Reinvigorating the regulatory compact.

Engaging consumers brings significant benefits. Competitive markets measure the success of suppliers by their ability to acquire and retain customers. Electricity is no different from other goods and services in this regard. Successful retail energy providers must understand and satisfy consumers' needs in order to engage them and acquire their business. Retail energy providers must deliver promised services at a reasonable price in order to retain customers. This requires ongoing customer engagement. With increased engagement we observe a growing sophistication with more complex advertisements and messaging, and increased targeting of market segments. Innovation allows a retail energy provider to retain customers for repeat business. Successful retail energy providers identify the customer segments they can serve best. Through the dynamic of customer engagement and innovation, consumers demand and receive lower cost products and better service.

A second benefit of electricity restructuring is the development of the local economy. Restructuring can be part of a state or provincial economic development strategy, and can signal a pro-market, pro-business environment to all industry sectors. First and foremost, electricity restructuring can result in outside investment that brings capital, expertise and jobs in pursuit of new business opportunities. Investors are attracted to the local energy industry to build new power plants, bid on transmission line construction, provide electric distribution utility investments in smart grid, and, of course, set up new companies to compete for retail electricity consumers. Information, expertise and investment dollars readily flow across political boundaries, and states can share their expertise with little loss of value. New retail energy providers set up back office operations, energy procurement operations, and marketing and sales staff. These activities can signal a new dynamic to other industry sectors, and lower prices can encourage business relocation.

Global competition in business has placed pressure on many businesses to reduce costs and enhance productivity. Electricity restructuring can help. Businesses that require huge amounts of energy can focus on power procurement, energy price risk management and managing their energy use in a restructured electricity market. Businesses that rely on digitized information and automated manufacturing can focus on value-added services, including enhanced on-site reliability, backup power and enhanced power quality. The businesses in jurisdictions with retail electricity competition have an advantage over businesses in jurisdictions with regulated electric utilities because they see an increased variety of choices, an increased ability to manage electricity like any other input, lower and declining commodity prices, and greater responsiveness to changes in market prices.

Finally, it is healthy to periodically reexamine the laws and practices that define the obligations imposed on the local electric distribution utility in return for a reasonable opportunity to earn a reasonable return on invested capital. Electric industry restructuring requires major revisions to the "regulatory compact," including a redefinition of the role of the electric distribution utility, its obligations and its opportunities. Each jurisdiction has the opportunity to determine whether additional progress can be achieved by adopting a retail electricity competition regime, and by refocusing the electric distribution utility on energy delivery. The process of restructuring require a reassessment of the utility role, and a clarification of which services are monopoly services, and which services can be best provided in a competitive market place. This parallels the regulatory choices about which decisions are best made in a central manner, and which decisions are best left to decentralized decision making.

Introduction

Price and quality comparisons are an essential feature of a competitive market. Comparisons help us to make sense of our complex world. We rely on standards, ratings and assessments to make decisions about everything from our choices for restaurants or hotels, purchases of new appliances, the selection of cars, or the selection of local services. A similar process occurs when we assess public and quasi-public services, including local public school districts, the quality of police and fire service, or roadway maintenance—each of which may influence our selection of a neighborhood when buying a home or relocating for a job. In each instance, we seek better service at a lower cost, and we rely on ratings by an independent agencies. Both competitive markets and government services perform better when consumers have information about the quality and cost of the service.

ABACCUS Methodology

ABACCUS provides a framework for comparing many attributes and qualities of electricity markets. The goal of this report is to assess the progress of U.S. states and Canadian provinces toward achieving workable competition in retail electricity markets. The report focuses on comparisons among the various electric industry structures in North America, particularly the design and implementation of consumer choice (direct access by retail energy providers to retail consumers). Comparisons are offered at the state/provincial level in an attempt to sort out what works best, and what can be improved.

The ABACCUS scores and rankings are based on: 1) retail market status, 2) wholesale market competition, 3) default (standard or basic) service design, and 4) facilitation of the choice of retailer. The ABACCUS assessment methodology was developed over several years through a collaborative effort among retail energy providers and representatives from state regulatory commissions. The ABACCUS methodology relies on data from each market to score the state or province. The resulting scores and rankings are set forth below. The appendices contain a detailed description of the ABACCUS methodology, information about each state and province.

> *Different states use different terminology to describe the same type of company. In this report, we refer to the regulated utility as the "electric distribution utility" and the competitive retail electricity supplier as the "retail energy provider." See Appendix E.*

This report also presents background information on electric markets. We present the ABACCUS findings for smaller consumers (residential) and larger consumers (commercial and industrial or "C&I"). We discuss several new policy decisions and initiatives and their impact on electric markets. We present a list of product and service offerings available today in competitive electricity markets. We describe the best practices available to the state and provincial legislators and regulatory commissioners.

North America has an astounding variety of utility ownership arrangements and market structures. In addition to restructured electric markets that offer consumer choice and competition, there are state-regulated investor-owned utilities, government-owned municipal utilities, government power authorities, and member-owned electric cooperatives. In a remarkable display of heterogeneity, these utilities operate side-by-side and with merchant power plant owner/operators, transmission companies, retail energy providers and energy solution providers. Opinions vary about which utility ownership arrangement is best, what electric distribution utility size is best and what market structures are best.

The focus of ABACCUS is a comparison of the policies and rules in the jurisdictions that offer direct access to consumers by retail energy providers.

Consumer Preferences

Even after some industry facts are gathered, a variety of perspectives remains about how to interpret these data. In this regard, assessing the electric industry is no easier than assessing complex services such as public education or health care. Reasonable people can disagree. We cannot resolve the different perspectives that are brought to the policy debates, but we may present useful information.

Different people value things differently! That simple statement provides one reason that market transactions are an efficient mechanism for the allocation of services and resources. Markets serve this complexity well. That statement also gives insight into why there is disagreement over "what works best" in electric restructuring. There are disagreements because *different people value things differently* and therefore reach different conclusions when they review the same data.

What do people want, and therefore what do they value? You do not have to spend much time looking at the electric industry to understand the things that most people value: 1) price, 2) reliability, and 3) customer service. Some people want the electric commodity delivered at the lowest possible cost, while others place a premium on the reliability of service and power quality. Others want great customer service and a responsive call center. Others prefer the lowest emissions. Many want a mix of attributes. Just when a regulatory commissioner thinks s/he has solved a power reliability or power quality issue (for example, "maintain both at a high level"), some cost-conscious consumers will complain about a rate increase. Those who care about the source of power generation or fuel type may prefer renewable resources over reliability or the low cost of a major new fossil-fuel power plant. A few consumers may prefer independence and would like to be off the grid, or to have the ability to operate off the grid when there is a reliability problem, but the question arises regarding their responsibility of grid-related costs. Each value-based preference imposes costs on other people. A system of regulation that is designed to satisfy one goal will fall short on another. The balance achieved through excellent regulatory practices are still criticized.

Consumer choice mitigates some problems of central decision making by offering a diverse set of options that meet consumers' diverse preferences. Rather than a one-size-fits-all approach or a government-mandated outcome, a competitive market is comprised of companies that offer a range of products and services. Consumers choose the ones that best match their needs. There are still compromises to be made with respect to the regulated (monopoly) components of the system; however, the less we mandate, the lower the shared costs, and the smaller the arguments.

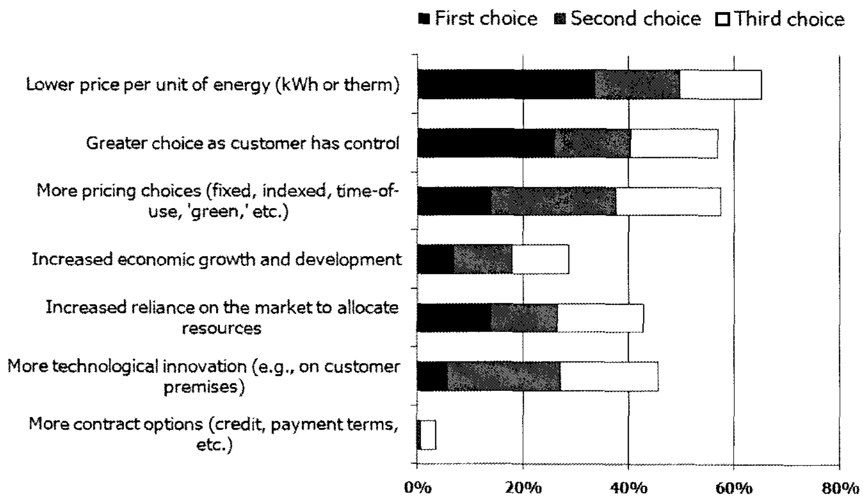
Goals for Electricity Restructuring

What are the goals of a fully competitive electric market? What do people value? Some observers have tried to judge success or failure by one measure, notably the average cost of electricity. However, for most homeowners and businesses, the value of electric service is properly measured in terms of the value provided by the electricity-consuming end-use devices. There are many attributes of service—cost, reliability, power quality, fuel source, customer service, access to new technologies—that matter to consumers.

In 2006, 2009 and 2011, we conducted a survey of energy professionals on electricity restructuring in North America.[2] We asked energy professionals to select their first, second and third choices from a list of seven options in response to the question: "In your opinion, what are the goals of a fully competitive retail energy market? Which outcomes are the most important? Select the top three."

A large number of respondents in all years gave high rankings to "greater choice as customer has control" and "more pricing choices" in addition to "lower price per unit of energy." (The chart displays 2011 results.) Six of the listed options received a significant level of support and other options were written in (e.g., "conservation" and "demand response"). While "lower price per unit of energy" was selected most frequently as the top choice (by one out of three respondents in 2011), it was not universally selected as the goal of a fully competitive retail energy market.

Goals of a Fully Competitive Retail Energy Market

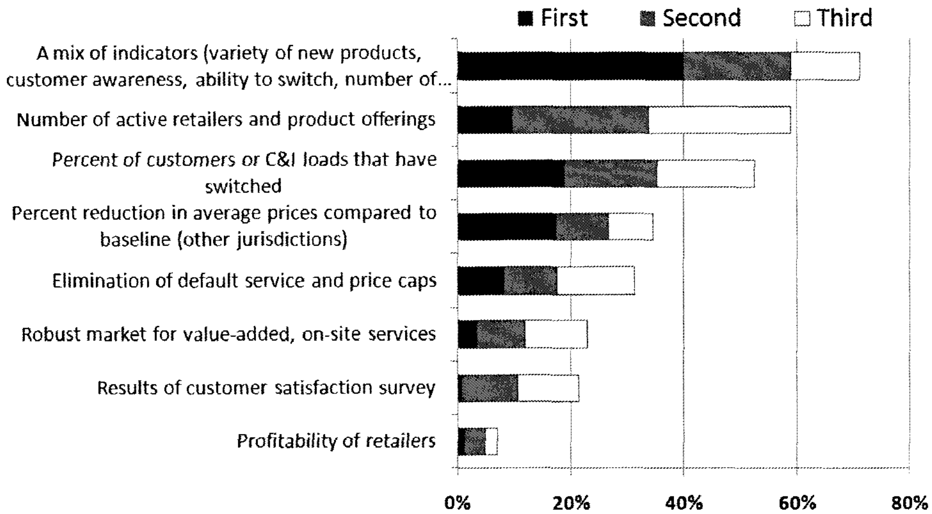


We also asked energy professionals, "In your opinion, what are the three most effective ways to measure whether there is a fully competitive market?"

A majority in the 2011 survey responded that "a mix of indicators" would be appropriate to measure whether there is a fully competitive market. Forty percent listed "a mix of indicators" as their first choice (out of eight options listed). Seventy-one percent placed "a mix of indicators" among the top three choices out of eight listed. The "percent reduction in average prices" was in fourth position overall.

[2] "Electric Industry Restructuring Survey," conducted online by DEFG, November 2006, September 2009 and July 2011.

Most Effective Way to measure Fully Competitive Retail Energy Market



These data reinforce the finding that people understand that there are many goals relating to the competitive provision of energy services, and there are many ways to measure success. A single metric misses the point. These results support the use of many indicators to assess electricity markets. That is the role of the ABACCUS methodology.

EcoPinion Consumer Survey No. 11 points to overwhelming consumer support for the concept of competition in the retail purchase of electricity.[3] Eighty-eight percent of those surveyed thought it was a good idea. This holds true across all demographic segments and geographical regions of the country. Younger Americans (from 18 to 34 years old) have even stronger support (90%) for competition in the retail purchase of electricity than do older Americans (84%).

The American narrative confirms a market orientation including the purchase of electricity from competing suppliers. This provides grounds to support continued advancement in electricity restructuring; however, there is a significant amount of work ahead with regard to raising consumer awareness and restarting a national dialogue on the issue.

[3] "Resurgence for Retail Electricity Choice and Competition," EcoPinion No. 11: DEFG and EcoAlign, April 2011. Available: www.defgllc.com or www.ecoalign.com.

ABACCUS Findings

Texas is the competitive residential electricity market leader for the sixth consecutive year. Nine other states and provinces have achieved significant levels of switching in the residential sector.[4] These include Alberta, Connecticut, Illinois, Maine, Maryland, Massachusetts, New York, Ohio and Pennsylvania. Two of these—Illinois and Massachusetts—have relied to a significant degree on municipal aggregation; Ohio has relied almost exclusively on municipal aggregation.[5]

Texas is also the market leader for the sixth consecutive year in offering opportunities to commercial and industrial (C&I) consumers, but the gap with other states is smaller. Twelve other jurisdictions—Alberta, Connecticut, Delaware, District of Columbia, Illinois, Maine, Maryland, Massachusetts, New Jersey, New York, Ohio, and Pennsylvania—have strong scores and have achieved significant levels of switching. C&I consumers can negotiate customized energy service solutions and contract terms. The largest consumers are very sophisticated in their business dealings. Their experience allows them to ensure that the contract reflects the values they prefer for the services delivered. These businesses acquire electricity in the same manner they do other goods and services, reflecting their risk tolerance and taking into account the in-house expertise they may have to manage energy.

The U.S. states with restructured retail electricity markets are advancing and making progress. None of the states is moving back toward reregulation or a reversal of electricity restructuring.

- Alberta, Connecticut, Delaware, District of Columbia, Illinois, Maine, Maryland, Massachusetts, New Jersey, New York, Ohio, Pennsylvania and Texas have workable competition in the C&I sector as measured by ABACCUS, or by simply examining the relatively large percentages of C&I consumers who have shopped for power and switched to a competitive supplier.
- Alberta, Connecticut, Illinois, Maine, Maryland, Massachusetts, New York, Ohio, Pennsylvania and Texas have achieved significant competitive activity in the residential sector. Illinois and Massachusetts have relied to a significant degree on municipal aggregation; Ohio has relied almost exclusively on municipal aggregation.
- Two states with limits on choice continue to debate the issues. Both California and Michigan have caps on participation.

Wholesale power market reforms support retail energy supplier access to reliable sources of power at competitive prices. As a result, the average price of electricity is falling in states with successful retail markets.

The success of Texas is a result, in part, of its approach to default service:

[4] Switching in this report refers to net movement away from the incumbent supplier. It is measured by the number of residential customers or by the amount of commercial and industrial customer electric load or electricity use. "Net switching" means that you might have 5% move away and 1% return to the incumbent for a net switching rate of 4%. Another definition of switching—not applied in this report but used by others in the industry—is the percent of customers or loads moving back and forth each year. It is the "annual switching rate," sometimes called "churn."

[5] Municipal aggregation brings the benefits of the wholesale market to a large number of consumers without any action by individuals. Individual consumer choice, in contrast, refers to actions by each consumer to determine the attributes of energy service that are most important to their household, and the type of contract that is preferred.

- Large consumers (using more than one megawatt of power during a month) started direct access in 2001 without a default service safety net. That is, it was assumed that they could take responsibility for participating in the retail market.
- A provider of last resort (POLR) service was established as a safety net. POLR is available to consumers who, through no fault of their own, are without a supplier. For example, if a retail energy provider goes out of business, POLR ensures that customers receive electricity until they can select a new supplier.
- Residential consumers relied on a "price-to-beat" default service in Texas from 2002 through 2006. All stakeholders knew that the service was a transition service. The tariff was successfully phased out after five years and all residential consumers in the restructured portions of the state seamlessly moved to a competitive price with the same supplier.
- The default service customers started on "day one" of the market with regulated rates offered by the competitive suppliers, not with a regulated rate offered by the electric distribution utilities. In many cases, the competitive supplier was affiliated with the electric distribution utility, but with rules that affected the interactions between the two companies.
- Electric distribution utilities were focused on the monopoly distribution service function, and were not responsible for (or distracted by) providing services that could be provided in the competitive market.

Separation of monopoly functions from competitive functions can have an impact on the ability of service providers and entrepreneurs to innovate. Product and service innovation in retail electric markets marks a shift from pure commodity sales to a consumer-driven market in which retail energy services can flourish.

This report includes qualitative and quantitative measures of product and service innovations.

- Large C&I consumers negotiate customized energy service solutions in numerous states. This is an ongoing activity since the initial opening of the retail electricity markets. Large customers were the first to take advantage of the ability to combine desirable services, such as credit terms or energy data analysis, with commodity purchases of electricity.
- Residential consumers select from numerous distinct product types. These include
    - Month-to-month power contracts (often at a low cost but no guarantee about future costs)
    - Fixed/guaranteed price contracts of two to sixty months
    - Prices with defined ceilings and price reductions indexed to a market price
    - A flow through of wholesale market prices (which can be volatile prices)
    - Time-of-use rates with blocked time prices
    - Time-of-use rates with discounted or free energy at particular times (one free day per week or free nighttime usage)
    - Prepaid energy (no deposit, no credit check, daily usage and credit balance updates)
    - Green or renewable power contracts (fixed percent of renewable energy up to 100%)
    - Electricity bundled with on-site services (heating and cooling system checkup and maintenance or home energy audits) included in the price

  - Electricity bundled with energy management devices and information (in-home displays, smart phone apps, text messages, weekly usage charts, educational materials)
  - Solar leasing programs and buy-back of excess distributed renewable energy
  - Rate discounts and rebate card programs
  - Electric vehicle charging prices

- As consumers gain knowledge and sophistication about energy prices and energy management, retail suppliers are adapting their products and services to increase consumer value. Retail suppliers compete on several attributes such as brand, products, customer service, etc.
- Technology advances in electricity and telecommunications are accelerating the learning curve. There is an expectation that a merging of IT, communications and energy will continue occurring as data, data analysis, energy controls, and energy management services develop. The end uses of energy are becoming smarter as they are monitored, controlled and integrated into the electricity market.

Workable retail electric competition can grow under a range of market frameworks. Pennsylvania, New York, Illinois and Texas demonstrate there is more than one way to bring choice of energy supplier, service, innovation and lower prices to retail consumers. These four states can offer useful best practices for other states and provinces.

Workable retail electric competition does not solely depend upon whether a state has advanced or traditional meters, mandatory or voluntary renewable portfolio standards, or fees (universal charges) for low income programs or energy efficiency initiatives. As long as the requirements for these public policies are well structured and consistently applied, competition can grow.

Workable retail electric competition requires unbundled rates and services, supportive electric distribution utility billing options, consumer education, consumer protection, a strong regulatory preference for workable competition, and ongoing monitoring and reform. While non-uniformity of markets among states can be time consuming, such policy variations do not prevent retail competition if the core ingredients for a successful retail market are in place.

Commercial and Industrial Consumer Findings

The electricity choices for individual consumers have never been greater in North America, and that is particularly true for large commercial and industrial (C&I) consumers. The choices include access to competitive energy suppliers, access to new technologies, access to wholesale markets and access to on-site options such as storage and self-generation.

C&I Scores, Ranking and Assessment

Commercial and Industrial ABACCUS Scores and Rank

Jurisdiction	2012 Score[6]	2012 Rank	2012 Assessment[7]	2011 Score	2011 Rank	2012 Assessment[8]
Texas	87	1	Excellent	86	1	Excellent
Illinois	66	2	Good	64	2	Good
New York	64	3	Good	64	3	Good
Pennsylvania	61	4	Good	62	4	Good
Maryland	60	5	Good	61	5	Good
Connecticut	59	6	Good	60	6	Good
Alberta	59	7	Good	58	7	Good
New Jersey	56	8	Good	54	10	Good
Maine	56	9	Good	56	8	Good
Massachusetts	54	10	Good	54	9	Good
Ohio	53	11	Good	51	12	Good
District of Columbia	52	12	Good	52	11	Good
Delaware	47	13	Good	46	14	Good
California	46	14	Marginal	46	13	Marginal
Ontario	41	15	Marginal	41	15	Marginal
New Hampshire	37	16	Marginal	37	16	Marginal
Rhode Island	33	17	Marginal	33	17	Marginal
Michigan	33	18	Unsatisfactory	33	18	Unsatisfactory

Number of Retail Energy Suppliers

Commercial and industrial retail electricity customer choice has been successful in numerous areas of North America. Electricity choice is thriving for these consumers because states and provinces have

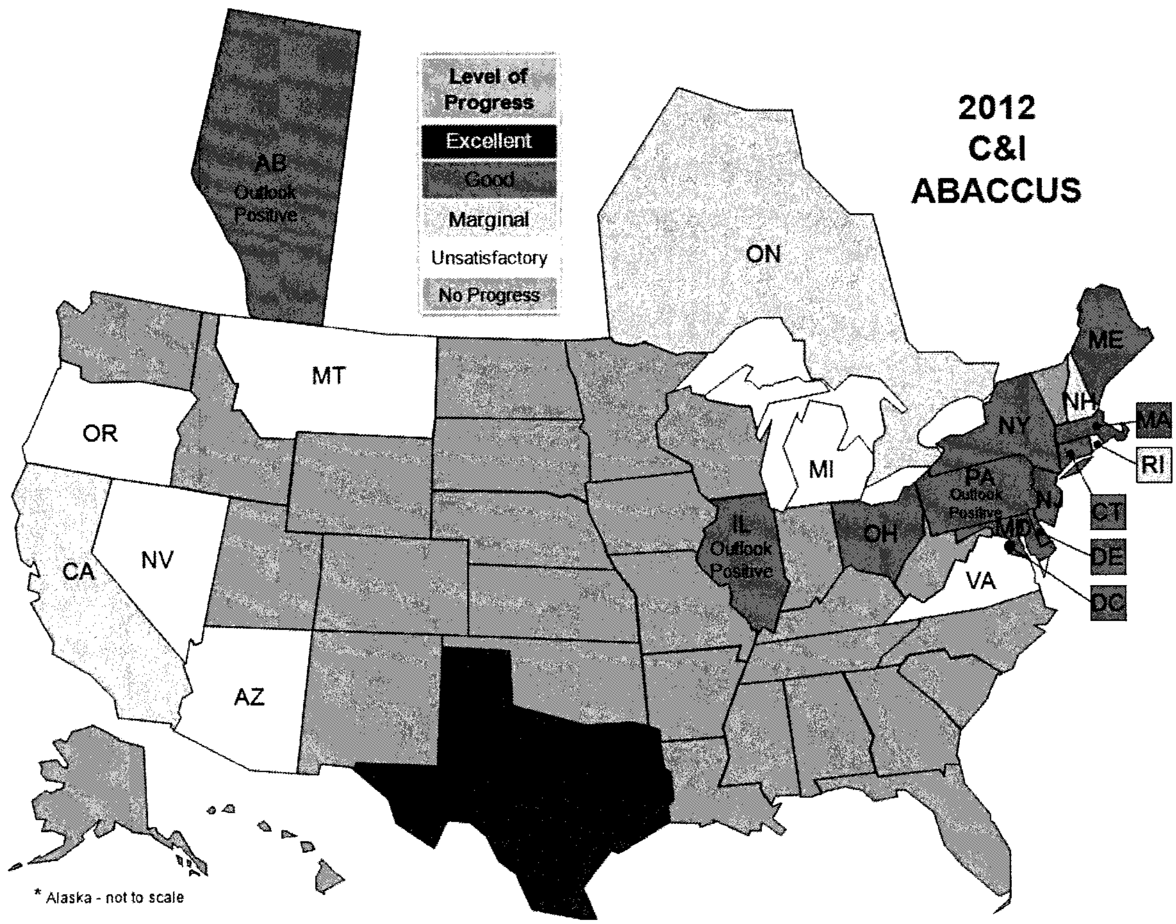
[6] Scoring is very tough and there is no "grading on a curve." No jurisdiction will likely ever score 100 because perfect scores for particular ABACCUS elements may not be ideal or even practical in a particular jurisdiction given its history of regulation.

[7] States receive a qualitative assessment that may appear inconsistent with the quantitative score. This is intentional. It is possible to score points with certain reasonable policies, yet limit the success of retail choice as a result of other policies.

[8] States receive a qualitative assessment that may appear inconsistent with the quantitative score. This is intentional. It is possible to score points with certain reasonable policies, yet limit the success of retail choice as a result of other policies.

achieved a balance between the flexibility afforded to large consumers and the minimal regulatory oversight necessary and desirable to build confidence in well-structured C&I markets and draw in many retail energy suppliers. The number of retail energy suppliers in jurisdictions with active C&I markets continues to rise. A few jurisdictions make no distinction between licensed, registered or certified companies and active companies.

Commercial and Industrial ABACCUS Assessment



Innovation and Product and Service Differentiation

Large C&I consumers were some of the early beneficiaries of retail electricity choice because they were already knowledgeable about how to contract for power and the associated services. Large consumers must determine how best to manage a variety of inputs into their industrial processes and business operations, and electricity is just one of many important and complex issues that they deal with every day. Business needs vary, facility configurations vary, and management preferences and needs vary. It is intuitively obvious that the competitive market is best at satisfying extremely diverse needs. The "one-size-fits-all" regulatory model does not serve C&I consumers very well. Competition is a mainstay of the global economy precisely because competitive service providers respond to consumers who shop. Choosing among a variety of products, services and suppliers is routine for these consumers and the introduction of retail choice to the electric industry is spurring innovation and efficiency.

Commercial and industrial consumers in more than a dozen competitive retail electricity markets have access to numerous retail power suppliers who offer options that vary with respect to contract term, price, risk, and other factors. There are opportunities for fixed price contracts, prices that vary according to a published index, formulas that combine several attributes and prices that vary by quarter-hour with the wholesale market price. Demand and price-responsive consumers can participate in wholesale markets for capacity, energy and ancillary services, including reserve markets. Each business consumer can decide whether to take advantage of these market opportunities, or whether to reduce their exposure to market price variability. Their choice depends on their unique industrial process, willingness to respond, and the technical feasibility of the response. Building management systems continue becoming more sophisticated to facilitate more real-time decision making. Large commercial and industrial consumers are able to invest in backup generation, on-site energy storage, and end-use load controls to participate in power markets to manage usage and lower costs.

There is a broad array of innovative products and services address the needs of large C&I consumers such as:

- Energy price risk management remains extremely important to nearly all C&I consumers. Retail energy suppliers offer a variety of options to satisfy the varied preferences and to suit the needs of each consumer.
- On-site services (energy services performance contracting, building retro-commissioning services, on-site generation, construction services) allow retail energy suppliers to create the right mix of service and commodity for each C&I consumer.

How does innovation occur? Innovation leverages public and private infrastructure investments. In some instances, government makes a decision to assume some of the risk with respect to new investment. These investments then spur the private investments on the consumers' premises. For example:

- Advanced meters and usage data portals enable new offerings for consumers. With these public investments (regulated, cost-based recovery), there is information available that can be transmitted to handheld devices, on-site displays, computer screens, or to smart devices throughout the utility's delivery network.
- Transmission investments facilitate green power development and transactions. Texas, for example, has committed to new transmission investments to double the capacity of power transfers from windy West Texas to the population centers.
- The Internet and advanced telecommunications help consumers to engage through social media with retail suppliers and the local distribution utilities and provide new market channels.

A huge variety of electricity products and services is available. The opportunities are nearly limitless. Current offerings allow C&I consumers to choose among the following in several areas of North America:

- Power contracts to lock in prices over one or several years
- Power prices indexed to a commodity price that is critical to customer operations
- Prices that change hourly so the consumer can assume risk if that serves its business
- Customized billing and credit terms
- Blended products to provide a portfolio of supply to reduce risk
- Green power that is backed by production from renewable resources
- Sustainable energy paths that are low-carbon or carbon-neutral

- Bundled equipment maintenance costs with their electric service
- Retail supplier-provided services for energy efficiency, and/or energy management devices, usage monitoring and optimization of energy use for their production processes
- Combined heat and power production and contracts for on-site power development
- Demand response projects if the business operations allow it

C&I Switching Statistics

Customer net switching (migration) rates and customer choice rates for competitive offerings are high in several states because of the large number of retail energy suppliers, sophistication of the large customers and customized contract offerings.

Jurisdictions with Significant C&I Customer Switching[9]

Jurisdiction	Large Customer Switching	Medium Customer Switching
Texas	100.0%	100.0%
Maine	95.3%	60.5%
Pennsylvania	95.0%	73.3%
Alberta	94.4%	63.0%
Illinois	93.2%	80.7%
Maryland	92.4%	72.4%
Connecticut	91.9%	82.3%
Massachusetts	90.9%	63.8%
New Jersey	87.6%	55.6%
Delaware	82.1%	82.1%
District of Columbia	82.0%	82.0%
New York	81.3%	64.4%
Ohio	66.6%	71.5%

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[9] The jurisdictions use different definitions for switching; therefore, these data are not strictly comparable. Switching refers, in general, to movement away from default service. Several jurisdictions distinguish between commercial and industrial consumers (separated as medium v. large here). Others specify various size thresholds between medium and large. In some instances the size threshold is based on peak usage and in other instances it is based on energy usage. A few jurisdictions place all nonresidential consumers in one group for reporting purposes.

Residential Consumer Findings

Residential electricity choice began in the late 1990's with much positive anticipation and initial success in several states. However, the California market problems during 2000-01 brought uncertainty to retail markets and policy making. Later, rising input fuel prices resulted in what was perceived as high market prices for electricity, and these prices increased the cost of residential electricity service. A number of states adopted policies that limited or discouraged the participation of retail energy providers. As a result, the participation of residential customers in retail choice programs declined in several states after 2001, and perceptions around mass market participation in retail choice were mixed. Some observers were very critical and skeptical of the ability of residential consumers to benefit from retail choice.

A much more positive picture has come about during the past several years. The electricity choices for individual mass market consumers have never been greater in North America. Infrastructure investments in advanced meters and the smart grid are beginning to bear fruit. The choices available to residential consumers include green power, month-to-month rates, fixed-price contracts for terms of three months to five years, prepaid energy service, time-of-use prices (free days or free nights) and a variety of bundled service options that include maintenance of major appliances, in-home energy management devices, distributed renewable self-generation options, and advanced technologies. Residential consumers have access to new approaches to billing and transaction such as prepaid energy with daily updates.

- Texas leads the ranking for the sixth time in as many years. More than 40 companies offer more than 250 products. In this report we declare that the competitive portions of ERCOT have achieved 100% consumer choice. That is, "net switching" no longer has meaning because six years after the end of default service there is no longer an "incumbent supplier."
- Nine other states and provinces have achieved significant levels of switching in the residential sector: Alberta, Connecticut, Illinois, Maine, Maryland, Massachusetts, New York, Ohio and Pennsylvania. Two of these—Illinois and Massachusetts—have relied to a significant degree on municipal aggregation; Ohio has relied almost exclusively on municipal aggregation.
- The number of active retail energy providers and the number of product and service offerings has grown substantially. In Connecticut, Maryland, Illinois and Alberta, the number now approach last year's level of activity in New York and Pennsylvania.

Residential Scores, Ranking and Assessment

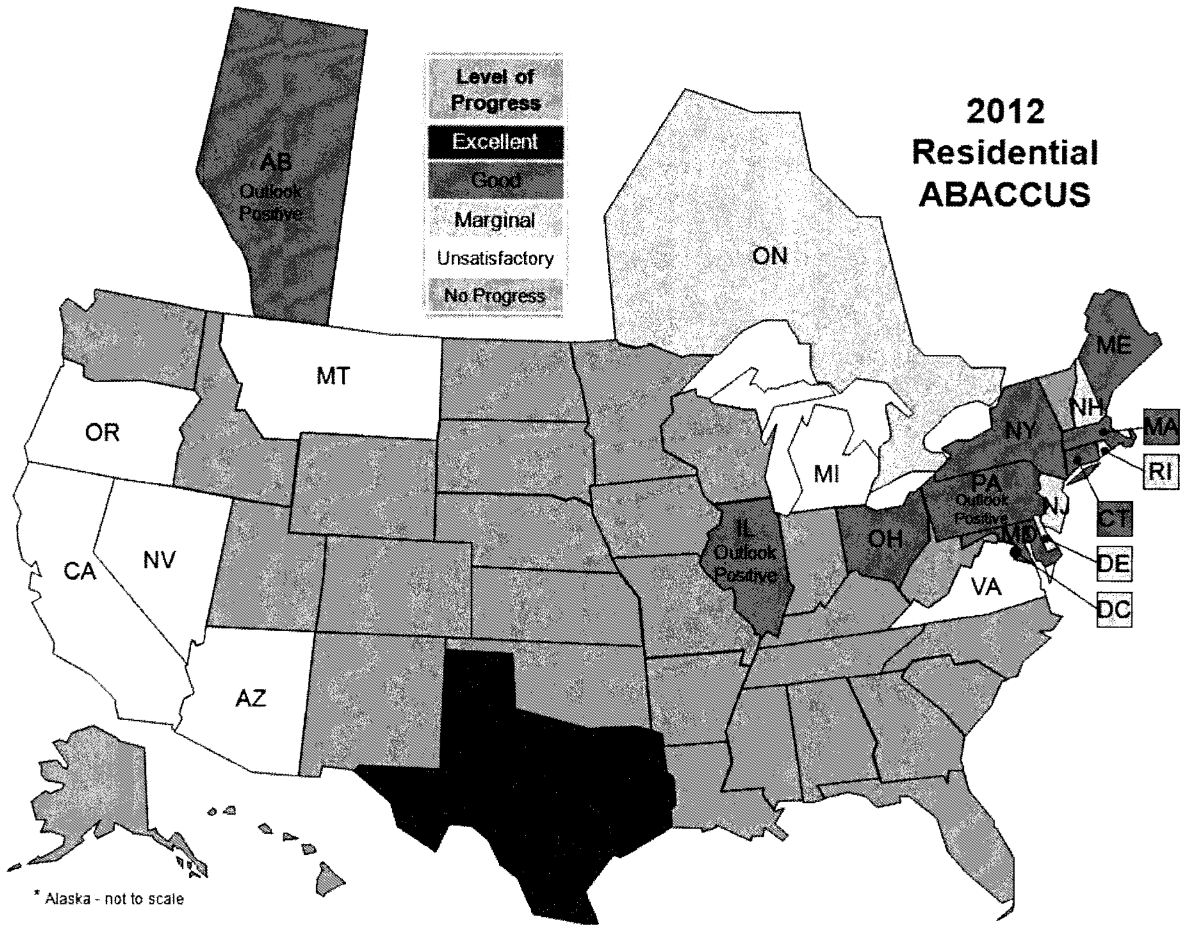
Residential ABACCUS Scores and Rank

Jurisdiction	2012 Score[10]	2012 Rank	2012 Assessment[11]	2011 Score	2011 Rank	2011 Assessment
Texas	86	1	Excellent	85	1	Excellent
Alberta	66	2	Good	62	4	Good
Pennsylvania	64	3	Good	62	3	Excellent
New York	62	4	Good	63	2	Excellent
Connecticut	55	5	Good	55	5	Good
Maryland	55	6	Good	53	6	Good
Illinois	52	7	Good	50	7	Good
Ohio	49	8	Good	46	10	Marginal
Maine	47	9	Good	46	11	Marginal
Ontario	45	10	Marginal	47	9	Unsatisfactory
Massachusetts	43	11	Good	48	8	Good
New Jersey	43	12	Marginal	45	12	Marginal
District of Columbia	39	13	Marginal	39	13	Marginal
Delaware	35	14	Marginal	31	17	Marginal
New Hampshire	33	15	Marginal	35	14	Marginal
Rhode Island	33	16	Marginal	32	16	Marginal
California	29	17	Unsatisfactory	29	18	Unsatisfactory
Michigan	28	18	Unsatisfactory	33	15	Unsatisfactory

[10] Scoring is very tough and there is no "grading on a curve." No jurisdiction will likely ever score 100 because perfect scores for particular ABACCUS elements may not be ideal or even practical in a particular jurisdiction given its history of regulation.

[11] States receive a qualitative assessment that may appear inconsistent with the quantitative score. This is intentional. It is possible to score points with certain reasonable policies, yet limit the success of retail choice as a result of other policies.

Residential ABACCUS Assessment



Number of Retail Energy Suppliers

Residential electricity market development tends to lags the C&I customer sector, partially due to a greater degree of hesitancy by policymakers to trust consumers to make decisions. Regulated default service often provides what is perceived as an adequate price while there has generally been less effort to spur the development of residential electricity markets. The cost of customer acquisition and retention can also be high to retail energy providers in relation to the revenue.

Number of Retail Suppliers Making Offers to Residential Customers[12]

Jurisdiction	Retailers
Pennsylvania	47
New York	46
Texas	43
Illinois	22
Maryland	21
Connecticut	20
Delaware	14
Alberta	14
District of Columbia	13
Maine	13
New Jersey	11

Innovation and Product and Service Differentiation

Innovation is taking off residential consumers in several states and provinces. For example:

- Nine retail energy providers in Texas offer prepaid electricity products with innovative use of advanced meter infrastructure and mobile communications. This is a voluntary offering that customers actively choose to meet their needs.
- The number of product and service offerings has grown substantially in Connecticut, Maryland, Illinois and Alberta. These numbers now approach last year's level of activity in New York and Pennsylvania.

Residential consumers can also exercise significant choice and control over their energy usage, billing and cost. Residential consumers can choose contract periods of one month, or they can lock in today's prices for two, three and even five years. These consumers can exercise a preference for the source of their power by selecting renewable/green power generated with wind turbines or hydroelectric facilities. In some states, consumers can bundle heating and cooling equipment check-up or maintenance costs into their electric bill. Other choices include enrolling in rewards and cash-back programs, energy efficiency programs, demand response and time-of-use pricing to name a few. Additionally, as the advanced metering smart grid infrastructure continues taking off, residential markets are beginning to open up to include home area networks and control devices that are coordinated with these smart grid investments.

[12] The jurisdictions make data available to consumers in different ways, so comparing and counting the number of active retailers and the number of different products has an element of subjectivity.

Number of Products Available to Residential Customers[13]

Jurisdiction	Offers
Texas	264
New York	88
Pennsylvania	59
Illinois	56
Maryland	56
Connecticut	48
Alberta	44
Delaware	14
District of Columbia	13
Maine	13
New Jersey	11

In numerous jurisdictions retail energy providers offer at least four categories of products: 1) month-to-month products, 2) fixed-price products, 3) indexed price products, and 4) clean/green products. In Texas, there are 264 products offered to residential consumer (up from 120 in 2009) by 43 retail energy providers (up from 30 in 2009) on the state's "Power to Choose" website as of October 2012.

Residential Switching Statistics

The rate of residential customer switching from regulated default service to competitive energy supplier is modest in a few jurisdictions. However, other jurisdictions have made reforms that have advanced consumer participation in the marketplace. Connecticut, Pennsylvania and Illinois have seen recent gains. Some jurisdictions have used aggregation programs to help jump-start customer choice activity. For example, Massachusetts has achieved about one-half its switching through aggregation programs. Ohio currently has most of its switching through aggregation programs.

[13] The jurisdictions make data available to consumers in different ways, so comparing and counting the number of active retailers and the number of different products has an element of subjectivity.

Jurisdictions with Significant Levels of Residential Customer Switching[14]

Jurisdiction	Residential Switching
Texas[15]	100.0%
Connecticut	44.1%
Ohio[16]	42.2%
Alberta	35.4%
Pennsylvania	31.5%
New York	22.7%
Illinois[15]	22.4%
Maryland	22.1%
Maine	21.6%
Massachusetts[15]	14.3%
New Jersey	14.3%
District of Columbia	12.3%

[14] The jurisdictions use different definitions for switching; therefore, these data are not strictly comparable. Switching refers, in general, to net movement away from the incumbent provider or default service provider

[15] The competitive portions of ERCOT in Texas have effectively achieved 100% consumer choice. In 2010, a report issued to the Public Utility Commission of Texas found that 87.1% of the eligible mass market in Texas had chosen a product, either with a new retail electricity provider, or with the incumbent provider. Other data reflect switching and are based on periodic reports issued by regulatory commissions or utilities.

[16] See the discussion of municipal aggregation programs and individual consumer choice in this report.

Effective Retail Market Policies

Retail Market Reforms

Pennsylvania led the nation in regulatory reform and progress in 2012, particularly as it affects the opportunities for small consumers. These efforts lay the groundwork for what is expected to spur significant market growth moving forward. The Pennsylvania PUC initiated a major new project by order entered on April 29, 2011 to "assess the status of the current retail market and explore what changes need to be made to allow customers to best realize the benefits of competition."[17] The Office of Competitive Market Oversight (OCMO) is studying how best to deal with issues relevant to the success of the retail market, including the phase out or elimination of default service. "The commission's goal is to make Pennsylvania the most competitive electricity market in the country," said PUC Chairman Robert Powelson. "I believe the order being voted on today provides an excellent roadmap for the commission's next steps toward achieving that goal."[18] The PUC provides regular updates of its Retail Markets Investigation on its website.[19]

Phase I of the project included presentations to the commission in a June 2011 *en banc* hearing, followed by comments in response to eleven questions regarding barriers to competition, the role of local distribution companies, and the design, delivery and future of default service. On July 28, 2011, the Commission issued and order and opinion and began Phase II of the project. The Commission concluded that Pennsylvania's retail market for electricity requires change in order to bring about the robust competitive market envisioned by the Electricity Generation Customer Choice and Competition Act in 1996. Phase II will be conducted by the OCMO to address the long range steps and structural changes to default service. OCMO will conduct technical conferences and present recommendations to the Commission. In its Phase I order, the commission rejected the notion that all consumers are participating in competitive electric supply markets based on the status of the wholesale market. The Commission further emphasized the need to make near-term reforms to market structure to address information access and switching; to make near-term and long-term changes to default service, and to address consumer education.

Significant progress has been made. In its March 2, 2012 final order, the commission adopted an Intermediate Work Plan.[20] The PUC ordered utilities to provide educational materials (a tri-fold flyer) to consumers in May 2012. Electric distribution utilities must institute a new/moving customer referral program by the end of 2012. The PAPowerSwitch.com website to will be expanded to provide small business customers with comparative pricing data. Call center scripts for new and moving customers will be developed and consistently used by electric distribution utilities and suppliers. Electric distribution utilities shall include price-to-compare information on electric bills. Sample bills will be made available on utility website to show a sample bill with default service and a sample bill with service by a competitive supplier. Parties will work on a standard letter of authorization to provide access to

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[17] Pennsylvania PUC *Investigation of Pennsylvania's Retail Electricity Market*, I-2011-2237952.

[18] Restructuring Today, July 29, 2011.

[19] See: http://www.puc.state.pa.us/utility_industry/electricity/retail_markets_investigation.aspx

[20] See: http://www.puc.state.pa.us/electric/Retail_Electricity_Market.aspx

customer data and information and customer care service. These activities resulted in a big jump in the number of visits of the PAPowerSwitch.com website.[21]

In its September 27, 2012 secretarial letter, the PA PUC sets forth a Retail Markets Initiative "End State Proposal." It is envisioned that utilities will remain in the default service provider role, and offer a default service product that will become more efficient in the coming years. Medium and large C&I customers would pay hourly locational marginal prices. Other customers (C&I customers lacking advanced metering capabilities and residential consumers) will move to 90-day full requirements products that are acquired in quarterly auctions. This will go into effect in mid-2015. Utilities will also remain in the metering role. By October 2013, there will be a plan to allow switching between meter reads. By mid-2013, a plan will be developed to allow competitive parties to offer consolidated billing for power supply and distribution services.[22]

In Alberta, the Minister of Energy announce in March the creation of a Retail Market Review Committee to study the volatility and costs of the "regulated rate option" (RRO).[23] RRO is the name given to the default service product for small consumers. The RRO uses a forward month price to let consumers know what price to expect if they do not select a competitive provider. The Retail Market Review Committee reported to the provincial government in September. Government action is expected in late 2012.[24]

August 2012, the Public Utilities Commission of Ohio modified and approved AEP's "electric security plan" (ESP) application. The PUCO ruling allows AEP to transition to a more competitive market based structure by June 1, 2015, with base generation rates frozen through May 2015. AEP will auction increasing amounts of its standard service offer beginning in 2013. By June 2014, 60% will be provided by competitive auctions, and by January 2015, 100% will be provided by competitive auctions. A 12% rate increase cap was set during the term of the ESP.[25]

Illinois is considering a staff-proposed procurement plan to move the mix of resources so that it would involve less hedging. The current hedging strategy—100% hedged for the first year, 70% hedged for the second year, and 35% hedged for the third year—would be replaced with 75% hedged in the first year, 50% in the second year, and 25% in the third year. This would help deal with the risk associated with retail customer migration.[26] Public Act 96-0176 amended the Illinois Power Agency Act effective January 1, 2010 to allow municipalities and counties to aggregate electrical load. Municipal corporate authorities and county boards can adopt an ordinance to aggregate residential and small commercial electrical loads and solicit bids for the sale and purchase of electricity. A referendum is required to determine whether or not the aggregation shall be an opt-out program. Municipal aggregation activity has increased dramatically with 306 communities placing an opt-out aggregation referendum on the March

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[21] Communication with the staff of the Pennsylvania Public Utility Commission.

[22] Secretarial Letter, Retail Markets Investigation, Docket No. I-2011-2237952.

[23] See: http://www.rmrc.ca or http://alberta.ca/NewsFrame.cfm?ReleaseID=/acn/201203/321543AD1BA38-DFE1-65D3-92E48B254A8FAFB4.html.

[24] "Alberta Energy minister promises to release electricity market report by end of year," Edmonton Journal, Oct. 16, 2012, http://www.edmontonjournal.com/news/edmonton/Alberta+Energy+minister+promises+release+electricity/7399125/story.html.

[25] Source: http://www.puco.ohio.gov/puco/index.cfm/consumer-information/consumer-topics/aep-ohioe28099s-electric-security-plan/.

[26] See p. 3: http://www.icc.illinois.gov/downloads/public/2013%20Procurement%20Plan%20FOR%20PUBLIC%20 COMMENT%208-15%2011.pdf.

20, 2012 election ballot, and with 245 referendums passing. Finally, the ORMD staff of the Illinois Commerce Commission estimates that about 60% of the switching reported for residential consumers in Illinois is due to aggregation. These data are derived from the detailed utility reports.

Municipal Aggregation

Ohio, California, Illinois, Massachusetts and a few other jurisdictions have authorized municipal aggregation or retail electricity consumers.

- What is municipal aggregation?
- Does municipal aggregation promote the goals of electricity restructuring?
- How is municipal aggregation treated in the ABACCUS methodology scoring?

Municipal aggregation, in its various forms, can bring the benefits of bulk power market competition to retail consumers. Aggregation is consistent with a goal of providing the electric commodity at a reasonable cost to residential consumers. Aggregation tends to favor standard or "plain vanilla" electric service; that is, the purchase of the commodity at a reasonable price. Therefore aggregation does not promote individual choice, innovation, technological change, or product and service differentiation at the retail level. Opt-out municipal aggregation tends to maintain the status quo with respect to individual consumer awareness, education and choice.

Jurisdictions which authorize and promote aggregation programs—especially the opt out form—ought to treat aggregation as a transition mechanism. Jurisdictions with opt-out aggregation should develop and implement policies that cultivate, encourage and support individual consumer choice. Jurisdictions that want to add community aggregation should consider the opt-in version.

The ABACCUS methodology treats switching through municipal aggregation exactly as it treats switching through individual consumer choice. Other measures, such as the number of retailers and number of product choices, may differentiate jurisdictions that rely on municipal aggregation from those that rely on individual consumer choice.

Background

Municipal aggregation is a process whereby one entity purchases power on behalf of a group of consumers. Some states have authorized "community choice" or municipal aggregation as a way to introduce citizens to the benefits of restructured electricity markets, without any need for individuals to make a choice of retail energy provider or to select a retail energy product. In some programs, individuals must make an affirmative decision to leave the pool of aggregated citizens (they must take action to "opt out"). Opt-out aggregation, if properly structured and consistent with existing market structures, can extend a dimension of bulk power competition into restructured electricity markets, especially where customers have not made an individual choice.

Different stakeholders view opt-out aggregation differently, and these differences parallel their views regarding the goals of electricity restructuring. If you believe the goal of electricity restructuring is to maximize switching away from the default service provider, while managing electric service costs, then you may prefer municipal aggregation. To achieve this, a few informed people (perhaps elected officials and their expert consultants) can decide what is best for the population (the citizens of the town). Aggregation allows a municipality to act on behalf of many people, and it permits an averaging of the risks and rewards associated with purchasing the commodity across all citizens.

Aggregation treats consumers as if we already know what they want—typically, a plain-vanilla product of price-risk-managed, reliable, electric power. This is a one-size-fits-all approach. In that sense, aggregation can be viewed as similar to traditional electric distribution utility regulation and to regulated default service. Aggregation conducted by elected local officials gives consumers confidence that local people—who they may know and trust—are acting in their best interest to try to secure power for the community. If individual consumers are not involved in the decision making, however, they may not buy into the results. If commodity costs change, consumers may become concerned that they are locked into a contract for power that they did not select.

A different stakeholder perspective is that the goal of electricity restructuring is to focus on individual choices. Consumers who make choices are engaged and buy into, i.e., are responsible for, their own decisions. Further, decisions by individuals align a consumer with personalized or customized contracts for power and services. This perspective holds that entrepreneurship will more quickly apply new technologies and innovative products and services to meet individual consumer needs. The resulting bundles of products and services may include services not directly related to electric service.

Although many people in North America are used to purchasing the electric commodity, they are starting to exhibit new behaviors and preferences. The individual choice perspective may make more sense over the long term. Services may change; future bundles of popular service cannot be known today. The individual choice perspective recognizes that new market segments may arise and new technologies may dramatically alter the way that electricity is consumed, stored or manipulated. Advocates of this perspective point to changes in the telecommunications industry as an example of what is possible in the electric industry. They also tend to see opt-out aggregation as reducing consumer choice, and reducing the level of competition in the market.

How are the states implementing aggregation?

California. Assembly Bill 117 enables local governments to develop opt-out community choice aggregation programs to "offer procurement service to electric customers within their political boundaries." The CPUC has finalized procedures for informing customers about the programs and how to "opt-out" of service from the programs. One electric distribution utility has been aggressive in its efforts to retain customers (i.e., encourage consumers to opt-out). In a recent proceeding, the CPUC clarified that that utilities which engage in commercial speech that is untrue or misleading may be liable for penalties and subject to a temporary restraining order or preliminary injunction in a complaint before the CPUC. Further, the CPUC prohibited utilities from offering alternative opt-out mechanisms from those identified in the community-specific information provided by the aggregator.[27]

Ohio. Ohio's electric restructuring law allows communities to aggregate their loads when they negotiate electricity prices. Under aggregation, residents receive a postcard in the mail notifying them of their new electricity provider. Those who choose to "opt out" and continue buying power from their current supplier have 21 days to act. Between 2001 and 2005, residential consumer participation rose to nearly 900,000 in aggregation programs. Later, participation fell to about 200,000 and by 2006 nearly all consumers were back on default service. Between 2008 and June 2010, the number of aggregated residential consumers rose from 202,000 to 910,000. Approximately 42 percent of the state's eligible residential consumers participated in an aggregation program as of June 2012.

[27] CPUC Decision 10-05-050, Rulemaking 03-10-003, Decision modifying the Decision 05-12-041 to clarify the permissible extent of utility marketing with regard to community choice aggregation programs, May 20, 2010. Available online: http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/118462.pdf.

Illinois. Public Act 96-0176 amended the Illinois Power Agency Act effective January 1, 2010 to allow municipalities and counties to aggregate electrical load. Municipal corporate authorities and county boards can adopt an ordinance to aggregate residential and small commercial electrical loads and solicit bids for the sale and purchase of electricity. A referendum is required to determine whether or not the aggregation shall be an opt-out program. Municipal aggregation activity has increased dramatically with 306 communities placing an opt-out aggregation referendum on the March 20, 2012 election ballot, and with 245 referendums passing. Staff of the Illinois Commerce Commission estimate that about 60% of the switching reported for residential consumers in Illinois is due to aggregation.

How is behavior affected by "opt in" or "opt out" aggregation?

Rules matter. One of the decisions that must be made when authorizing a municipal aggregation program is how to determine whether individuals are part of the program when it is initiated. At first people may ask, "Why does that matter? As long as people have a voice in the process, why does the starting point matter?" For better or worse, our experience with human behavior has taught us that starting points matter.

If you require people to affirmatively "opt out" of aggregation, then a relatively small number of consumers will tend to leave the program when it is announced, even if such opportunities to leave are not restrictive. Likewise, if you require people to affirmatively "opt in" to aggregation, then fewer consumers will tend to join the program, even if the opportunities to join are not restrictive.

A low rate of "opting out" could be due to a low level of consumer awareness of the process, or a high level of satisfaction with aggregation programs, or to difficult and restrictive rules, or some other factor entirely, or a mix of several factors. For example, an "opt out" opportunity that is limited to a short "opt-out" window could be successful in retaining most people in the pool of consumers. If that is the goal, then policy makers would want to make sure that "opting out" is difficult. However, that approach seems inconsistent with a goal of customer choice. In contrast, an "opt-in" program would tend to have more informed people in the pool who have bought into or taken responsibility for the process.

In certain situations, a requirement for a consumer to "opt out" of a transaction is considered "negative option" marketing. Early "book-of-the-month" or record clubs were pioneers in these transactions. The consumer must decline specific products or services to avoid new transactions. This is illegal in some states. Negative option marketing has received Federal Trade Commission scrutiny, including recent actions to protect consumers and rein in aggressive marketers.

There are observed differences in "opt-in" and "opt-out" behavior. We have experience in the medical profession with different jurisdictions and very different rules regarding organ donations. Some countries allow people to "opt in" to organ donations, while others assume that every citizen is a potential organ donor unless they "opt out." The results of the two starting points are dramatically different. Authors Johnson and Goldstein refer to the "no-action default" as the starting point for organ donor consent.

> *The well-documented shortage of donated organs suggests that greater effort should be made to increase the number of individuals who decide to become potential donors. We examine the role of one factor: the no-action default for agreement. ... We then describe research that shows that presumed consent increases agreement to be a donor, and compare countries with opt-in (explicit consent) and opt-out (presumed consent) defaults. Our analysis shows that opt-in countries have much higher rates of apparent*

> *agreement with donation, and a statistically significant higher rate of donations, even with appropriate statistical controls.*[28]

Johnson and Goldstein also observe that: (1) "almost every public policy has a no-action default, and the wise selection of defaults entails a balance between these costs," (2) "the idea that preferences are constructed provides an important alternative to views that incentives are required to increase the rate of donation" and (3) "there is another cost ... and that is the cost of making a decision. ... Defaults not only make a difference in what is chosen, they can also make decisions easier."[29]

It matters whether an aggregation program is "opt in" or "opt out." If policy makers want maximum participation, then setting the "no-action default" as "opt out" will likely result in larger aggregation programs. However, like the regulated electric distribution utility service, consumers will not be as "bought into" the process and may continue to lack the education necessary to make individual choices of energy suppliers or retail products in the marketplace, which hinders the long-term development of the retail market.

Aggregation, innovation and choice

Almost every stakeholder agrees that consumer awareness and education are a necessary part of electric restructuring. Local governments may feel they are in a unique position to raise consumer awareness regarding electricity choice. Aggregation is one way to make people aware of an alternative means of securing electricity. People readily understand the idea of "buying groups," and municipal aggregation is an effective way for consumers to quickly obtain the benefits of bulk power markets to ponder the benefits of a competitive market.

Those who oppose opt-out municipal aggregation believe that individuals ought to make choices. They view awareness and education as a process whereby consumers become aware of market changes which allows individual consumers to select among many competing products and services. They see opportunity in the development of customized products and services. Further, they typically believe that well-developed retail electricity markets do not need aggregation programs if default service has been properly designed and implemented. If default service is a transition service, and is phased out, consumers will pay attention to their choices. Municipal aggregation risks becoming an end point in electric market transformation—effectively giving up on choice before it has a chance to develop—and stifling a fully competitive market.

Aggregation perpetuates the notion that electricity is a commodity, and that innovation, technological change, creativity, brand development and entrepreneurship are not important. Those who advocate for individual consumer choice feel that the electric commodity is just one input into an array of electric services.

Default Service

Residential consumers need time to become educated about making individual choices; therefore, many experts in electricity restructuring believe that default service is necessary for a period of time. However, poorly-designed default service discourages energy suppliers from entering electricity

[28] Johnson, Eric J. and Daniel G. Goldstein, "Defaults and Donation Decisions," *Transplantation*, December 2004, 78(12), pp 1713-1716.

[29] Id. p. 1716.

markets. Default service must reflect bulk power market prices and provide energy suppliers with opportunities to provide new services to individuals.

Recommendation. Each state and province ought to ensure that default service is a transitional service, that it meets consumers' basic needs, and that it closely tracks the cost of power in the wholesale power market. Default service is not necessary for large C&I consumers.

The ABACCUS methodology considers different dimensions of default service. It matters who provides default service. It matters how it is procured. It matters whether it is a basic package of services or a substitute for services that could be provided through a competitive market. Most significantly, it matters whether or not default service continues to exist. Full credit is not given in the ABACCUS methodology until a state completely phases out default service. Texas is the only jurisdiction in North America that has phased out default service. In January 2007, consumers on regulated default service became competitive consumers of the traditional incumbent retail electricity providers who had been providing them with service.

Provider of last resort (POLR) is a separate safety-net service for customers whose retail energy provider goes out of business. Some jurisdictions have combined these services, thus mixing a service that should be phased out with a service that is an ongoing safety net service.

The design and implementation of default service is the single most significant issue affecting the success of retail electricity restructuring in the residential sector.

Background

Default service (basic or standard service) refers to the retail tariffs established to provide a transition from regulated rates to market-based prices and contracts. If default service is not a transition service, then it is arguable that there is not a serious intent to restructure the retail electricity market and to allow competition in retail electricity service to flourish.

The design and implementation of default service is the most significant single issue affecting the success of retail electricity restructuring in the residential sector. If regulators are determined to design default service so as to attempt to address all residential consumers' needs, set prices artificially below cost, or to bundle risks and spread the risk premium to all consumers, then it is unlikely that energy suppliers will enter the market. A poorly-designed default service program can undermine retail competition because it attempts to provide the services that a robust market can provide.

The ABACCUS methodology considers six dimensions of default service, expressed here in terms of questions. A few of the options are listed. (For a more complete discussion, refer to the appendix.)

- Supplier: What type of company provides default service as of September 1, 2012? The electric distribution utility? A competitive retail energy provider?
- Product Options: To what extent is default service designed to provide a substitute for the choices provided in a competitive retail market? Is it plain vanilla or basic service, or are there variations that give consumers choices—choices that could be provided in the competitive market? This is, is default service designed to compete with the competitive market, or does it provide a transition to the competitive market?

- Rate Mechanism: How frequently is the default rate adjusted to reflect the cost of service in the wholesale market? Is the adjustment made frequently so that consumers are exposed to market prices, or is it done infrequently, protecting consumers from the market?
- Resource Portfolio: Does the default service provider hedge resources or match the term of the resource contracts to the term of the default service? Hedging and managing a portfolio of resources is a function that can be performed by retail energy providers and energy marketers. Hedged products are available in competitive markets.
- Switching Options: Are consumers restricted in switching away from default service? Barriers should be removed to make switching as fast and cost free as possible.
- Cost Allocation: Does the default service rate reflect the cost of service? Each jurisdiction has historical precedents that it must respect; however, these must be reformed as quickly as possible to ensure that cost allocation supports the formation of a competitive market.

Each of these six items is scored on a zero to ten scale, and thus it is possible to achieve a total of sixty points. (These items are weighted to give the overall score as explained in the methodology section.) Texas, which has phased out its "Price to Beat" default service, now has a score of 60 points on these six items, while the other states and provinces fall in behind this.

Raw Residential Scores for Default Service Elements

Jurisdiction	Raw Scores
Texas	60
Alberta	44
Maine	32
New York	32
Pennsylvania	30
Connecticut	29
Maryland	28
Ohio	28
Massachusetts	24
Illinois	23
Ontario	22
New Jersey	21
Delaware	20
New Hampshire	20
Rhode Island	20
District of Columbia	18

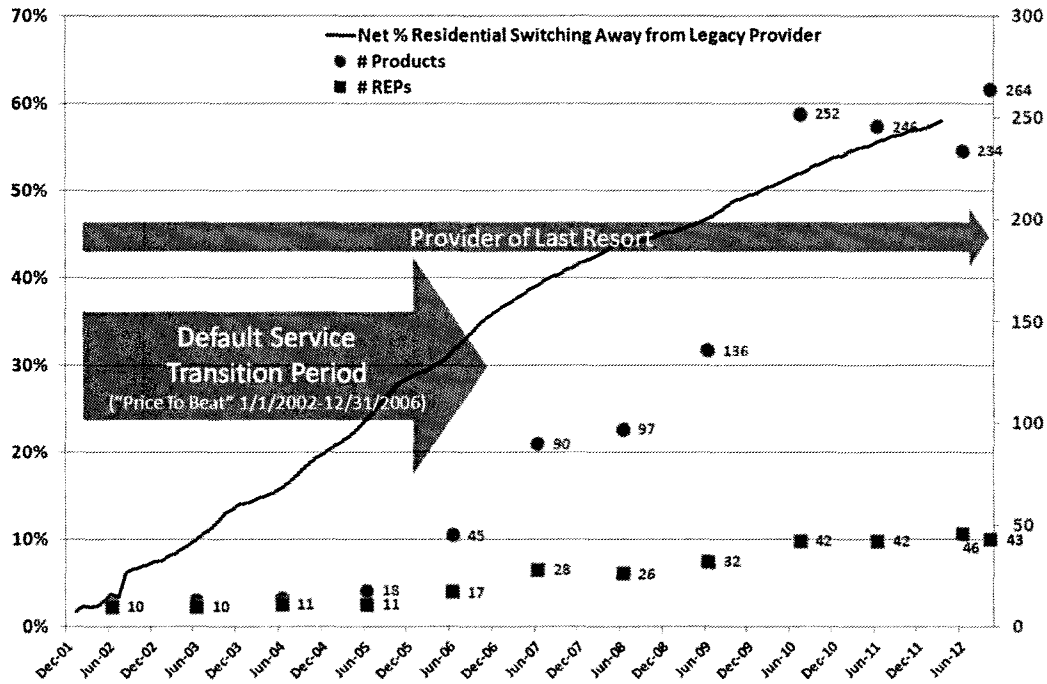
What does a phase out of default service look like?

The past eleven years in Texas is charted below with policy choices and performance measures displayed on a timeline. Displayed prominently is the five-year default service transition period, from January 1, 2002 through December 31, 2006. Also displayed (arrow) is the ongoing provider of last resort service that is available to anyone who, through no fault of their own, loses their retail energy provider.

The timeline also displays what has occurred in the residential electricity market, partially in response to the policies regarding default service. The upward sloping line displays monthly "net switching" away from the affiliated REP in each of the major electric distribution utility service territories. Also displayed (annual snap shots) are the number of REPs (blue squares) and number of product and service offerings in the market (red circles).

Though correlation is not causality, one can observe an uptick in the number of REPs and the number of residential offers in anticipation of the end of default service. One can also observe significant growth in market participants and products since that time.

Texas Default Service and Residential Electric Market Activity Timeline



Principals for creating and phasing out default service

There are a number of actions that a state can take to reduce the impediments of default service to competitive retail markets. Key among these is the movement of default service to a more market-reflective rate in the near term. Short term prices are more efficient, and allow consumers to better respond to price changes. Consumers will become more aware of market choices. For consumers who desire a longer-term fixed-price product, energy suppliers will offer such products.

Several of the states that allow retail electricity choice have had problems with implementation. In an effort to protect consumers, states have set default service rate below costs, and placed restrictions on the ability of energy suppliers to make a reasonable profit for the risks they incurred. Stated plainly, some jurisdictions designed default service in a way that discouraged the formation of competitive markets. These states need to raise consumer awareness and education, and encourage consumer behavior that is conducive to establishing a system of individual consumer choice. Many residential consumers are not monitoring the market or making choices, and it takes some time for new service providers to make the investments necessary to offer services that address consumer preferences.

Each state and province ought to adopt the following principles with respect to default service:

- Default service is a transitional service with a clear beginning, middle, and end
- Default service is not necessary for large C&I consumers
- Default service ought to be easy for residential consumers to understand
- Default service ought to meet only the residential consumer's basic needs
- Default service should closely track the cost of power in the wholesale power market
- Default service auctions should not bid out the entire load at one time because multiple, short-term auctions may be more effective

It is also worth noting that responsibility for providing default service can be placed on the electric distribution utility, or transferred to a competitive retail energy provider. As noted above in the context of municipal aggregation, the starting point of a new process matters in very practical ways. If you want small consumers to understand that the electricity market has been restructured, and that responsibilities have changed, then it is important that the market structure reflect these roles.

Texas took a deliberate approach to electric distribution utility regulation. In 1998-1999, the PUCT conducted a rulemaking proceeding to define what customer services should be competitively provided and what services should continue to be provided by the electric distribution utility. The PUCT defined "competitive energy service" as comprising "customer energy services business activities that are capable of being provided on a competitive basis in the retail market."[30] These included many services.[31] The PUCT determined that an "electric utility shall not provide competitive energy services.[32]

Default service ought to be designed as a transitional service that meets a residential consumer's basic needs while consumers gain knowledge of, and confidence in, the individual choices available in the market. Poorly-designed default service discourages energy suppliers from entering electricity markets.

[30] PUCT Substantive Rule §25.223, Unbundling of Energy Service, last updated 6/14/1999.

[31] PUCT Substantive Rule §25.341, Definitions (Subchapter on Unbundling and Market Power), last updated 10/09/2003.

[32] PUCT Substantive Rule §25.343, Competitive Energy Services, last updated 7/11/2005. See subsection (c), Competitive energy service separation.

Summary of Best Practices

Every jurisdiction must adopt and support a strong preference for workable competition in retail energy sales. There must be a commitment at every level of government to give the appropriate opportunities to entrepreneurs. At the highest level, there must be a commitment to:

- Adopt and support a strong preference for workable competition in retail energy sales
- Unbundle rates and services to open opportunities for new service providers
- Create a code of conduct to govern interactions between regulated entities and affiliates
- Educate residential consumers and make information about power markets accessible
    - Create a comprehensive education plan that reflects how far the markets have progressed
    - Create a Website for residential consumers that is easy to use, up-to-date and includes comparison data (price, fixed-price contract term, renewable content, deposit/cancellation fees)
- Reform default service in the near term
    - Make default service pricing more market reflective; that is, use competitive power procurement with multiple, short-term auctions; align the default service rates with market prices
    - Make the default service price known in advance of its effective date (greater transparency and predictability)
    - Allow competitive suppliers to provide default service instead of the incumbent utilities
    - Provide C&I default service to small- to medium-sized commercial consumers; default service is not necessary for the largest C&I consumers
    - Limit residential default service pricing to basic (plain vanilla) service; let the market offer choices
- Phase out default service
    - A plan to phase out default service is essential. It must reflect the realities of each jurisdiction. No two plans would be the same as each jurisdiction must be mindful of past decisions

Recommendations

The ABACCUS report sets forth a methodology that reflects the direction each jurisdiction should consider to improve the likelihood of success of its retail electricity restructuring. The ABACCUS methodology points to public policies that promote market forces to the greatest degree possible, while maintaining essential consumer protections. The purpose of the ABACCUS report is to point to improvements that may help states with the process of reform.

The following recommendations are suggested, but do not necessarily represent the position of the ABACCUS Advisory Board, its individual members, or their respective companies or regulatory agencies.

<u>Electricity Restructuring Goal</u>. The goal of individual consumer choice will result in innovation, technological change and product differentiation. State legislators and regulatory commissioners need to ask how the state's goal can promote individual consumer preferences and choices. Individual consumer choice "looks beyond price" to consider a wide range of choice options. Price will always remain an important criterion, but the ability to assess risk, manage a personal budget and select a guaranteed low price over an extended period are some of the valuable attributes of service and choice which empower individuals to make decisions they prefer.

A goal of individual consumer choice contrasts with the traditional paradigm of average-cost regulation. The lowest average price of the electric commodity is one important measure of success for an electric market or electricity restructuring, but not to only measure.

> *Recommendation #1: The goal of retail electricity restructuring is to promote individual consumer choice in the selection of electric products and services.*

<u>Market Eligibility</u>. Customers must be eligible to participate in markets. Several states have yet to open all areas to retail electric choice. That limits the ability of consumers to shift from regulated tariffs to competitive offers from retail energy providers.

> *Recommendation #2: Allow all electricity consumers in the jurisdiction to participate in a competitive retail electricity market.*

<u>Aggregation</u>. Aggregation is a process whereby one entity purchases power on behalf of a group of consumers. Several states have authorized "community choice" or municipal aggregation as a way to introduce residential consumers to the benefits of restructured electricity markets without the need for individuals to get educated or to make choices among retail energy providers or diverse retail products. In some programs, an individual must make an affirmative selection ("opt-out") to leave the pool of aggregated citizens. "Opt-out" community choice aggregation can extend a dimension of bulk power competition in restructured electricity markets, but it is not consistent with individual consumer choice.

> *Recommendation #3: States with "opt-out" aggregation should develop and implement policies that cultivate and encourage individual consumer choice. States considering community choice aggregation should select "opt in" aggregation.*

<u>Wholesale Market Design</u>. Wholesale market development must precede retail electricity competition. Ten organized markets in the U.S. and Canada are advancing the development of the bulk power markets that serve retail electricity consumers. Effective wholesale markets are essential to successful retail markets. A competitive retail energy provider can manage the physical and financial risk associated with electricity in a way that is beyond the capabilities of the typical small energy consumers. Through scale economies, and a deep understanding of both the wholesale markets and the consumers' needs, a retail energy provider can offer differentiated and customized risk management services that

individual consumers would prefer. Policies to support fully-integrated wholesale and retail electricity markets includes the adoption of advanced market policies and the integration of retail consumers into demand response activities.

> *Recommendation #4: Support the introduction of advanced wholesale market practices including market-based congestion management and markets for balancing energy, regulation and reserves.*

> *Recommendation #5: Support the establishment of a market platform that facilitates the participation of retail consumer loads in demand response programs, including aggregation of small-scale loads and deployment of advanced meter infrastructure.*

Default Service Design. Default service (basic or standard service) refers to the retail products established to provide a transition from legacy regulated rates to market-based prices, products and services. The design and implementation of default service is the single most significant issue affecting the success of electricity restructuring in the residential sector. Competitive markets and retail energy providers can provide a range of products and services from which consumers may choose. Default service that operates in opposition to the following recommendations is probably is inconsistent with a transition to retail competition.

> *Recommendation #6: Establish default service as a transition mechanism, with a clear ending date for the majority of consumers. Develop and implement a plan for a transition from the default service to individual consumer choice.*

> *Recommendation #7: Design a default service product that is plain vanilla, easy to understand, and meets the basic needs of the consumer. Do not attempt to mimic the variety, scope or breadth of rates or services that are provided by energy suppliers to individual consumers.*

> *Recommendation #8: If supply procurement for default service is done through competitive wholesale procurements, rely on multiple, short-term auctions. This will ensure that appropriate pricing signals are sent to consumers to allow them to select a competitive electric service product and to efficiently manage their energy usage.*

Facilitation of Choice. Each state may adopt policies and programs to facilitate the choice of energy supplier. The options include rules, regulations and laws regarding electric distribution utility structure, utility-affiliate codes of conduct, rules governing billing and metering, and rules that require the standardization of business transactions among all market participants. Energy suppliers will enter a market when they have certainty regarding market structure, rules and oversight.

> *Recommendation #9: Establish a plan for the separation of regulated utility services from competitive services, and for the application of a strict code of conduct to govern interactions between the regulated electric distribution utility and its competitive affiliates.*

> *Recommendation #10: Establish protocols and standards for access to basic consumer information including commercial practices and electronic data exchange.*

> *Recommendation #11: Establish a flexible approach to customer billing, establish a plan for advanced metering infrastructure, and adopt rules for consumer privacy, data security, and access to consumer usage data.*

Public Policy Goals. States and provinces employ a variety of mechanisms to achieve goals for energy efficiency, renewable resources, demand response and the promotion of on-site power generation. Some regions have taken a command and control approach through standards and codes, but should instead pursue market mechanisms to achieve compliance. Most residential consumers rely on competitive markets to purchase appliances, perform home repairs and make home improvements. C&I consumers acquire services relating to energy usage, investments in new processes, installation of more efficient devices and the measurement, monitoring and control of devices. The ABACCUS methodology is relatively indifferent to policies relating to renewable resources and energy efficiency as long as the policies treat all the market participants fairly

> *Recommendation #12: Rely on market forces to the maximum extent possible to achieve goals relating to renewable resources, energy efficiency, demand response and distributed generation.*

Appendix A: ABACCUS Advisory Board

The 2012 ABACCUS Advisory Board is comprised of regulatory commissioners and former commissioners, energy executives, and representatives from sponsoring companies. The 2012 Advisory Board was created to review the methodology, facilitate a sharing of ideas among stakeholders, and improve awareness and understanding of electricity restructuring. The report does not necessarily represent the views of any particular member, government agency or company.

2012 Advisory Board Members

- Chairman Garry Brown, New York State PSC
- Chairman Robert F. Powelson, Pennsylvania PUC
- Chairman Todd Snitchler, Public Utility Commission of Ohio
- Chairman Donna L. Nelson, Public Utility Commission of Texas
- Commissioner Timothy Alan Simon, California PUC
- Commissioner Erin O'Connell-Diaz, Illinois CC
- Commissioner Greg R. White, Michigan PSC
- Commissioner Paul Roberti, Rhode Island PUC
- Pat Wood, III, Principal, Wood3 Resources (former PUC of Texas and FERC Chairman)
- Vicki Sandler, President, Wearthy Ideas (former President, APS Energy Services)
- Bill Massey, Partner, Covington & Burling LLP (former FERC Commissioner)
- Paul Hudson, Founder and Principal, Stratus Energy Group (former PUC of Texas Chairman)
- Brett Perlman, Principal, Vector Consultants (former PUC of Texas Commissioner)
- Parviz Adib, Principal, Pionergy Consulting (former ERCOT market monitor)
- Adam Fairbanks, Director, Regulatory and Retail Structuring, ConEdison Solutions
- David I. Fein, Vice President, State Government Affairs, Constellation
- Ron Cerniglia, Director–National Advocacy, Governmental & Regulatory Affairs, Direct Energy
- Meigs Jones, Assistant General Counsel, Green Mountain Energy Company
- Gene Alessandrini, Senior Vice President, Marketing, PPL EnergyPlus, LLC
- Jeff Brown, Vice President, Shell Energy North America
- Harry Kingerski, Director of Regulatory, Spark Energy
- Keven Richardson, Director of Public Policy, TXU Energy

Appendix B: Quotes and Testimonials

Consumers[33]

"As one of Leggett & Platt's most important manufacturing process inputs and as one of the company's largest controllable expenses, energy has a very material impact on our operations and bottom-line. Competitive electricity markets provide a reliable electricity supply, enable us to control our costs, and encourage our participation as a virtual resource and integral Smart Grid participant that produces a significant revenue stream for our company." Steve Elsea, Director of Energy Services, Leggett & Platt Inc.

"Competitive energy markets are a cornerstone of Safeway's greenhouse gas reduction and sustainability initiatives. Customer choice for energy supplies has enabled Safeway to be a pioneer and leader in this area. Competitive energy markets are crucial to our daily operations, helping businesses like ours provide competitively priced quality products and services to our customers, employees and the communities we serve." George Waidelich, Vice President, Energy Operations, Safeway

Industry Stakeholders and Government

"In Texas we refuse to rest on our laurels and have every intention of remaining number one by continuing to add features in our nation's leading electricity market. We keep finding ways to increase customer value in the marketplace through smart grid innovations and ongoing improvements in the shopping experience, just to name a few." Chairman Donna L. Nelson, Public Utility Commission of Texas

"A robust and competitive market for the commercial and industrial customers is nothing new for the State of Illinois and this latest report shows that even the smallest commercial customers have access to a host of competitive offers. However, the most dramatic change of the last year has been the transformation of the residential market. Today, more than 30 suppliers offer at least one residential product, with many of them offering two or more. Residential customers continue to take advantage of these new choices, with almost 30% of residential customers now buying their electric supply service from a competitive supplier. In addition to selecting a supplier or offer on their own, many Illinois residents also have the opportunity to take advantage of an aggregation program from their local government. We look forward to the continuous evolvement of the competitive market in our State and we want to ensure Illinois residents will always have plenty of choices when it comes to buying electricity for their business or their home." Commissioner Erin O'Connell-Diaz, Illinois Commerce Commission

"Three years ago, the expiration of long-term rate caps jump-started retail electric competition in Pennsylvania. Since then, the PUC has been working diligently to improve the competitive markets in Pennsylvania. More than 1.9 million customers, representing 59.4 percent of the electricity being used in the state, currently are shopping for their electricity. In the coming year, we will be moving forward with recommendations that have grown out of our Retail Markets Investigation. As we further improve our competitive markets as a whole, Pennsylvania will see more and more consumers shopping for electricity and a corresponding rise in the ABACCUS rankings to reflect this." Chairman Robert F. Powelson, Pennsylvania Public Utility Commission

[33] Several customer quotes were acquired with the assistance of Joel Malina, Executive Director, Compete Coalition.

“California’s competition policy has been focused on demand response and direct access programs but the state is also making progress in other areas. Recently, California in energy efficiency introduced the local government administered programs in hard to reach markets and in electricity procurement allowed an increased entry by community choice aggregators – areas that were traditional utility functions.” Commissioner Timothy Alan Simon, California Public Utilities Commission

“Retail customers can benefit more immediately and more fully by choosing among a large number of competitive suppliers who are able to adjust prices more quickly as low natural gas prices drive down the cost of electricity production. In addition, retail markets provide all customers the opportunity to participate more fully in new products and services derived from competitive wholesale markets and market innovation.” Gene Alessandrini, Senior Vice President Marketing, PPL EnergyPlus

“The ABACCUS report has become a guide for policy makers and retail service providers to learn about achievements in other jurisdictions, observe the best practices in retail innovation and service offerings, and select the most appropriate course of action for their own decisions whether in regulatory policy or competitive service offerings. Such an invaluable forum is essential in achieving a sustainable competitive retail electricity market in the upcoming years.” Dr. Parviz Adib, Principal, Pionergy Consulting (former ERCOT market monitor)

"It's hard to overstate the importance of competitive energy markets to customers large and small. Competition is saving customers billions of dollars, making U.S. businesses far more competitive and helping families lower their energy bills." David Fein, Vice President, State Government Affairs, Constellation

“Demand response and energy efficiency are two important components of an emerging retail customer engagement model that focuses on providing customers with value beyond electricity. With its competitive wholesale market, leading smart meter deployment and growing resource adequacy concerns, the ERCOT market seems poised once again to lead the nation in the development of this new model if policymakers can provide the right market structure and incentives for these developments.” Brett Perlman, Principal, Vector Consultants

Appendix C: ABACCUS Sponsors

The views set forth in this report represent the positions of the author and do not necessarily represent the views of any particular sponsoring company.

2012 Sponsoring Companies

ConEdison Solutions
http://www.conedsolutions.com/

Constellation Energy Group, Inc.
http://www.constellation.com/

Direct Energy
http://www.directenergy.com/

Green Mountain Energy
http://www.greenmountainenergy.com/

PPL EnergyPlus, LLC
http://www.pplenergyplus.com/

Shell Energy North America
http://www.shell.us/home/content/usa/products_services/solutions_for_businesses/energy_na/

Spark Energy
http://www.sparkenergy.com/

TXU Energy
http://www.txu.com/

Appendix D: ABACCUS Goals and Process

The *Annual Baseline Assessment of Choice in Canada and the United States* (ABACCUS) is a scorecard on the implementation of retail electricity choice. ABACCUS assesses the electric industry's achievements in electric industry restructuring.

The ABACCUS report is intended to achieve the following:

- Identify the government policies, market structures and business practices that support a vibrant retail electricity market and individual consumer choice
- Identify best regulatory practices for the regulated electricity network so that utilities can support a vibrant retail electricity market
- Provide useful information to policy makers and retail electricity market stakeholders in U.S. states and Canadian provinces
- Identify potential improvement areas and suggest solutions that U.S. states and Canadian provinces may consider implementing
- Provide information that will enable other U.S. states and Canadian provinces to better consider the market structures, business practices and government policies that provide a good foundation for the future successful implementation of individual consumer choice in electricity markets

An ABACCUS Advisory Board was created in 2006 to balance the perspectives of energy suppliers with other points of view. The 2006-7 Advisory Board included senior professional staffers from some of the larger state regulatory agencies: California, Illinois, Maryland, Massachusetts, Michigan, New York, Pennsylvania and Texas. The Board met via conference call between October 2006 and May 2007 to design the ABACCUS methodology, including scoring and weighting of the elements.

The 2012 ABACCUS Advisory Board was created to review and update the methodology. The 2012 Advisory Board included sitting commissioners from state regulatory agencies in California, Illinois, Michigan, New York, Ohio, Pennsylvania, Rhode Island and Texas. (See Appendix A for a list of members.) The Advisory Board met twice in 2012. The issues discussed during the meetings are described in this report.

Appendix E: Electricity Restructuring Terminology

	Retail Energy Provider	Default Service	Electric Distribution Utility	Miscellaneous
Arizona	Energy Service Provider (ESP)			
California	Electric Service Provider (ESP)			
Connecticut	Electric Supplier	Standard Service (small customers) Supplier of Last Resort Service (large customers)		Generation Service Contract (GSC)
Delaware	Electric Supplier	Standard Offer Service (SOS)		
District of Columbia	Electric Generation and Transmission Supplier	Standard Offer Service (SOS)		
Illinois	Alternative Retail Electric Supplier (ARES)			Office of Retail Market Development (ORMD)
Maine	Competitive Electric Provider (CEP)	Standard Offer Supply (SOS)		
Maryland	Electric Supplier	Standard Offer Service (SOS)		
Massachusetts	Competitive Supplier	Standard Offer Service (SOS through 2004) Basic/Default Service		
Michigan	Alternative Electric Suppliers (AES)	Default Service		Retail Open Access (ROA)
Montana	Competitive Electricity Supplier			
New Hampshire	Competitive Electricity Supplier	Transition Service Default Power Service		
New Jersey	Alternative Energy Supplier	Basic Generation Service (BGS)		
New York	Energy Service Company (ESCO)			Market Supply Charge (MSC) and Merchant Function Charge (MFC)
Ohio	Competitive Retail Electric Service (CRES) Providers	Standard Service Offer (SSO)		Electric Security Plan (ESP) and Market Rate Offer (MRO)
Oregon	[Certified] Electricity Service Supplier (ESS)			
Pennsylvania	Licensed Electricity Supplier; Electric Generation Supplier (EGS)	Default Service	Electric distribution company (EDC)	Conservation Service Providers (CSP) Office of Competitive Market Oversight (OCMO)
Rhode Island	Competitive Electric Supplier	Standard Offer Last Resort Rates		

	Retail Energy Provider	Default Service	Electric Distribution Utility	Miscellaneous
Texas	Retail Electric Provider (REP)	Price-to-Beat (ended 1/1/2007) Provider of Last Resort (POLR)	Transmission and distribution service providers (TDSP) Transmission and distribution utility (TDU)	
Alberta	Retailer	Regulated Rate Option (RRO)		
Ontario	Electricity Retailer	Standard Supply Service (SSS) Regulated Price Plan (RPP)	Local distribution company (LDC)	Hourly Ontario Energy Price (HOEP) wholesale commodity price

Appendix F: Innovations in Retail Product and Service Offerings

Different people value things differently! That simple statement provides one reason that market transactions are an efficient mechanism for the allocation of resources and for resolving challenges with regard to the diffusion of information. Markets serve this complexity well by aligning the needs of individuals with the products and services of businesses. That statement also gives insight into why there is disagreement over "what works best" in electric restructuring. There are disagreements because *different people value things differently* and therefore we each may reach different conclusions when we review the same information.

In general, what do people want? You do not have to spend much time looking at the electric industry to understand that most people and policy makers want: 1) low prices, 2) reliable delivery service, and 3) good customer service. Some people want the electric commodity delivered at the lowest possible cost, while others place a premium on the reliability of service, the quality of power, lowest emissions or some other attribute of service. Some people want a blend of these factors.

DEFG recently sponsored a consumer survey relating to time-based pricing, wherein we asked, "Which phrase best describes your attitude towards your personal energy consumption?" The randomly-listed options were: "I am most concerned that my electricity use is as environmentally responsible as possible"; "I am most concerned that my utility bill is as low as possible"; "I am most concerned that my utility bill remains as predictable as possible"; "I am most concerned that I have a secure and reliable supply of electricity"; and "I rarely think about electricity." Consistent with many other consumer surveys, the responses of 1020 consumers demonstrated that there is a mix of consumer priorities, and that these correspond to consumer preferences and motivations.

Phrase That Best Describes Attitude Towards Personal Energy Consumption[34]

	Total	Male	Female	18-54	55+	Own	Rent
Total Respondents	(1,000)	(491)	(509)	(717)	(283)	(504)	(381)
	%	%	%	%	%	%	%
I am most concerned that my utility bill is as low as possible	44	47	42	45	42	46	43
I am most concerned that my utility bill remains as predictable as possible	17	17	18	18	15	15	20
I am most concerned that I have a secure and reliable supply of electricity	15	15	16	13	21	16	15
I am most concerned that my electricity use is as environmentally responsible as possible	12	13	12	12	12	14	11
I rarely think about electricity	11	9	12	11	10	8	11

How can we serve diverse interests? The mix of consumer priorities makes life complicated for regulators. Just when a regulatory commissioner think s/he has solved a power reliability and quality issue (i.e., maintain both at a high level), some cost-conscious consumers will complain about high electric bills. Those who care about the source of power generation or fuel type may prefer renewable resources over the reliability and low cost of a major new fossil-fuel power plant. A few consumers may prefer independence and would like to be off the grid, or to have the ability to operate off the grid when there is a reliability problem, but the question arises regarding their responsibility of grid-related costs.

[34] EcoPinion Consumer Survey Report No. 16, "Consumer Preferences for Time-Based Electricity Pricing," DEFG and EcoAlign, forthcoming, January 2013.

Each value-based preference imposes costs on other people if it is forced on everyone. A system of regulation that is designed to satisfy one goal will fall short on another. Even excellent regulatory practices have their critics.

Consumer choice mitigates some problems of central decision making by offering a diverse set of options that meet people's diverse needs. Rather than a one-size-fits-all approach or a government-mandated outcome, a competitive market is comprised of companies that offer a range of products and services. Consumers choose the ones that best match their needs. A key advantage of individual consumer choice is that customers can procure energy in a manner that best fits their risk profile. Entrepreneurship and innovation in product offerings is extremely valuable and is a hallmark of competitive markets.

There are still compromises to be made with respect to the regulated or monopoly components of the system; however, the less we mandate, the lower the shared costs.

Innovations in the C&I Sector

It is generally agreed that large commercial and industrial consumers have benefited from the introduction of retail electricity restructuring. Large C&I customers in the restructured electricity markets have a variety of choices. C&I customers have signed favorable power contracts, benefited from price reductions, and benefited from new products and services that help them manage risk and energy costs. Large C&I consumers are comfortable managing risks in this manner. C&I consumers consider a continuum of choices and work with their energy suppliers to select the right blend of products to meet their needs. As important as the absolute price level may be the ability to procure energy to match a consumer's fiscal budget cycle, or the ability to reduce cost risk by tying price to an index. C&I consumers want control, and the ability to manage price volatility is valued by risk-averse consumers.

Large C&I consumers are able to manage energy costs as a part of the overall business plan. Certain industrial consumers can curtail usage and receive compensation for peak capacity, operating reserves and regulation service in organized wholesale markets. This may require the installation of new on-site equipment and may be part of a significant re-engineering of their industrial process. Management of these cost and revenue streams can be complex and assistance is provided by energy service specialists, energy suppliers and curtailment service providers. Many C&I customers have also installed new equipment on-site to increase power quality and reliability. Overall, large electricity customers are comfortable with the ability to choose. The competitive market allows access to specialized products and services in a timely fashion. Market allocation of resources ensures efficiency and equity.

Commercial consumers may choose to be LEED certified by procuring 20% of consumption as green or to acquire the equivalent in Renewable Energy Credits. Competitive packages can bundle such credits with other energy products to satisfy these customers' desires.

Here are some of the ABACCUS sponsors' recent C&I product offerings or changes to existing offerings.

- ConEdison Solutions offers "energy optimization" that allows C&I customers to benefit from shifts in commodity prices by turning their energy management and curtailment programs into a revenue stream.
- Constellation Energy offers Virtuwatt™, a load control system allowing C&I customers to participate in DR incentives, take advantage of price responsive offerings, and easily modify usage patterns to avoid costs.

- Constellation Energy offers "Efficiency Made Easy: Innovation in Financing" to business customers in the Mid-Atlantic, New York Metro and New England. It includes 3-year fixed price electricity agreement and high-impact energy efficiency measures. The consumer maintains his current total energy cost over the term of agreement and consumption is reduced through efficiency measures financed by Constellation. At end of agreement, customer retains 100% of energy efficiency savings.
- Green Mountain Energy offer on-bill financing to its small business consumers who want to install the EnTouch energy management system to measure, monitor and manage building energy use.
- PPL EnergyPlus offers an online billing platform that puts customer hourly load and pricing information at the fingertips of its C&I customers.
- TXU Energy's MyAccount Summary is a free, fast and convenient web-based service that helps business customers understand their electricity consumption patterns and savings opportunities.

Innovations in the Residential Sector

Small consumers are becoming more sophisticated and product offerings are differentiating. In successful restructured electric markets, consumers choose among variable pricing products (month-to-month changes), fixed-price products (three to 60 months), renewable energy or green products, among other offers. In selecting the lowest cost, some residential consumers may choose a pricing plan that changes every month in order to get the lowest near-term price. Others prefer to lock in a price for a period of a year or longer.

Small consumers are also expressing a growing appreciation for energy-efficient appliances and devices, green building technologies, and other actions to help protect the environment. The beauty of the competitive market is the ability of energy suppliers to respond rapidly to consumer preferences. Energy suppliers are able to bundle new energy services and products with non-energy offers and are willing to bear the financial risk of such offerings.

Here are some of the ABACCUS sponsors' recent residential product offerings or changes to existing offerings.

- Constellation Energy offers "Consert" a user-friendly residential energy management solution that allows consumers to conserve energy and offer it back as a source of capacity and energy reserves. It gives conservation the attributes of generation.
- Constellation Energy offer the "Power Circle" in New Jersey. Customers refer 10 people and get free power. Constellation views customers as educating consumers where consumer choice is new as distinct from multi-level marketing where someone is an agent or broker.[35]
- Direct Energy offers Power-To-Go℠ prepaid electricity to residential Texans with a new payment channel, pay as you wish, and daily text updates.
- Direct Energy offers Comfort Club™ to residential Pennsylvanians to bundle electricity with heating and air conditioning tune ups and safety checks.

[35] "Constellation Energy trades free power for customer referrals," Restructuring Today, September 18, 2012.

- Direct Energy offers Free Power Day or Free Power Nights of Half-off Weekend pricing plans to residential customers in Pennsylvania
- Green Mountain Energy offers a Renewable Rewards® Buy-Back Program: qualifying renewable energy generation facilities receive credit for the excess energy.
- Green Mountain Energy offers a 100% wind electricity plan exclusively for electric vehicle drivers (special rate on pollution-free power for car and home).
- Spark Energy offers a mobile Web site and app that provides enrollment information, tools to manage energy use, and the ability for Texas customers to pay bills.
- TXU Energy offers a residential Solar Leasing Program that includes full service system design, financing, equipment, installation, insurance, monitoring, warranty and guaranteed solar power production.
- TXU Energy offers MyEnergy Dashboard℠ an online tool that helps residential consumers examine how and when they use electricity and how to reduce energy consumption.
- TXU Energy empowers Texans to save energy by launching an Enhanced Personal Energy Advisor.
- TXU Energy has teamed up with the City of McKinney to Support Electric Vehicle Infrastructure and installed the first eVgo℠ network charging location.
- TXU Energy has introduced FlexPower℠ for consumers who prefer to prepay for electricity service.

Appendix G: Survey of States and Provinces

This section describes the important events relating to electric industry restructuring in each major jurisdiction in North America. Following the overview of the major legislative and regulatory decisions, we present tables with switching statistics, the number of competitive electric retailers and competitive products available to residential customers, and a display of statewide sales and average prices over time. The U.S. states in alphabetical order are followed by the Canadian provinces.

Data Sources and Assumptions

The description of electric industry restructuring in each jurisdiction provides a high-level summary of the major restructuring legislation and decisions that have shaped the opportunities for individual consumer choice since the 1990s. This information is based on electric distribution utility and regulatory agency Web sites, press releases, interviews with regulatory agency staffers, and comments and data provided by members of the ABACCUS Advisory Board.

"Switching" refers to the percent of customers (for residential) or customer loads (for C&I) that have moved or migrated from the incumbent or default service (i.e., the standard offer, basic service) to a competitive contract, offer, or electric product or service from a competitive retail energy provider. These are "net switching" numbers which are distinct from "annual switching" that is reported in some sources. These data are available on the websites of the jurisdiction's regulatory agency. Since reporting methodologies vary, we present switching data in terms of percent of eligible residential customers and percent of nonresidential load. "Load" may refer to "non-coincident customer class peak demand" or "megawatt-hours sales," depending on the jurisdiction. Where available, these data are displayed for each electric distribution utility service area.

Switching statistics provide a snapshot of the status of retail choice; however, switching statistics are just one of the many inputs into the ABACCUS model. It is also worth mentioning that switching statistics may not indicate multiple customer switches (the "churn" rate), or customers who may select a competitive contract or pricing plan from the default service provider or the incumbent service provider. (For example, in certain jurisdictions, the default service provider is allowed to offer both regulated default service and competitively-priced alternatives.)

In 2010, the ABACCUS Advisory Board determined that the report needed to expand beyond the traditional emphasis on price comparisons. There are many services and products that provide the value to consumers beyond price. Electricity restructuring allows new choices, such as locking in a low price for a period of months. The number of products offered to residential consumers is displayed in a table next to the number of electric suppliers. The number does not include the default service, and assumes one product per active supplier unless additional information is publicly displayed. The greater variety available to commercial and industrial customers is not publicly available and does not appear in this report.

Data reported to the USDOE's Energy Information Administration provides background on the volume of retail electricity sales and average electricity prices in each state. Residential, commercial and industrial electricity sales (in gigawatt-hours for the period 1990 to 2011) are presented as bars in the state-level chart. (Due to reclassification of sales data, there are occasional discontinuities; in some years the commercial sales increase while industrial sales fall, and vice versa.) Average residential, commercial and industrial electricity prices are displayed as lines. Average price is total annual revenues divided by total annual sales. These data are in "real 2008 dollars" through 2008, and in "current-year dollars" for 2009 through 2011.

Arizona

Legislation (HB 2663) was enacted in 1998. The Arizona Corporation Commission (ACC) rules required generation divestiture (transfer to a utility affiliate) and mandated a rate cut. Retail choice was phased-in, with about 90% of electric customers eligible for retail choice by January 2001. By June 2001, all competitors had pulled out of the market due to the way the shopping credit was established. Wholesale market prices rose, but the low credit subtracted from the retail rate for the energy service provider to compete, was not increased. Switching halted and all customers were returned to the incumbents.

Citing market immaturity, Arizona Public Service Company (APS) asked the ACC to overturn the rules that compelled it to obtain power from the competitive market. APS proposed that the power needs be met through 2015 from the parent company, Pinnacle West Capital Corp., and the competitive generation affiliate. In making a determination, the ACC issued Decision No. 65154 (Track A) in September 2002, and ordering APS and Tucson Electric Power Company (TEPCO) to cancel any plans to divest interest in any generating assets. The ACC also stayed the requirement that 100% of power purchased for Standard Offer Service be acquired from the competitive market. Without an RTO in the western U.S., and with the problems in California markets, the ACC was not willing to wait for markets to function properly.

In March 2004, Arizona Court of Appeals ruled that the ACC's decision to require electric utilities to divest their generation assets was unconstitutional because the ACC was trying to control rates, not utilities, and had not proven the case for divestiture. By October 2004, restructuring was placed on hold.

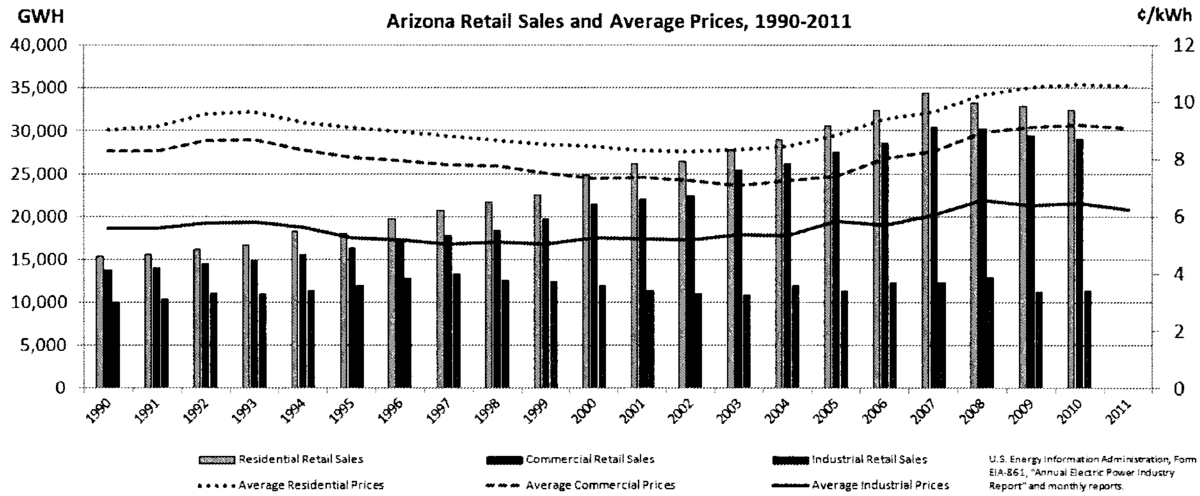
Sempra, a competitive energy service provider in Arizona, has argued (Docket No. E-03964-06-0168) that it is fit to serve as a competitive energy service provider and it has requested reinstatement. In a recent order, the ACC has determined that certain other findings are still needed. It has ordered the ACC's Utilities Division to conduct public workshops to address the underlying policy issue of whether retail competition is in the public interest and to examine the potential risks and benefits of retail competition. By December 31, 2009, a report based on the workshops must include the staff recommendation as to whether or not retail competition should be implemented, and if so, how such implementation should proceed.

Docket E-20690A-09-0346 may affect the staff report in the Sempra case because the commission must determine whether SolarCity is "acting as a public service corporation pursuant to Article 15, Section 2 of the Arizona Constitution" when it provides solar services to Arizona Schools, government and non-profit entities. The issue is whether these services should be regulated since the definition of a "public service corporation" is one furnishing electricity to the public. The ACC may determine that some light-handed regulation of those who provide solar service sales to consumers. If so, this could lay groundwork for competition to sell green energy in the local utility's service area.

In a December 2010 order, the ACC found that utilities can request decoupling in its next rate case to account for the financial disincentives of energy efficiency programs, including "revenue per customer decoupling."

In May 2012, the ACC approved the Arizona Public Service Company's rates in Docket E-01345A-11-0224, which calls for no increase in base rates for four years and zero percent bill impact for remainder of 2012, allowing for rate relief during the high energy usage associated with summer months. It also allowed APS to go forward with a new experimental buy-through rate that will be open to all large customers (>10 MWs) who meet certain qualifications.

Currently, no electric customers are competitively served.



California

The California Public Utilities Commission (CPUC) issued a report in 1993 (Yellow Book) and an order in 1994 (Blue Book) that addressed regulation and restructuring. In 1995 the CPUC issued a decision (Preferred Policy Decision), and in September 1996, Assembly Bill 1890 was enacted to start retail access January 1998 (delayed to April 1998). The legislation included a separation of transmission operations (with ISO) and operation of the wholesale market (PX). Approximately 14% of load was served by competitive energy service providers by 2000. California experienced setbacks with its wholesale markets that affected retail prices and resource availability. Because of supply shortages, wholesale market prices were extremely volatile. San Diego Gas & Electric Company had completed its stranded cost recovery in 1999, and could therefore pass wholesale prices to retail customers. In contrast, Pacific Gas and Electric Company (PG&E) and Southern California Edison Company (SCE) paid high wholesale prices, but incurred significant debt because they were not allowed pass high wholesale prices to retail customers.

In January 2001, PG&E filed for bankruptcy protection. Subsequently, the State of California Department of Water Resources (DWR) purchased power on behalf of the utilities. (Authorized by emergency legislation AB 1X, February 1, 2001, this state procurement lasted until 2003.) In March 2001, the Federal Regulatory Energy Commission ordered suppliers to make refunds to utilities. On June 18, 2001, FERC voted to impose price controls on wholesale electricity prices for California and ten other Western states.

On September 20, 2001, in Decision 01-09-060, the retail access provisions of AB 1890 were suspended by the CPUC. Direct access contracts signed before September 20 were allowed to continue until their expiration. These direct access customers were charged Cost Responsibility Surcharges for costs incurred by the State and utilities during the energy crisis (Decision 02-11-022). As of February 2008, there were 18,700 residential direct access customers (0.2%) in California. In 2002, AB 117 passed to amend the Utilities Code to allow community choice aggregation with an "opt out" provision. In April 2007 the CPUC authorized the first community choice aggregation application.

In May 2007, the CPUC determined that it would investigate the potential to reopen the retail market for direct access (Rulemaking 07-05-025). The CPUC determined that it did not have authority to reinstitute direct access. (Phase I of the proceeding focused on legal issues. Since power is supplied when delivered to a retail customer, the DWR is still "supplying power" under the Water Code §80110.

DWR still holds power contracts, has title, and receives payment. Although DWR no longer has contracting authority, it still administers contracts and "sells electricity" under existing contracts, therefore, the CPUC must extricate DWR from that role prior to the reopening of the direct access market.) On February 25, 2008, the CPUC said it would consider steps to enable lifting the suspension. In a February 28, 2008 press release, CPUC President Peevey stated: "The suspension of choice cannot be lifted until DWR no longer supplies power through the contracts that were signed during the energy crisis. Accordingly, the CPUC can and should evaluate the merits of ways to extricate DWR from its current role as supplier of energy under those existing contracts. After that the CPUC can proceed to the question of whether and how to reinstate Direct Access." Phase II of R.07-05-025 considered the public policy merits and prerequisites to reopening direct access. On February 4, 2009, the CPUC set the membership roster for the Working Group established to develop protocols and strategies for negotiating power contracts to replace DWR with the IOUs "in accordance with the principles and directives set forth in Decision 08-11-056."

In October 2009, Governor Schwarzenegger signed into law SB 695 affecting electricity rates (creating two rate indexes for residential consumers) and lifted a cap on shopping by allowing a small segment of nonresidential consumers to shop for electricity subject to conditions. Electric sellers are subject to the Renewable Portfolio Standard, AB 32 greenhouse gas reduction compliance, and must have adequate electric supplies. Direct access sales can increase to the historically highest amount of annual direct access sales for each utility. In its March 11, 2010 decision on direct access, the CPUC ordered revised caps on direct access transactions to be phased in over four years.[36] This will allow the current cap of about 11% to rise to about 14%. Attention now turns to the details relating to cost responsibility for procurement of specific resources (reliability projects and renewable resource procurement.

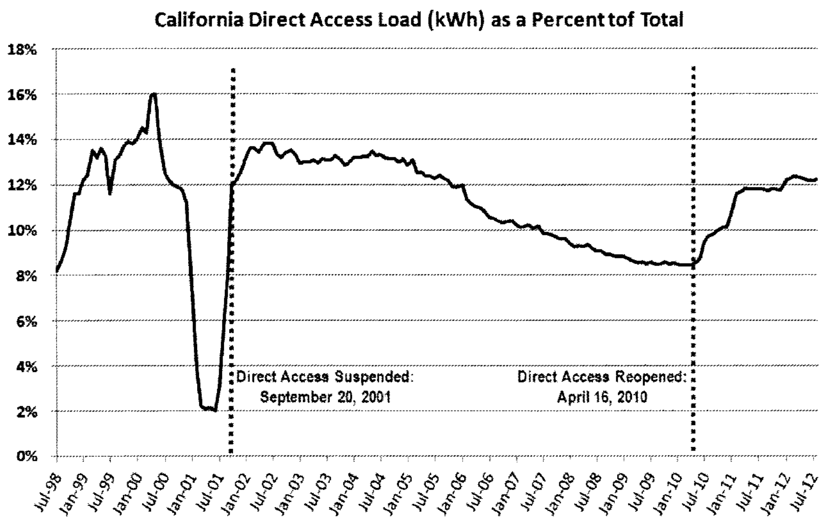
In May 2012, Docket No. 10-03-022, Ordering Paragraph 1 reads, in part: "The Energy Division is authorized to post each utility's monthly baseline amount of direct access load, as reported in their Direct Access Implementation Activities Reports, on the Commission's public web." The Direct Access load caps for each utility can be exceeded by 10% in 2012. While participation of small customers (residential and small commercial) is small, more than 12% of the electricity sales in the state are provided through direct access suppliers.

Residential customer participation is growing in California though community choice programs which have been approved by the voters in each community. In 2002 the California Legislature passed Assembly Bill 117 which added to the Public Utilities Code that customers within a defined jurisdiction shall be entitled to aggregate their electric loads and to contract for power from alternative energy suppliers. "Community Choice Aggregation" customers have the choice to either stay with the utility, join a community choice aggregator, or opt out of the program. Through various CPUC decisions there exist two operating CCAs: San Joaquin Valley Power Authority and the Marin Energy Authority. In terms of recent success, the CPUC Decision D. 12-11-015 appropriately empowered the Marin Energy Authority to administer its respective energy efficiency programs and provide an opportunity for Community Choice Aggregation to work cooperatively with utilities.

[36] CPUC Rulemaking 07-05-025, Rulemaking regarding whether, or subject to what conditions, the suspension of Direct Access may be lifted consistent with Assembly Bill 1X and Decision 01-09-060, Decisions Regarding Increased Limits for Direct Access Transactions, http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/114976.pdf

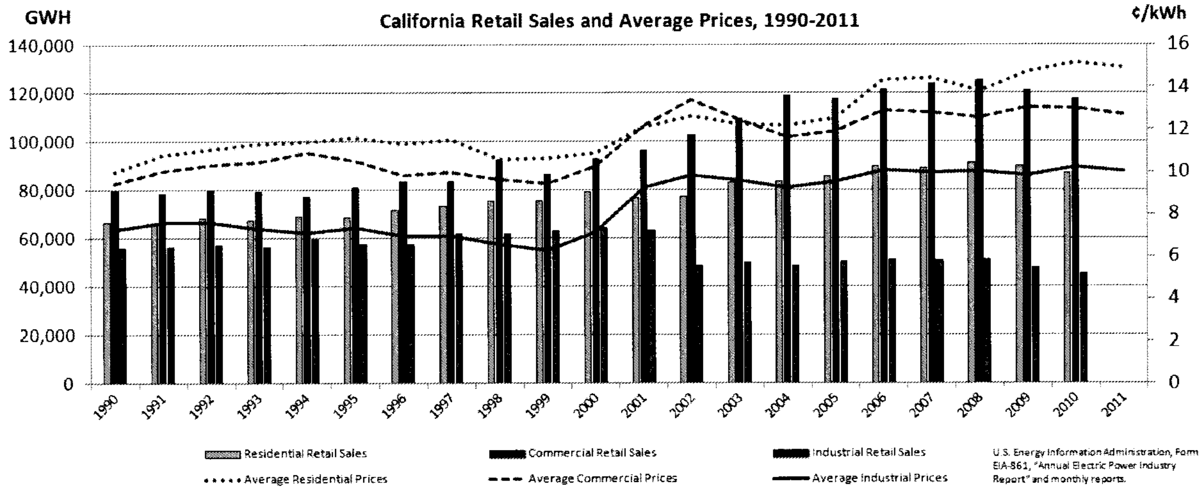
California Number of Suppliers in the Market October 2012	Residential	Nonresidential
Pacific Gas & Electric	0	19*
San Diego Gas & Electric	0	15*
Southern California Edison	0	18*
* Registered providers		

Statewide direct access measure by load (kWh) increased from 8.6% in 2009 to 11.81% in 2011 to 12.24% in 2012. The chart at right displays changes from 1998 to 2012.[37]



California Percent of Customer Switching August 2012	Percent of Residential Customers	Percent of Small Commercial (<20 kW) Sales (MWH)	Percent of Medium Commercial (20 - 500 kW) Sales (MWH)	Percent of Industrial (> 500 kW) Sales (MWH)	Percent of State Sales (MWH)
State Total	0.1%	1.4%	16.6%	32.2%	12.24%

[37] Enhanced CPUC chart from these data: http://www.cpuc.ca.gov/PUC/energy/Retail+Electric+Markets+and+Finance/Electric+Markets/Direct+Access/thru2008.htm



Connecticut

The Act Concerning Electric Restructuring (HB 5005) was signed into law April 1998. The law required divestiture of nuclear assets, participation in an ISO, functional unbundling, a renewable portfolio standard, a 10% rate reduction, and a rate cap until 2000. The utilities filed divestiture plans and there was some uncertainty with respect to the amount of stranded costs. Few competitive retailers entered the state. The Department of Public Utility Control (DPUC) set restrictions on switching back to standard offer service – a 12 month switching moratorium was instituted.

Rate caps ended and rates increased in 2004-05. In June 2006, DPUC passed regulations requiring Connecticut utilities to hold multiple auctions for standard offer power supply.

In 2007 the Connecticut General Assembly passed legislation allowing utilities (which had been divested of generation after the 1998 restructuring bill) to construct regulated peaking units. In March 2008, Connecticut Power and Light (CP&L) filed for permission to build four 50 MW units and two 32.5 MW units, scheduled to come into service in 2010. In late January 2008, CL&P rates were approved by the DPUC in Docket Nos. 07-07-01 and 03-07-02RE10.

Connecticut regulators have limited utility requests to permit long-term power contracts as a hedge against future cost increases. The regulators recognized the risks associated with hedging and the consequences for retail competition: long-term contracts which turn out to be higher than market prices place a burden on consumers; long-term contracts which turn out to be lower than market prices can freeze competitors out of the marketplace. Connecticut relies on "laddering" for resource procurement – buying small blocks of power over time and blending the results. Quarterly bids for tranches of approximately 10% of the load are used to provide the two largest utilities with sufficient resources for standard service and last resort service.

In 2008, Connecticut passed Public Act No. 08-98, *An Act Concerning Connecticut Global Warming Solutions*, concerning climate change. Connecticut law requires the state to create a greenhouse gas inventory and to reduce greenhouse gases by 10% by 2020 and 80% by 2050.[38]

In February 2007 the governor proposed a new state department of energy to work on energy policy and renewable resources. The state has a three-tier resource portfolio standard that includes renewable

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[38] See: http://ctclimatechange.com/index.php/learn/mitigation/

resources and energy efficiency. There is also an emphasis on distributed generation to address capacity needs in the southwestern corner of the state. April 18, 2008, Governor Rell signed the Governors' Declaration on Climate Change, joining 17 states to urge federal-state cooperation and federal support.

In 2011, Connecticut passed Public Act 11-80, *An Act Concerning the Establishment of the Department of Energy and Environmental Protection and Planning for Connecticut's Energy Future*, which reconstitutes the Connecticut Energy Advisory Board (CEAB) and modifies its mission as of July 2011. The CEAB report to the General Assembly on the status of programs administered by the Department of Energy and Environmental Protection, including energy conservation, integrated resource planning, and renewable portfolio standards.

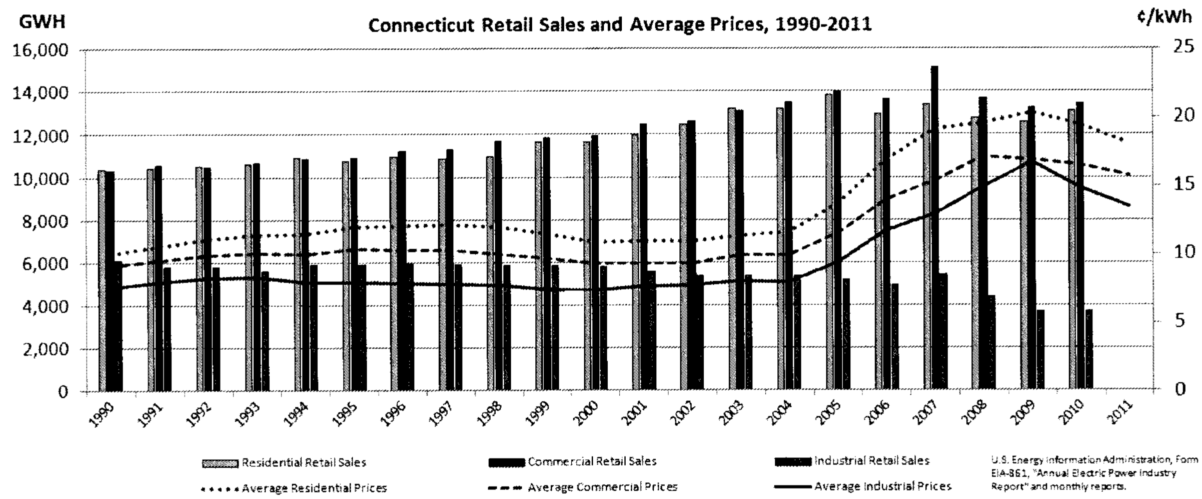
Connecticut Light and Power Company (CL&P) and United Illuminating Company (UI) are required to procure Class I renewable energy credits (RECs)1 under 15-year contracts with owners or developers of renewable energy projects. On December 9, 2011, CL&P and UI submitted to the Public Utilities Regulatory Authority a joint petition which includes their proposed six-year Solicitation Plan which includes a plan to enter into 15-year contracts for the purchase of $1.02 billion of RECs directly from customers, site owners and/or developers of clean energy.[39]

Connecticut Number of Suppliers and Products in the Market September 2012	Residential Suppliers	Residential Products	Nonresidential Suppliers
Connecticut Power & Light	20	48	16
United Illuminating	20	49	16

Residential switching has increased significantly from 6.6% of customers in 2008, to 17.7% in 2009, to 32.1% in 2010, to 40.6% in 2011, to 44.1% in 2012. Business customer switching was up among all businesses sizes in both service territories.

[39] Docket No. 11-12-06 (Joint Petition of CL&P and UI), April 4, 2012. See: http://www.ct.gov/deep/lib/deep/press_releases/2012/2012april4lzrecdecision.pdf.

Connecticut Percent of Customer Switching September 2012	Percent of Residential Customers	Percent of Small Business Sales (MWH)	Percent of Large Business Sales (MWH)	Percent of Statewide Sales (MWH)
Connecticut Light & Power	42.8%	83.2%	90.4%	67.4%
United Illuminating	48.9%	79.2%	97.2%	72.6%
State Total	44.1%	82.3%	91.9%	68.4%



Delaware

In March 1999, Delaware enacted legislation (HB 10) mandating electric restructuring and a rate cut of 7.5% for most electric customers. Larger customers of Connectiv Power were eligible for choice October 1999, medium customers January 2000, and all residential and commercial customers became eligible October 2000 (26 Delaware Code, Chapter 10). In April 2001, Delaware Electric Cooperative's customers became eligible for the choice plan. Rate caps were lifted for Delaware Electric Cooperative in March 2005 and rates increased 8%.

Delmarva Power & Light Company merged with Potomac Electric Power Company (PSC Docket No. 01-194) and the PSC (Order No. 5941 signed April 16, 2001) approved a rate cap extension for customers of Delmarva Power & Light Company until May 1, 2006. In October 2004, the Commission opened PSC Docket No. 04-391 to determine which company would provide standard offer service (SOS) in Delmarva Power service territory after May 2006. Delmarva Power was selected. The Request for Proposal process results in one third of the power need acquired annually to reduce price volatility.

The Electric Utility Retail Customer Supply Act of 2006 requires Delmarva Power to file a proposal for long-term supply contracts. Electric distribution companies are designated as the standard offer service supplier in their territories. Electric distribution companies "enter into long- and short-term supply contracts, own and operate generation facilities, build generation and transmission facilities, make investments in demand-side resources" to diversify resources. On December 4, 2007, the Commission entered PSC Order No. 7318 to propose and take comments on Integrated Resource Planning regulations. IRP has a forward-looking 10-year time frame and is filed every two years starting with December 1, 2006.

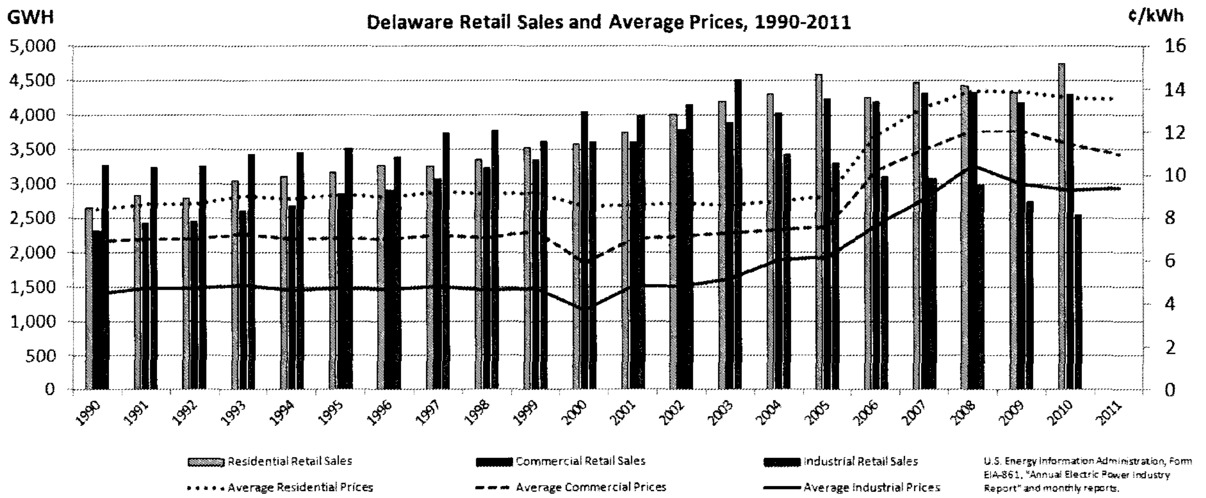
In July 2012, the DEPSC issued Order No. 8187 to make rule changes to make electric choice more competitive, including changes to provide additional protection for customers, require electric suppliers to include additional details regarding the rates, terms, and conditions of service in their offers, and to make the certification process for Electric Suppliers more uniform. Stakeholder workshops were held in August and October 2012. Staff will propose amendments Supplier Rules and may propose changes to the SOS procurement process under PSC Docket No. 04-391. The Commission will then consider whether to accept the proposed amendments and/or revisions and create new rules.[40]

Delaware Number of Suppliers in the Market August 2012	Residential	Nonresidential
State of Delaware*	6	29
* Delmarva Power Electric.		

While residential switching is relatively light, the nonresidential loads increased from 68.6% switching in 2009 to 812% switching in 2012during the past year.

Delaware Percent of Customer Switching August 2012	Percent of Residential Customers	Percent of Nonresidential Sales (MWH)	Percent of Statewide Sales (MWH)
State Total	4.5%	81.2%	49.8%

[40] See: http://www.depsc.delaware.gov/orders/8187.pdf.



District of Columbia

The 1999 Retail Competition Act provided authority for retail choice. The District of Columbia Public Service Commission (DCPSC) issued Order Nos. 11576 (December 1999) and 11796 (September 2000) to allow all residential and commercial customers to choose an alternative electric supplier effective January 2001. Potomac Electric Power Company (PEPCO) is the sole electric distribution company. At the end of 1999, PEPCO made a decision to divest itself of generating units. A Code of Conduct working group was created in 2000 to work on competitive safeguards, with an interim decision to adopt Maryland's Code of Conduct, and a longer-term effort to develop a DC-specific Code of Conduct. DCPSC orders issued in 2001 addressed customer education, new electric supplier tariffs, and interim customer aggregation standards.

In 2002, the DCPSC issued an order and report on a Municipal Aggregation Program. The DCPSC also approved the PEPCO/Connectiv merger subject to conditions. Divestiture resulted in a sharing of proceedings with customers (the typical household received $80.42 of divestiture sharing credits in 2002). PEPCO has moved toward a holding company structure.

In 2003-04, the DCPSC examined the standard offer service (SOS) process (Order Nos. 12655 and 13118), including whether PEPCO should continue to provide SOS because its obligation to serve was set to expire at the end of 2004. A new process was adopted that relied on wholesale market prices to a greater degree. In March 2006, PEPCO filed for rates increases for SOS of about 10% to 12%. In July 2006, the DCPSC issued Order No. 14006 to adopt improvements in the procurement process for SOS, and to consider the benefits of a portfolio approach.

A Renewable Energy Portfolio Standard Act was enacted in 2005 which will require suppliers to acquire 11% of their energy from renewable resources by 2022. The DCPSC has increased the amount of information available to customers regarding energy efficiency.

The Clean and Affordable Energy Act of 2008 defines a Sustainable Energy Utility with authority to lower per capital energy use, increase the use of renewable energy resources, create "green collar jobs" and meet other objectives in the District of Columbia.

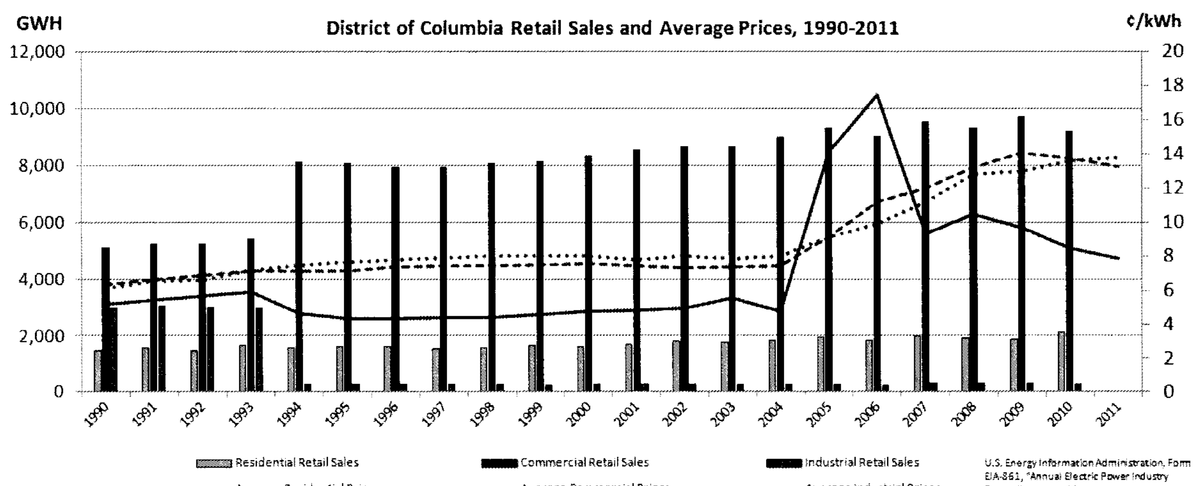
On June 1, 2012, the DCPSC approved the results of a competitive auction for electricity supply that will result in lower rates for SOS customers in March 2013. An electric bill for a residential SOS customer will decrease by 5.6% or about $4.89 per month for the average user of 685 kWh/month. The residential

SOS summer rate declines from 9.7 to 8.7 cents per kWh, and the winter rate declines from 9.2 to 8.6 cents per kWh. Pepco's SOS Program is the default source of electrical energy for customers who have not chosen to purchase power through a certified competitive provider. The SOS Program is administered by Pepco under rules established by the PSC.[41]

District of Columbia Number of Suppliers in the Market August 2012	Residential	Nonresidential
District of Columbia	13	22

During the peak period for switching (between September 2002 and December 2003), residential customer switching was between 10.2% and 11.9% in DC. By August 2009, 2.8% of residential customers in DC were served by competitive suppliers. Residential switching increased from 5.1% in 2011 to 12.3% in 2012. Nonresidential switching has been flat at about 82% for two years.

District of Columbia Percent Switching July 2012	Percent of Residential Customers	Percent of Nonresidential Sales (MWH)	Total of District (MWH)
District Total	12.3%	82.0%	63.1%



[41] See: http://www.dcpsc.org/pdf_files/hottopics/PR_PSC_Announces_Lowers_SOS_Rates.pdf.

Illinois

In December 1997 and again in September 1999, the Illinois Public Utilities Act was amended (P.A. 90-0561, Electric Service Customer Choice and Rate Relief Law of 1997, HB 362). Large customers were allowed to choose their supplier in 1999, and other nonresidential customers were allowed to choose in 2000. The initial decision to give residential retail choice (in 2002) was moved up to a late-1999 to late-2000 phase in. The amendments also mandated rate cuts of 15% in 1998 and 5% in 2001. Other provisions promoted cogeneration and allocated $250 million to special environmental initiatives and to an energy efficiency fund. Rates were capped until 2005, providing relatively little incentive for mass market customers to switch. In 2002, the Illinois General Assembly extended the rate cap to January 1, 2007 (P.A. 92-357).

In late 2002, the Illinois Commerce Commission (ICC) eliminated the regulated rate for customers above three megawatts. As of the end of 2006, nearly 28,000 commercial and industrial customers have chosen to take delivery service from a retail electric service provider other than the utility, totaling approximately 28,500 GWH for that year. ("Summary of Annual Reports Filed by Electric Utilities Regarding the Transition to a Competitive Electric Industry: Required by Electric Service Customer Choice and Rate Relief Law of 1997", May 2007 (220 ILCS5/16-130) (1999).)

In 2007, Public Act 095-0481 created and independent agency, the Illinois Power Agency (IPA), to develop and manage a new electric supply procurement process for customers of Ameren Illinois and ComEd, and amended the Illinois Public Utilities Act to return certain rates to 2006 levels. Rate relief to residential and certain nonresidential customers of ComEd and Ameren utilities began in September and October that year, and were applied to customer accounts through 2009. The IPA is responsible for overseeing the procurement of power and energy for retail customers who receive fixed-price bundled service from electric utilities with 100,000 or more customers (220 ILCS 5/16-111.5(a)(2007)). The IPA is to prepare a plan, by August 15 of each year, to procure the necessary energy and power in the following year (220 ILCS 5/16-111.5(b)(2007)). After overseeing the procurement of electric supply, the IPA directs the utilities to enter into wholesale electric supply contracts of various duration to purchase electric supply from different sources.

The Illinois Power Agency Act also declared services in ComEd and Ameren whose peak demand is above 400 kW to be competitive as of August 2007 (220 ILCS 5/16-113(f)). ComEd customers who have peak demand above 400 kW were allowed to take bundled service until June 2008. ComEd customers who have peak demand between 100 kW and 400 kW are allowed to take bundled service until June 2010. Ameren customers with peak demand is above 1 MW were able to take bundled service until June 1, 2008, and customers with peak demand between 400 kW and 1 MW can take bundled service until June 1, 2010. Electric utilities are able to obtain determinations of competition for the customers who have peak demand between 100 kW and 400 kW if they can demonstrate that at least 33% of the customer's in the service area are eligible to take service from an alternative retail electric supplier and that at a least three alternative retail electric suppliers provide comparable service (220 ILCS 5/16-113(g)(2007)).

The ICC cannot make a determination of competition for residential customers, with peak demand less than 100 kW, until after July 1, 2012 (220 ILCS 5/16-113(h) (2007)). The Illinois Power Agency Act also set energy efficiency and demand response goals for Illinois utilities (220 ILCS 5/12-103)(2007).

In April 2008, utilities in Illinois started offering net-metering (83 IL. Admin. Code Part 465) to eligible customers, that is, to retail customers who own or operate a solar, wind, or other eligible renewable electrical generating facility with a rated capacity of 2 MW or less. In addition, the ICC has initiated a rulemaking (Docket No. 06-0525) that will set standards for interconnection of direct generation to the distribution network (83 IL. Admin. Code Part 466).

Illinois created an Office of Retail Market Development (ORMD) which prepared its first annual report in July 2008 pursuant to the requirements of Section 20-110 of the Illinois Public Utilities Act. The report presents Illinois' progress in addressing barriers to competition. The ORMD is engaging all stakeholders to ensure that the barriers to residential choice are addressed, determine how to raise awareness among consumers about the right to choose an alternative electricity supplier and determine how to create an independent source of information for small consumers. The ICC website describes the ORMD responsibilities as follows: ORMD was created pursuant to Public Act 094-1095 because the Illinois General Assembly recognized that in order "for Illinois consumers to receive products, prices and terms tailored to meet their needs, a competitive wholesale electricity market must be closely linked to a competitive retail electric market." The Act directs the ORMD to "actively seek input from all interested parties and to develop a thorough understanding and critical analyses of the tools and techniques used to promote retail competition in other states. The Office shall monitor existing competitive conditions in Illinois, identify barriers to retail competition for all customer classes, and actively explore and propose to the Commission and to the General Assembly solutions to overcome identified barriers."

In October and November 2008, staff of the ICC conducted workshops on energy efficiency and demand response and recommended that no rulemaking was necessary. Staff stated that handling the issues on a case-by-case basis was best given that the stakeholders are on a learning curve. The staff report describes the issues that are necessary in a future rulemaking.

In May 2009, the Procurement Administrators for Ameren and ComEd announced winning bidders and average prices for peak and off-peak capacity for the 24 or 36 months starting June 2009. Section 16-111.5 of the Illinois Public Utilities Act contains various provisions relating to the procurement of the electricity by the largest of Illinois' electric utilities. Sub-section (e)(1) provides that, "The procurement administrator shall disseminate information to potential bidders to promote a procurement event, notify potential bidders that the procurement administrator may enter into a post-bid price negotiation with bidders that meet the applicable benchmarks, provide supply requirements, and otherwise explain the competitive procurement process. In addition to such other publication as the procurement administrator determines is appropriate, this information shall be posted on the Illinois Power Agency's and the Commission's websites."[42]

Ameren Illinois had a new purchase of receivables tariff take effect in 2009. Final approval of Commonwealth Edison's purchase of receivables tariff was delayed in 2010.

Both Ameren Illinois and ComEd offer a real time pricing (RTP) option to help residential customers. As with many tariffs labeled "real time," a series of hourly prices for electricity are posted one day in advance so that residential consumer who choose this option can determine the best time to operate appliances during the upcoming 24 hours. The real time pricing option requires a special meter.

The current utility electric supply prices are in effect until May 31, 2013. In the spring of 2013, the IPA will again direct the utilities to purchase electric supply, which will result in new utility electric supply prices for the period June 1, 2013 and beyond. Future IPA-administered electric supply purchases by the utilities are expected to occur each spring. The ICC has the flexibility, however, to approve a plan that would purchase electricity at multiple times during the year, which could mean that charges for utility electric supply could change more than once a year. Shortly after the conclusion of the spring procurement events, Ameren and ComEd revise the base level of retail charges through which the costs of electricity and RECs are recovered from customers. Actual revenues and costs are monitored on a

[42] Electricity Procurement Processes links are provided here for each year: http://www.icc.illinois.gov/electricity/ElectricityProcurement.aspx.

monthly basis, and rates are adjusted, as necessary, to minimize the accumulation of a revenue-cost imbalance. An annual audit and reconciliation proceeding is also held.[43]

Under the IPA staff-proposed procurement plan, the mix of resource would involve less hedging. The current hedging strategy of 100% hedged for the first year, 70% hedged for the second year, and 35% hedged for the third year, would be replaced with 75% hedged in the first year, 50% in the second year, and 25% in the third year. This would help deal with the risk associated with retail customer migration.[44]

Public Act 96-0176 amended the Illinois Power Agency Act effective January 1, 2010 to allow municipalities and counties to aggregate electrical load. Municipal corporate authorities and county boards can adopt an ordinance to aggregate residential and small commercial electrical loads and solicit bids for the sale and purchase of electricity. A referendum is required to determine whether or not the aggregation shall be an opt-out program. Municipal aggregation activity has increased dramatically with 306 communities placing an opt-out aggregation referendum on the March 20, 2012 election ballot, and with 245 referendums passing.

The ORMD staff of the Illinois Commerce Commission estimates that about 40% of the switching reported for residential consumers in Illinois is not due to aggregation. These data come from the detailed utility reports.

The ICC is also working on the interconnection of distributed generation,[45] and the fostering of coordination and administrative efficiency in the provision of mandated energy efficiency programs.[46]

Illinois Number of Suppliers in the Market August 2012	Residential Suppliers	Residential Products	Nonresidential Suppliers*
Ameren Zone I	7	12	19
Ameren Zone II	5	9	19
Ameren Zone III	8	13	19
ComEd	22	56	43
* Listed as a supplier.			

Residential customer switching began to increase in 2011 (to about 2%), and then increased dramatically in 2012 to 22.37%. Small to medium C&I customer switching rose in the state from 50.2% in 2008 to 80.71% in 2012, and large (> 1 MW) C&I customer switching has been stable with about 93% over the past five years. Illinois groups customers by their peak usage and reports switching by their annual sales.

[43] ORMD Annual Report, June 2012, http://www.icc.illinois.gov/reports/.

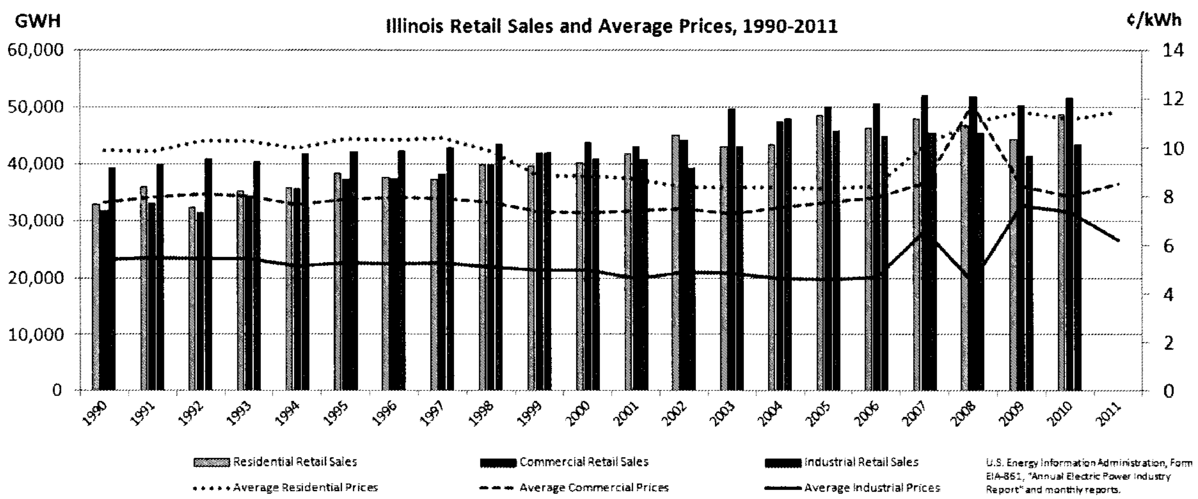
[44] See p. 3: http://www.icc.illinois.gov/downloads/public/2013%20Procurement%20Plan%20FOR%20PUBLIC%20 COMMENT%208-15%2011.pdf.

[45] See: http://www.icc.illinois.gov/Electricity/DGInstallerCert.aspx.

[46] See: http://www.icc.illinois.gov/Electricity/EnergyEfficiencyCoordination.aspx.

Illinois Percent Switching August 2012	Percent of Residential Customers	Percent of Small C&I Sales (MWH) (< 25 kW)	Percent Medium C&I Sales (MWH) (25kW-1MW)	Percent Large C&I Sales (MWH) (> 1 MW)	Percent Total Load (MWH)
Ameren Rate Zone I*	18.18%	52.14%	76.72%	81.67%	55.20%
Ameren Rate Zone II	18.18%	52.14%	76.72%	81.67%	55.20%
Ameren Rate Zone III	22.83%	52.23%	80.93%	93.87%	62.37%
Commonwealth Edison Company**	21.04%	54.37%	83.55%	97.84%	61.64%
MidAmerican Energy Company	0.0%	0.0%	0.0%	NA	0.0%
Mt. Carmel	0.0%	0.0%	0.0%	0.0%	0.0%
State Total	22.37%	53.96%	80.71%	93.24%	60.77%

* Ameren Rate Zone I was formerly AmerenCIPS (Central Illinois Public Service), Ameren Rate Zone II was formerly AmerenCILCO (Central Illinois Light Company) Ameren Rate Zone III was formerly AmerenIP (Illinois Power Company).
** Small C&I is 0-100 kW.



Maine

In May 1997, the Maine Legislature passed Directive 1804 to require divestiture of utility generation assets and initiate retail choice in March 2000. The Legislature imposed a 33% market share cap on investor-owned utilities in their old service areas, and instituted a renewable energy portfolio requirement of 30% (including hydroelectric power). Maine's law (Title 35-A, Chapter 32: Electric Industry Restructuring), allows retail consumers to purchase electricity supply from licensed competitive electricity providers, and requires customers not served competitively to accept standard offer electricity regulated by the Maine Public Utilities Commission (MPUC).

The MPUC has considered bids for resources to serve default customers. In 1999, the MPUC rejected bids and reissued a request in 2000 under amended rules in an attempt to attract more bidders. The MPUC set standard offer rates and ordered Central Maine Power to provide standard offer service from March 2000 to March 2002 for medium and large nonresidential customers. The MPUC also approved a transmission/distribution rate scheme for restructuring submitted by Maine Public Service Company (in far northern Maine, and isolated on the grid) that separated MPS's revenue requirements into a transmission component under FERC jurisdiction and a distribution component under MPUC jurisdiction.

The MPUC revisited standard offer service in 2002. To further connect the standard offer to market prices, the MPUC shortened the time period for its current medium and large standard offer categories to six months. That is, the winning bid sets the standard offer at start of the six-month period, with prices changing each month. In December 2002, the MPUC reported to the legislature that retail access had been a success for commercial and industrial customers in Maine, and that some residential customers had switched to renewable resource suppliers. At that time, 47% of the electricity in Maine was bought from competitive suppliers—the highest percentage in the nation. The MPUC stated that until retail markets mature, the legislature must keep standard offer service in place beyond the scheduled termination date of March 2005.

In late 2004, an auction produced standard offer rates with a nearly 30% increase in the generation price due to conditions in the wholesale market. In more recent auctions, the MPUC goes to the market each year for one-third of the load in a three-year contract. In January 2008, the MPUC accepted a one-year contract for one-third of the load at Central Maine Power and Bangor Hydro-Electric. As a result, in 2009, there was a need to replace two-thirds of the load (the 2006 and 2008 contracts). Standard offer rates have increased between 2% and 3% for each of the past two years for these two utilities, weighing together the net effect of power costs and decreases in stranded costs.

MPS with approximately 5% of the state's load is directly connected to the New Brunswick system, and is connected to the New England Power Pool through New Brunswick. There is only one competitive supplier serving the MPS service territory, and MPS filed an application in 2008 for new transmission facilities to better connect with the rest of the state. Cost allocation for the investment will be an issue.

In addition to the 30% RPS requirement, Maine requires "new renewable resources" to be 1% of the portfolio in 2008 (and growing by 1% a year). In 2007, Maine created an Energy Conservation Board to assist the MPUC with energy conservation as it relates to carbon dioxide reductions. In 2011, Public Act 413 was adopted which requires the PUC to study the renewable portfolio standard. The PUC engaged London Economic International and the results were published in January 2012 in the comprehensive report, MPUC RPS Report 2011 - Review of RPS Requirements and Compliance.

In June 2009, the MPUC determined that ratepayers are best served by allowing the utilities' agreement with ISO- New England to automatically renew for a two-year term. The MPUC had earlier assessed whether the ISO-NE's cost allocation was equitable. The MPUC found that the ISO-NE structure benefits

Maine's markets and consumers through operational control of the grid, market design and operation, and development of demand response programs. The MPUC directed Maine's two largest utilities to aggressively pursue reforms of their relationship with the ISO-NE.

In October 2009 the MPUC approved the first long-term contract since electric restructuring began by approving a 20-year contract with a wind developer delivery of the 60-megawatt Rollins wind project in Penobscot County. The criteria for election included energy and capacity benefits, hedging against fossil fuel prices, and resource diversity. Central Maine Power and Bangor Hydro Energy will share the contract 80%-20%, respectively. The Legislature gave the MPUC authority in 2006 to direct electric utilities to enter into long-term electric generation contracts.

In 2010, the MPUC approved the installation of advance metering infrastructure (CMP Docket No. 2007-215(II), BHE Docket No. 2006-661(II)). CMP received approximately $96 million in funding under the Department of Energy (DOE)'s Smart Grid Investment Grant Program (~50% of the cost). The Commission also opened proceedings for both CMP and BHE to consider the pricing programs that should be implemented when AMI is fully installed and operational (CMP Docket No. 2010-132; BHE Docket No. 2010-14). The commission also considered a transition plan for displaced employees.[47]

In July 2012, the MPUC set prices for standard offer electricity supply service for medium and large C&I customers of CMP and BHE, effective in September. The bids accepted reflect average prices over of 6.4 cents/kWh for CMP customers and 6.3 cents/kWh for BHE customers, which are 16% and 18% higher than current standard offer prices, respectively, but lower than the same period last year. The bids accepted for large C&I customers are indexed to the market, and prices will be set by the PUC in advance of each month based on current market prices.[48] Standard offer prices for residential and small commercial customers remain at current levels until March 2013. In September 2012, the MPUC issued an RFP for electricity for residential and small commercial customers in the territories CMP and BHE for service beginning March 2013.

Maine Number of Suppliers in the Market August 2012	Residential Suppliers	Residential Products	Nonresidential Suppliers
Bangor-Hydro Electric	13	13	35
Central Maine Power	10	10	37
Maine Public Service	8	8	16

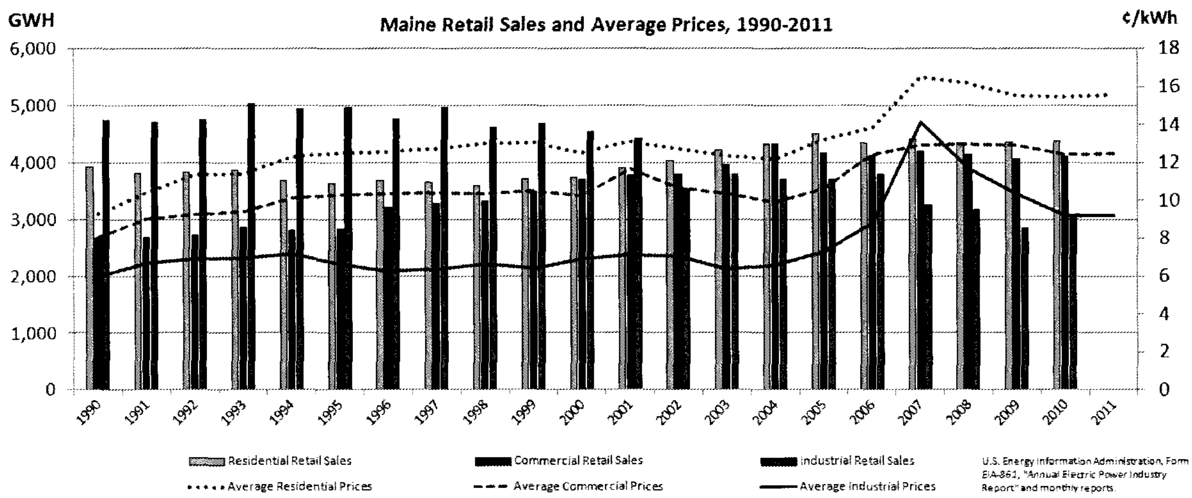
Residential switching increased dramatically this past year from 2.1% in 2011 to 21.6% in 2012. Medium C&I switching have increased from 36% in 2008, to nearly 45% in 2009, to 50.1% in 2010, to 51.9% in 2011 to 60.5% in 2012. Large C&I increased has ranged from 92% to 95% these past five years.

[47] Maine PUC annual report. http://www.maine.gov/mpuc/about/annual_report/documents/annualreport.pdf.

[48] For more information on standard offer service prices:
http://www.maine.gov/mpuc/electricity/standardofferrates/index.html

Maine Percent Switching August 2012	Percent of Residential and Small Commercial Customers*	Percent of Medium C&I Load (MWH)	Percent Large C&I Load (MWH)	Percent Total Load (MWH)
Bangor-Hydro Electric	6.7%	61.2%	84.8%	43.3%
Central Maine Power	26.0%	60.9%	96.9%	57.5%
Maine Public Service	0.1%	45.3%	94.4%	30.3%
State Total	21.6%	60.5%	95.3%	54.3%

* This category Includes residential and small commercial customers < 25 kW in BHE, < 20 kW in CMP and < 50 kW in MPS. Large C&I is defined as > 400 kW in CMP and > 500 kW in BHE and MPS. "Medium" falls between these two categories.



Maryland

In April 1999, Maryland adopted the Electric Customer Choice and Competition Act of 1999 (SB300 and HB703). The bill mandated retail access and a rate reduction. Customers of the investor-owned utilities became eligible for choice in July 2000, and customers of electric cooperatives became eligible at the end of 2001. Five municipal utilities remain locally controlled and are not required to offer retail choice.

Standard offer service design and rate levels have been a point of contention. The initial standard offer service remained in effect until July 1, 2003. A subsequent case (Case No. 8908) determined that standard offer service would remain in effect from 2004 to 2008. During this period, utilities, as the default service providers, acquired 1, 2, and 3-year power contracts to meet the needs of residential customers. Commercial customers received a more variable price, and large customers received hourly pricing over a one-year period. If numerous customers remained with standard offer service, the utilities applied an alternative price of service – the PJM hourly price.

Rate caps were scheduled to expire, but the anticipated price increases resulted in numerous alternative rate mitigation proposals. For example, in anticipation of 72% rate increases in the Baltimore Gas and Electric (BGE) service territory, the legislature considered bills in 2005 and 2006 to limit the immediate increase to 5% to 25%, with future recovery of deferred costs through a new transition charge. In Case No. 9056, the Maryland Public Service Commission (MDPSC) determined that everyone other than the smallest commercial customers would be moved to quarterly bidding and quarterly pricing. In Case No. 9064, residential customers were changed from to a two-year bidding framework, with one-fourth of the load bid every six months. In the BGE service territory, a Rate Stabilization Charge will collect a set amount over the next 10 years.

In December 2008, the MDPSC issued a report ordered by the State General Assembly in 2007. The report stated that Maryland should not try to repurchase generating units that were sold at the beginning of electric market restructuring. The MDPSC urged new laws to protect consumers and partial re-regulation by shifting the jurisdiction of future power plants to the State of Maryland.

In February 2009, the Maryland State Finance Committee introduced Senate Bill 795, the "Maryland Electricity Reregulation and Energy Independence Act of 2009" with the support of the governor. The bill stated that competitive retail electric markets did not developed as envisioned. In April, Maryland's House Economic Matters Committee voted nearly unanimously to kill the bill. In January 2010, Governor O'Malley stated that he would not submit legislation to re-regulate energy markets in the upcoming legislative session, but would instead rely on the Public Service Commission to use existing authority to build new power generation as needed.[49]

Maryland is pursuing climate change and energy efficiency issues. A significant portion of the revenues derived from a carbon auction in 2008 will be dedicated to energy efficiency activities and will be administered by the Maryland Energy Administration. Although advanced metering has not penetrated mass markets in Maryland, demand response remains important with approximately 1,000 MW of direct load control programs using smart switches, smart thermostats and radio frequency signals in PJM. State officials continue to work on reliability and resource adequacy issues, including the need for power plant construction in the state.

In December 2011, the MDPSC adopted a comprehensive set of regulations designed to improve reliability for electric distribution systems. The MDPSC adopted the System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI) metrics for 2012-2015. The utilities are required to submit annual performance reports. The first performance review will be concluded by July 2013.

In December 2011, the state announced that a settlement concerning the Exelon - Constellation merger would result in "$1 billion in investment into the Maryland economy over the next decade and create more than 6,000 jobs." The total megawatts of energy generation to be built increased from 25 MW to 285-300 MW.. The PSC also retains the ability to spin-off BGE at some later date if Exelon "experiences significant financial difficulty, experiences a nuclear disaster, or repeatedly violates PSC Orders."

In April 2012, the MDPSC awarded a 20-year contract to Competitive Power Ventures to build a 661-MW natural gas combined-cycle power plant. This award was in response to an RFP seeking up to 1,500 MWs of new gas plants to be built by 2015. The MDPSC had already gotten Exelon and Constellation to build a 120-MW combustion turbine as part the merger deal. Controversy continues between Maryland and

[49] Source: Office of Governor Martin O'Malley, http://www.governor.maryland.gov/.

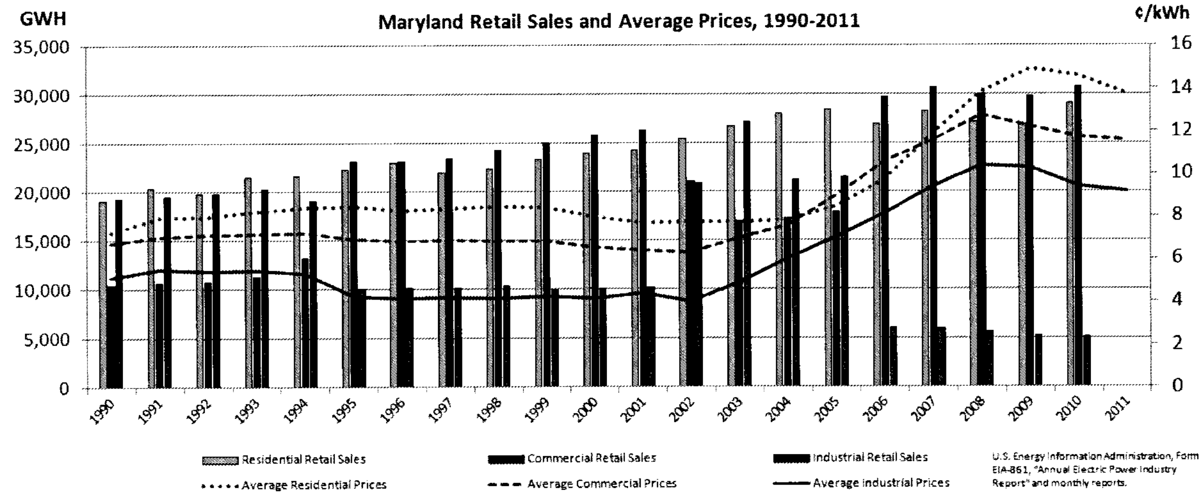
PJM as stakeholder talks have begun on revisions to the RTO's "minimum offer pricing rule." Stakeholders are concerned with states that subsidize new generation capacity and would reduce prices in the capacity market with capacity that is supported by mandatory wires charges that all customers must pay.[50]

Maryland Number of Suppliers in the Market October 2012	Residential Supplier	Residential Products	Nonresidential Supplier*
Potomac Edison (First Energy)	5	15	58
Baltimore Gas and Electric	21	56	90
Delmarva Power & Light	10	25	65
Potomac Electric Power	16	48	75
* Active supplier list			

Residential switching increased from 3% in 2008, to 4.2% in 2009, to 9.6% in 2010, to 18.4% in 2011, to 22.1% in 2012. Mid-sized C&I switching increased from 62.3% in 2008, to 72.4% in 2012, while large C&I has been 92% to 94% during the same period.

Maryland Percent Switching July 2012	Percent of Residential Customers	Percent of Small C&I Load (MW)	Percent of Mid-C&I Load (MW)	Percent of Large C&I Load (MW)	Percent of Total Load (MW)
Potomac Edison (First Energy)	10.1%	32.3%	66.0%	86.0%	40.1%
Baltimore Gas and Electric	25.3%	34.4%	73.2%	93.0%	52.1%
Delmarva Power & Light	13.7%	43.5%	70.9%	96.0%	42.1%
Potomac Electric Power	18.0%	45.2%	73.8%	92.7%	54.7%
State Total	22.1%	39.5%	72.4%	92.4%	50.8%

[50] See: "Maryland PSC awards RFP plant deal to Competitive Power Ventures," Restructuring Today, April 13, 2012.



Massachusetts

In November 1997, the state legislature enacted HB 5117 to restructure the electric power industry, granting rate cuts of 10% at first, and another 5% after 18 months, with full recovery of stranded costs over a 10-year transition period. In March 1998, the Massachusetts Department of Telecommunications & Energy (now housed within the Office of Energy and Environmental Affairs and called the Department of Public Utilities) issued final decisions and regulations to open the electricity market to retail competition. The law included a provision for a systems benefits charge, and Massachusetts has adopted advanced plans for energy efficiency and renewable energy.

Generation service became competitive, but transmission, distribution and customer services remained regulated monopoly services. Standard offer service was created as a transitional service for existing electricity customers. The standard offer set at 2.8 cents with a trajectory to rise to 5.2 cents per kWh in 2005 (projected to be above market in 2005). These were administratively determined numbers (not market based) and included fuel triggers to increase if necessary.

When markets opened, the 2.8 cents per kWh standard offer service rate was too low for competitors, stifling competition until the standard offer service rate was scheduled to rise in 1999. Utilities divested themselves of generation and natural gas plants were constructed. In 2000, standard offer rates were increased in response to market price increases.

As of 2005, standard offer service expired. These customers were transferred to default service which had been designed for customers who were new to the system but had not selected a competitive service provider. (In Massachusetts, "standard offer" and "default service" have distinct meanings.) Default service for smaller customers relies on twice a year procurement of 50% of the load for one-year terms. Default service for larger customers is procured four times a year, 100% of load at a time.

Aggregation is active on Cape Cod (eastern MA) with the Cape Light Compact serving a significant number of customers. Cape Light accounts for approximately one-half of the residential customer switching in Massachusetts. Customers who do not wish to participate can opt out of the aggregation program.

In August 2012, Governor Patrick signed S. 2395, "An Act Relative to Competitively Priced Electricity in the Commonwealth" intended to "protect ratepayers while providing greater reliability and energy independence." The bill extends long-term renewable energy contracts, raises the cap on net metering, and emphasized energy efficiency.[51] Also in 2012, the MDPU approved the NSTAR-NU merger and required purchases from the Cape Wind project.[52] In July 2012, the gas and electric distribution companies and municipal aggregator "program administrators" submitted a three year plan to the Energy Efficiency Advisory Council (EEAC) regarding energy efficiency plans. The plan is an integrated attempt to provide innovative energy efficiency services, deliver on savings goals, maintain Massachusetts' "first-in-the-nation energy efficiency status."[53]

Massachusetts Number of Suppliers and Products in the Market October 2012	Residential Suppliers	Residential Products	Nonresidential
National Grid	2	2	25
NSTAR Electric	12	12	59
Western Massachusetts Electric	4	4	40
Unitil	0	0	0

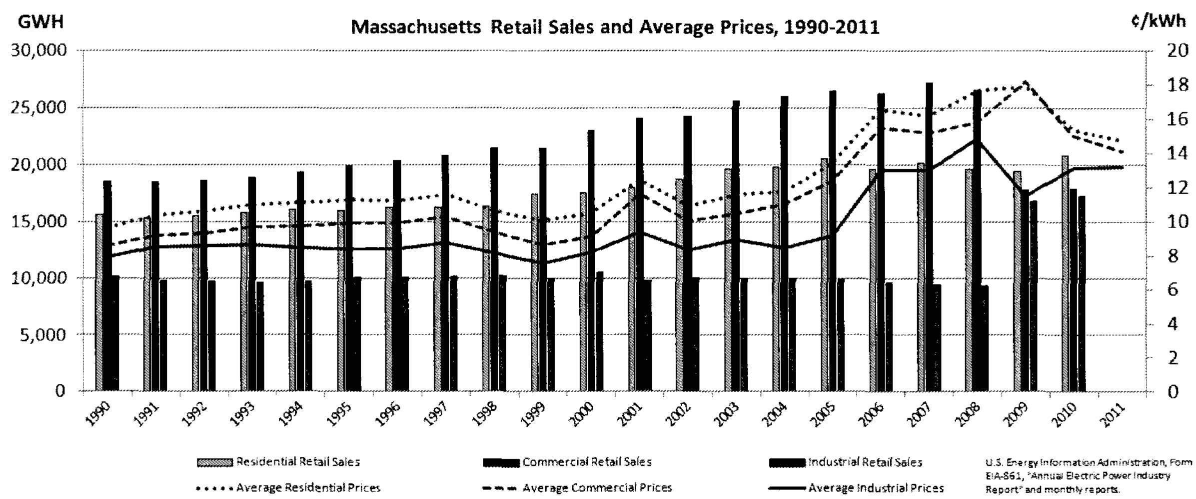
Residential switching has fluctuated from 11.2% to 13.2% to 12.2% over the past several years. C&I has switching increased in each size category over the period. Overall, statewide switching was 52.7% of electricity sales.

[51] Source: http://www.mass.gov/governor/pressoffice/pressreleases/2012/2012803-governor-patrick-signs-energy-bill.html.

[52] Source: http://www.mass.gov/eea/pr-2012/ma-dpu-announces-approval-of-nstar-nu-merger.html.

[53] See: http://www.mass.gov/eea/energy-utilities-clean-tech/energy-efficiency/policies-regs-for-ee/energy-efficiency-advisory-council-eeac.html and http://www.ma-eeac.org/docs/7.10.12/Gas%20and%20Electric%20PAs%20July%202%20Plan%207-2-12.pdf.

Massachusetts Percent Switching June 2012	Percent of Residential Customers	Percent of Small C&I Load (MWH)	Percent of Medium C&I Load (MWH)	Percent of Large C&I Load (MWH)	Percent of Total Load (MWH)
Boston Edison (NSTAR Electric)	6.5%	27.6%	53.0%	90.1%	58.0%
Cambridge Electric (NSTAR Electric)	4.3%	29.4%	50.1%	87.8%	72.4%
Commonwealth Electric (NSTAR Electric)	51.1%	70.3%	90.9%	96.1%	65.4%
Fitchburg Gas & Electric Light (Unitil)	16.5%	31.8%	51.9%	98.5%	58.5%
Massachusetts Electric (National Grid)	9.4%	34.5%	65.2%	91.4%	51.6%
Nantucket Electric (National Grid)	0.5%	21.8%	43.1%	84.9%	17.0%
Western Massachusetts Electric	9.3%	47.1%	81.0%	93.1%	53.8%
State Total	14.3%	43.7%	63.8%	90.9%	55.8%



Michigan

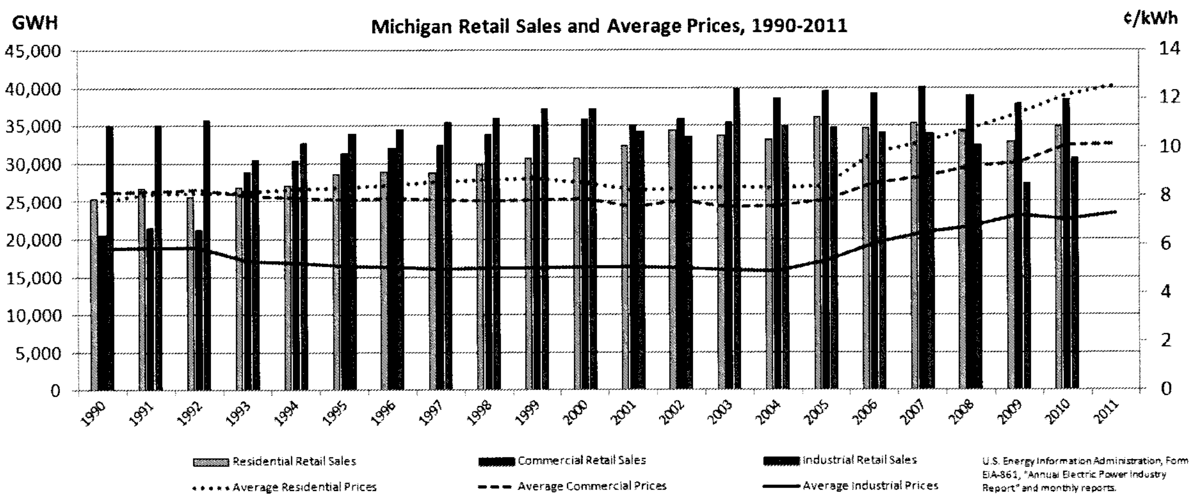
The Michigan Public Service Commission (MPSC) initially ordered retail choice pilot programs in 1998 and 1999. Michigan's Customer Choice and Electricity Reliability Act (2000 Public Act 141), enacted June 2000, introduced competition into the electric industry by offering Michigan customers the opportunity to choose to purchase their electric generation services from an alternative electric supplier (AES). While access for a few large customers began in 1999, all large customers (loads of greater than 1 MW) of Detroit Edison, Consumers Energy, and the electric cooperatives obtained retail access in January 2001. In December 2001, the MPSC issued nine orders to advance Michigan's competitive electric environment. Among the decisions: Detroit Edison and Consumers Energy could not change their depreciation accrual rates and practices until January 2006; rules would be drafted for service quality and reliability standards for electric distribution systems; standards were adopted for the disclosure of customer information, fuel mix and environmental characteristics; and net stranded costs for utilities were determined. Rate cuts were mandated for some default service tariffs.

Michigan is the first state to have independent transmission company ownership of virtually all its high-voltage transmission facilities. Trans-Elect owns Consumers Energy's 5,400 miles of transmission, and Kohlberg Kravis Roberts and Trimaran Capital Partners own DTE Energy's (Detroit Edison) 3,000 miles of transmission.

In Michigan, a bill introduced in December 2007 (HB 5524) has become law and more or less rescinds restructuring, placing a utility-specific load cap of 10%. On October 6, 2008, Governor Granholm signed a pair of bills. HB 5524 (2008 Public Act 286) amended the Customer Choice and Electricity Reliability Act, and SB 231 (2008 Public Act 295) addressed energy planning and renewable energy. Customers are required to give notice of a return to regulated service, and pay the higher (for one year) of average rates or market prices at the time of return. New customer would not be eligible for choice and would receive standard tariff service. HB 5524 would require customers to declare within 90 days whether they would continue to receive power from an alternative electric supplier. Upon selection of this option, customers would be required to give notice to return to regulated service, and would pay the higher of average rates or market prices at the time of return for one year. Other customers would receive on standard tariff service. New customers would not be eligible for choice and would receive standard tariff service. The proposed legislation would also limit the market share of non-incumbent suppliers to 10% of sales. (This states that "no more than 10% of an electric utility's average weather-adjusted retail sales for the preceding calendar year may take service from an alternative electric supplier at any time.")

While customer choice is available to all customers (excluding electric cooperative members with loads of one MW or less), competitive retail providers do not offer services in any utility service territories other than Consumers Energy and Detroit Edison. Commercial and industrial customers in the service territories of Detroit Edison and Consumers Energy accounted for all of the participation in the electric choice programs during 2011. In the Consumers Energy service territory, nearly 11% of the load has switched and within the DTE Energy service territory, more than 11% of load has switched. Pressure remains on the state legislature to re-visit the cap provisions, particularly in light of heightened customer interest.

Michigan Percent Switching October 2012	Percent of Residential Customers*	Percent of Commercial Load (MWH)*	Percent of Industrial Load (MWH)*	Percent of Total Load (MWH)*
Consumers Energy (CMS Energy)	NA	NA	NA	10.85%
Detroit Edison (DTE Energy)	NA	NA	NA	11.31%
Indiana Michigan Power (AEP)	NA	NA	NA	5.41%
Upper Peninsula Power	NA	NA	NA	0.99%
State Total	NA	NA	NA	10.72%
* The cap is set at 10% of each company's previous calendar year's weather adjusted sales.				



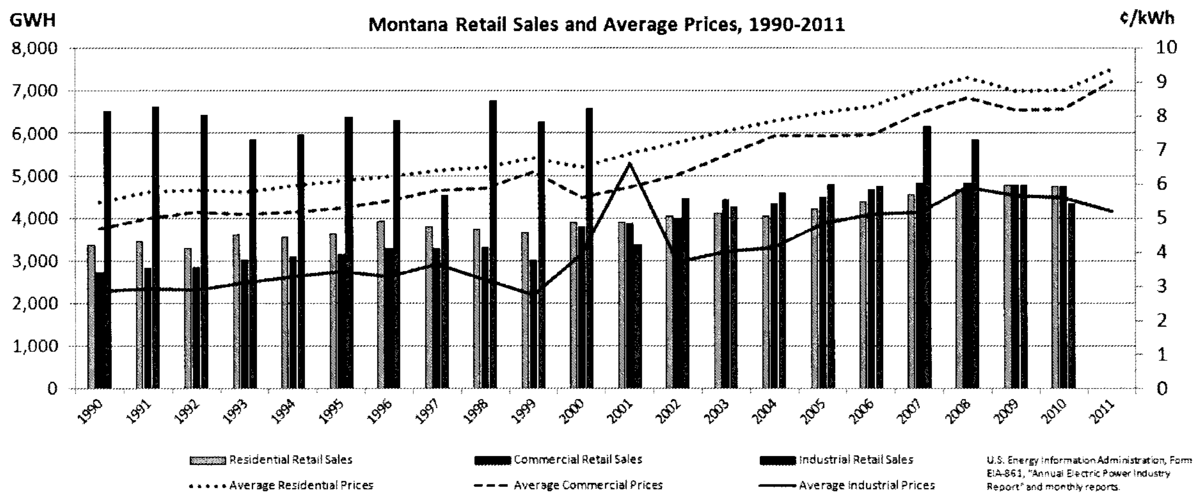
Montana

In May 1997, Montana enacted SB 390, the Electric Utility Industry Restructuring and Customer Choice Act, and gave larger consumers the ability to choose their power supplier in 1998. Under the Act, electricity suppliers must file an application and obtain a license from the Montana Public Service Commission (MPSC) before offering electricity for sale to retail customers. Legislation in 1999 (SB 406) allowed residential and small business customers to combine their buying power by forming a cooperative. The law exempts electricity suppliers from laws that prohibit cooperatives from expanding into cities of more than 3,500 persons. A standard information facts label was required for sales to residential and small commercial customers. The MPSC web site provides consumer protection information.

The MPSC decided in 2000 to delay full customer choice until 2004. Montana's investor-owned utility voluntarily divested its generation in December, 1999, and acquired default supply through competitive bidding. Additional legislation in 2001 (HB 474) altered the existing legislation and extended the transition period to July 2007. Rates were increased and the MPSC was criticized for not exerting enough control over the market participants.

Every two years, NorthWestern Energy must submit a plan detailing how it will secure electricity. The utility remains the default service provider and the MPSC conducts proceedings to consider the utility's Electricity Supply Procurement Plan. Montana-Dakota Utilities (MDU) was not required to restructure pursuant to the Electric Utility Industry Restructuring and Customer Choice Act. All aspects of electricity service provided by MDU to Montana retail customers remains fully regulated.

In September 2012, the MPSC released a report on utility planning and procurement. The draft rule suggests changes to improve consumer protections for NorthWestern Energy. Specifically, it suggests that the MPSC require all generators to compete with one another in competitive solicitations rather than be offered standard rates established by the MPSC. The report proposes updates to integrated resource planning rules.[54]



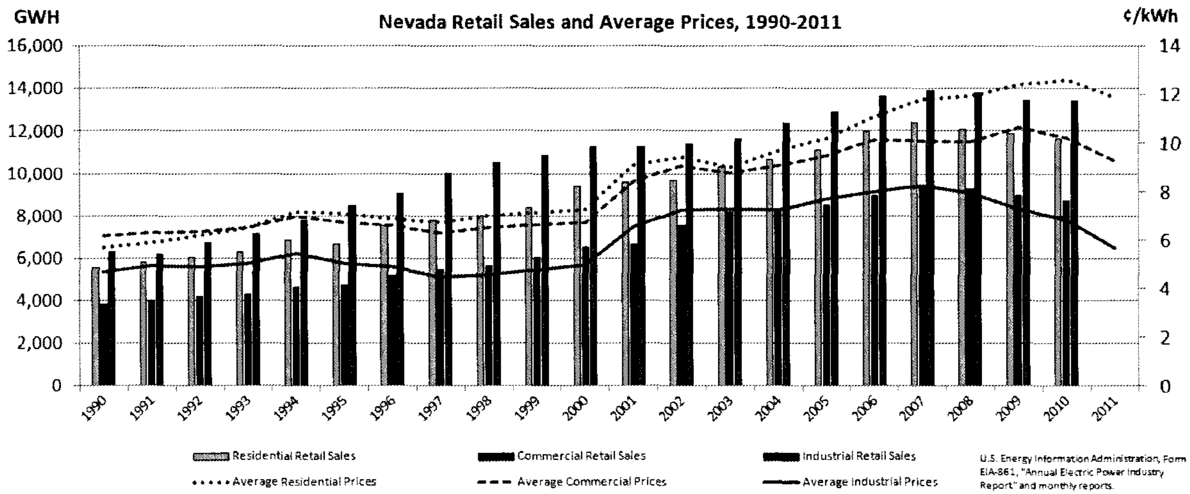
Nevada

In July 1997, Assembly Bill 366 was enacted adopting retail access. Larger customers became eligible in 2000. A settlement from a challenge by the Nevada utilities to the state's electric restructuring statue resulted in an agreement that the companies would not seek stranded cost recovery. In October 2000, the governor delayed implementation of the choice plan for residential customers until September 2001.

54 See http://psc.mt.gov/news/pr/20120925_PSC_Releases_Report_on_Utility_and_Procurement_Practices.pdf and Docket N2012.5.56 at http://www.psc.mt.gov.

In March 2001, the governor issued the Nevada Energy Protection Plan, a strategy to provide energy reliability, consumer protection, and long-term rate stability. In April 2001, AB 369 rejected retail access for small customers, returned utilities to regulation, and barred the sale of power plants before July 2003. Electric utility deregulation was halted because of high demand, low supply, and unstable prices. Also in 2001, Assembly Bill 661 revised and repealed certain provisions of Nevada's restructuring law. The law allowed each "eligible customer" (>1 MW average load) to choose an alternative supplier for power with permission from the State PUC. By March 2003, nine large commercial customers (e.g., casinos) were approved to purchase power from competitive sources.

Electric utility triennial IRPs set forth an energy supply plan and the utility is required to file an energy supply update each year regarding cost and volatility mitigation using hedging for fuel and power purchases.[55]



New Hampshire

In May 1996, legislation (HB 1392) was enacted for retail choice: statute RSA 374-F. In July 1998, Granite State Electric opened its retail load to competition. Litigation in state and federal courts tied up implementation for Public Service Company of New Hampshire (PSNH). Additional legislation (SB 472) passed in May 2000, breaking the deadlock with PSNH. PSNH did not implement customer choice until May 2001. Legislation mandated rate reductions and divestiture of generation. The other three electric distribution utilities restructured between 1998 and 2002. Competitive suppliers are welcome to provide service in restructured areas, but most residential customers receive Transition Service (available to customers who do not immediately select a supplier) or Default Power Service (safety net service which is always available).

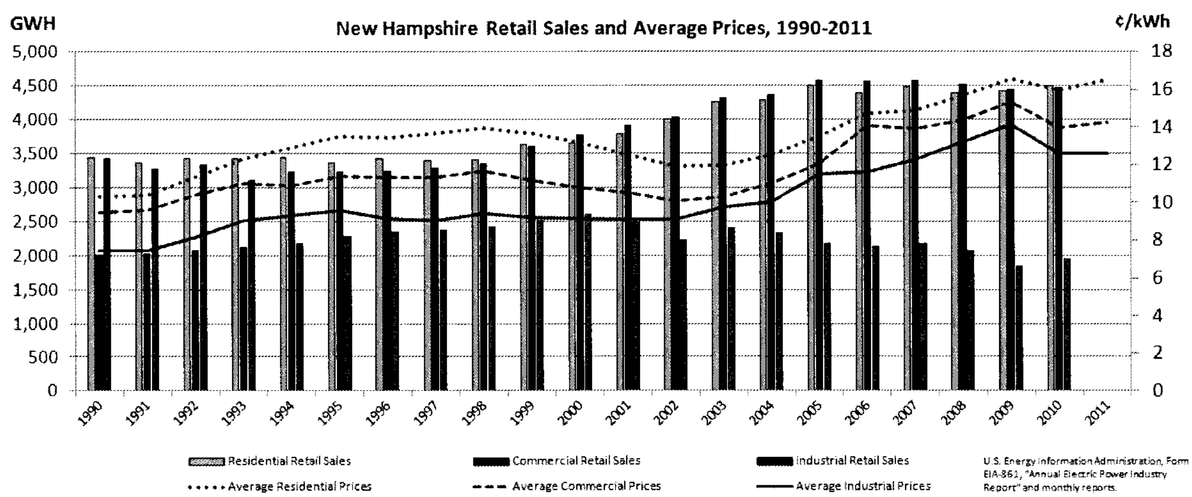
The focus in recent years in New Hampshire has been on the development of comprehensive energy efficiency programs and the effective use of a system benefits charge. In its October 2009 report to the legislature, the New Hampshire Public Utilities Commission (NHPUC) stated that the current SBC of 3.3 mills per kilowatt-hour was split between energy efficiency and low income assistance. EE funds were used for cost effective measures, market transformation and demand response. (About 3% of program revenues came from payments from the ISO-NE's Forward Capacity Market.) A January 2009 study indicated significant EE potential remains in NH.

[55] Source: http://pucweb1.state.nv.us/PDF/Admin/Biennialreport.pdf.

A September 2011 report, "Independent Study of Energy Policy Issues," discussed energy efficiency, sustainability and conservation of resources. The report was to include "The appropriate role of regulated energy utilities, providers of energy and energy efficiency, and others ... to achieve the state's energy efficiency potential for all fuels ..." However, the report made no statement about competitive retail energy markets and did not mention "competitive energy suppliers" in 350 pages.

In September 2012, Granite State Electric Company filed pursuant to a settlement in Docket No. DE 05-126 with regard to its default service rates for medium and large C&I customers and for 100% of requirements for residential and small commercial customers. The bill impact for large customers will be 19-24% and for residential customers (500 kWh) would see an increase from $60.54 to $68.75 (13.6%).[56]

New Hampshire Number of Suppliers in the Market October 2011	Residential	Nonresidential
Public Service Company of New Hampshire	7	8
Granite State Electric Company (National Grid)	7	8
Unitil Energy Systems	6	7
New Hampshire Electric Cooperative	7	8



[56] Source: http://www.puc.state.nh.us/Regulatory/Orders/2012orders/25416e.pdf.

New Jersey

In February 1999, New Jersey adopted the Electric Discount and Energy Competition Act (EDECA) (AB 10/SB 5) which authorized the New Jersey Board of Public Utilities (NJBPU) to permit competition in the electric and gas marketplace, allowed electric utilities to divest themselves of electric generation assets, allowed securitization of stranded cost recovery that could be collected through a non-bypassable wires charge, provided an immediate rate reduction of 5% (10% by year four) and established a social benefits charge for the collection of monies for demand-side management programs. Utilities were allowed to use deferred accounting for expenses that were not collected under the rate cap. All customers in New Jersey can purchase their electricity from a third party supplier rather than the local utility company. Shopping credits, the rates against which outside suppliers must compete, were set at about 5 to 6 cents per kWh, depending on the rate class and utility.

In December 2000, the NJ Supreme Court upheld a decision upholding the NJBPU restructuring and securitization orders for PSE&G. By 2002, the difference between the market cost of electricity and the mandated rates, known as "deferred balances," had grown to approximately $1 billion, largely because competition in New Jersey had not occurred as anticipated. A task force on deferred balances was convened by the governor.

Under EDECA, there was a requirement for a provider of last resource for basic generation service (BGS). BGS has been provided by the electric utilities since 2002-03. In February 2006, rate increases of 12% to 13.7% were announced as a result of the 2006 auction for BGS. The 2008 auction covers hourly-priced service for Commercial and Industrial Energy Pricing (CIEP) Customers for one year beginning June 1, 2008. The fixed price customer auction is for a supply period of three years, with approximately one-third of each utility's total load requirements acquired each year. The winning fixed price contracts averaged 11.15 to 12.05 cents per kWh. These supplies replace the 2005 contracts and will result in residential customer price increases of 11.5% to 17.3% in the various service areas.

In late 2009, the 2010 auction is underway. In the JCP&L service area, for example, there is a transition toward more tranches of approximately 100 MW each. There will be 18 tranches this year, but by the 2012 auction there will be 53 tranches. The average BGS price next year will include power procured in the 2008, 2009 and 2010 auctions, with 2010 auction fixed-price contracts replacing those from 2007.

The social benefits charge includes incentives for energy efficiency programs and renewable resource programs. The state adopted a renewable portfolio standard that includes a solar set aside (2.12% solar capacity by 2020). New Jersey has almost 55 MW of solar capacity and uses Solar Renewable Energy Certificate (SREC) trading to help finance solar projects. In 2007, New Jersey adopted the Global Warming Response Act (A3301) which set greenhouse gas emissions targets. The state has programs implemented by investor-owned utilities that are transitioning to third-party program management.

In July 2012, Governor Christie signed legislation to "strengthen and encourage the continued growth of New Jersey's solar industry, while protecting ratepayers from increased costs." S-1925 modifies the "solar alternate compliance payments" to lower costs by an approximately $1 billion over 15 years. The fixed megawatt requirement was changed to a percentage of overall energy usage, rising and falling with overall energy use. Over 1% of electricity in NJ now comes from solar energy.[57]

In February 2012, the NJBPU approved the state's eleventh annual electricity auction for Basic Generation Service (BGS). This year's auction result will reduce costs for residential customers by 1-6.4%. As is the state's practice, this auction will be used to satisfy one-third of the state's residential and

[57] Source: http://nj.gov/bpu/pdf/announcements/2012/20120723.pdf.

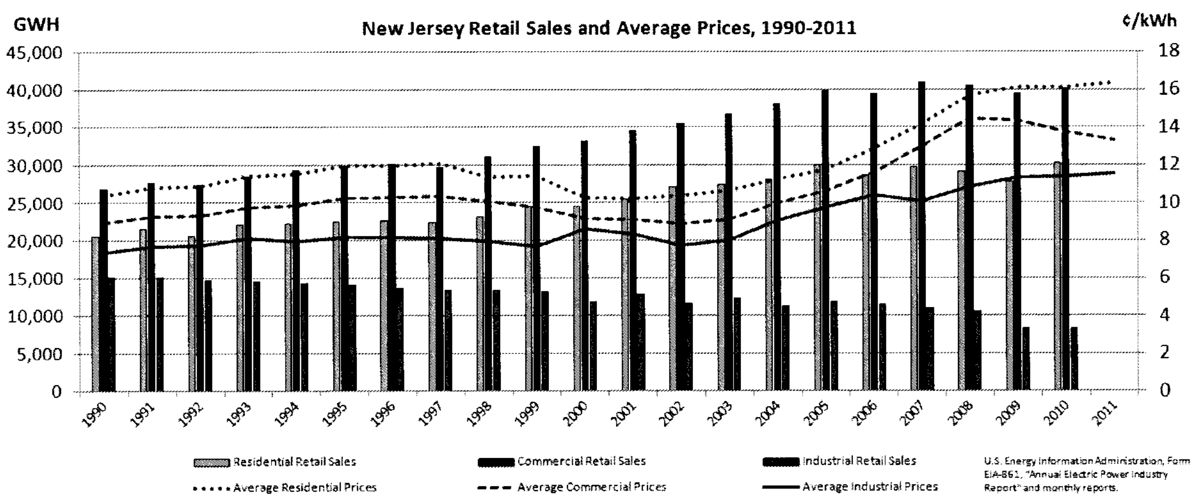
small business electric demand over the next three years. The remaining two-thirds was acquired in prior year auctions, 2010 and 2011. The state's four electric distribution utilities do not earn a profit on the cost of the generation. PJM's capacity market price (the Reliability Pricing Model or RPM) has increased the capacity portion of the auction, and the NJBPU is advocating before PJM to address what it considers inequities of the RPM. For larger customers, the "Commercial and Industrial Energy Pricing" (CIEP) price is for C&I customers not served by third-party suppliers. As of August 2012, 86.7% of the large C&I load was provided through individual competitive contracts with third-party suppliers. The CIEP customers access supply in the hourly energy market.[58]

New Jersey Number of Suppliers and Products in the Market October 2012	Residential Suppliers	Residential Products	Nonresidential
Atlantic City Electric Company	37	37	52
Jersey Central Power & Light (JCP&L)	43	43	57
Public Service Electric and Gas Company (PSE&G)	43	43	67
Rockland Electric Company	25	25	38

Residential customer switching increased from 2.1% in 2010 to 8.9% in 2011. Small C&I customer switching (< 500 kW) rose in New Jersey from nearly 39.1% in 2010 to 47.7% in 2011.

[58] Source: http://www.bpu.state.nj.us/bpu/newsroom/BGS2012release020912.pdf.

New Jersey Percent Switching August 2012	Percent of Residential Customers	Percent of C&I Load < 500 kW (MW)	Percent of C&I Load >500 kW (MW)	Percent of Total Load (MW)
Atlantic City Electric Company	16.9%	61.7%	82.3%	40.4%
Jersey Central Power & Light (JCP&L) (First Energy Corp.)	17.3%	62.6%	85.2%	44.9%
Public Service Electric and Gas Company (PSE&G)	12.2%	51.4%	89.3%	44.5%
Rockland Electric Company	9.2%	47.8%	90.5%	34.4%
State Total	14.3%	55.6%	87.6%	43.9%



New York

The New York Public Service Commission (not the state legislature) ordered restructuring of the electric utilities in May 1996. The NYPSC implemented a plan for restructuring by approving utility plans in 1997 and 1998. The entire market is now open. Residential consumers can elect to receive service through the regulated tariff of the local electric distribution company, or through an aggregation program, or directly from a competitive retailer known in New York as an energy service company (ESCO). Switching rates appear in the table below. Although New York does not use the term "default service," a majority of residential consumers receive electric service through the regulated tariff of the local electric distribution utility.

The NYPSC played a key role in the development of national uniform business practices. The NYPSC approved standards governing the electronic exchange of routine business information and data among electricity and natural gas service providers in New York in June 2001. The NYPSC also issued an order to establish uniform retail access billing and payment processing practices that facilitates a single bill option for customers.

In 2002, New York made important progress in enhancing retail competition in the areas of customer protection, information disclosure, and demand responsiveness. Under a 2002 law, the customers of ESCO receive the same protections as those of the utilities. The ESCOs lobbied for these provisions because they now have a greater chance of getting payment from customers, and customers have equal protection from all ESCOs and utilities. Electricity consumers now receive information in electric bills about the types of generating fuels and related air emissions. These steps encourage green power offerings in New York. ESCOs are participating in demand response programs. Electricity use curtailment competes directly with generation during periods of high electricity consumption.

Competitive electric metering and electric meter data services are permitted in New York for certain customers. New York is considering the deployment of an advanced metering infrastructure to realize the State's energy policy goals for time-differentiated pricing and energy efficiency.

In May 2007, the NYPSC initiated a proceeding (Case 07-M-0548) to investigate an Energy Efficiency Portfolio Standard (similar to a renewable resources portfolio standard) to advance the Governor's goal of 15% reduction in electricity use by 2015. The existing systems benefit charge is used, in part, to fund energy efficiency incentive programs administered by the New York State Energy Research and Development Administration (NYSERDA). In March 2012, an order established an incentive mechanism for utilities administering the Energy Efficiency Portfolio Standard (EEPS). This revised the current mechanism and runs from 2012-15.[59]

The New York PSC is considering a requirement for a consumer disclosure statement, timelier dispute resolution and training of retailer representatives. In New York, nearly three-quarters of the industrial consumers and over one-half the commercial customers are purchasing power from competitive suppliers. Numerous electric rate offerings are available including guaranteed savings programs, fixed and variable prices, and green power. New York benefits from an intrastate independent system operator with advanced policies regarding demand response. These policies allow retail customers to participate directly in the bulk power market and to provide services needed for the operation of the transmission system. Like Texas, New York is fine tuning its market rules. The PSC has recently required a number of additional consumer protection provisions. New York is working on timelier dispute resolution and training of retailer representatives. New York also has in place an extensive set of programs that encourage energy efficiency, renewable resources and on-site generation, including combined heat and power. The NYPSC has adopted modifications to the Uniform Business Practices (UBP) and an ESCO Consumers Bill of Rights (ECBR) to provide to prospective residential customers and any customers marketed to through door-to-door sales.[60]

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[59] Source: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={93BC3B51-B317-461C-876E-0ED5962DBBA9}.

[60] Source: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B328751D7-8DE4-4D5E-852F-60A69A2134B5%7D.

In Case 10–E–0285, Proceeding on Motion of the Commission to Consider Regulatory Policies Regarding Smart Grid Systems and the Modernization of the Electric Grid, the commission decided (August 2011) not to prescribe a particular end-state or deployment schedule for smart grid. The policy framework—addressing customer data privacy/access, interoperability/cyber-security standards and communications—enables utilities to avail themselves of the opportunities in this area.[61]

New York Number of Suppliers and Products in the Market November 2012	Residential Suppliers	Residential Products	Nonresidential
Central Hudson	18	21	34
Consolidated Edison	46	88	55
Niagara Mohawk (National Grid)	30	47	47
New York State Electric & Gas	30	41	41
Orange & Rockland Utilities	14	14	29
Rochester Gas & Electric	31	41	43
* Registered providers			

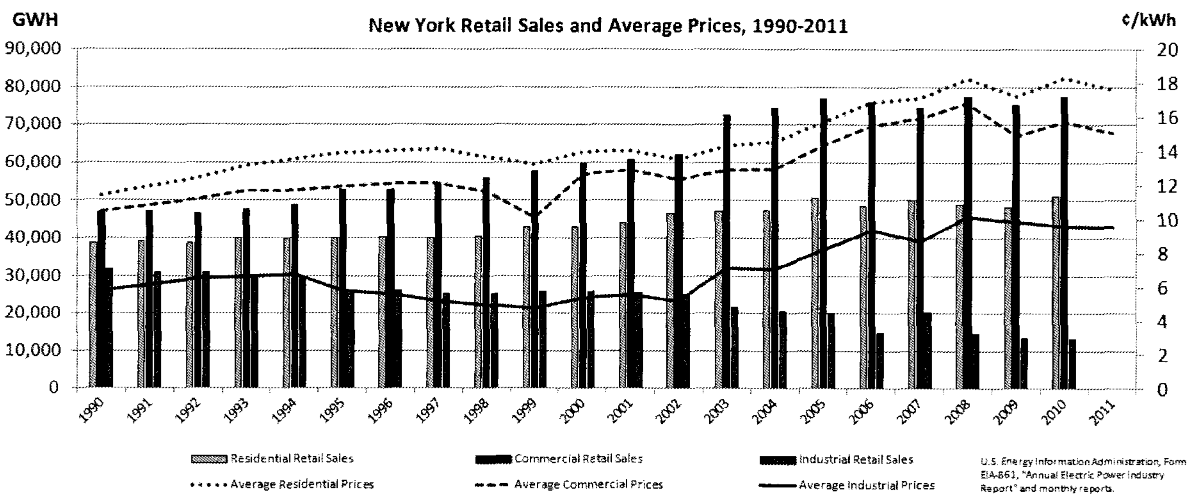
Switching rates continues upward by several percentage points in each category in New York, reaching 48.2% of retail sales in the state, and over 80% of electricity sales to largest industrial customers in the urban service territories.

[61] Source: http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=10-E-0285.

New York Percent Switching March 2012	Percent of Residential Customers	Percent of Small Nonresidential Sales (MWH)	Percent of Large Nonresidential TOU Sales (MWH)	Percent of Total Sales (MWH)
Central Hudson Gas & Electric	10.0%	50.5%	91.7%	44.0%
Consolidated Edison	23.2%	62.2%	90.4%	55.3%
National Grid*	20.1%	67.8%	67.7%	50.1%
New York State Electric & Gas	25.7%	64.3%	88.2%	54.4%
Orange & Rockland Utilities	37.1%	81.6%	46.9%	57.4%
Rochester Gas & Electric	25.3%	71.2%	90.8%	63.9%
State Total	22.7%	64.4%	81.3%	53.7%

Does not include Long Island Power Authority and municipalities that purchase from the New York Power Authority.

* Formerly Niagara Mohawk



Ohio

Legislation (Senate Bill 3) was enacted in July 1999. On January 1, 2001, this legislation freed Ohio's utility-owned generation from economic regulation, caused utilities to unbundle rates into generation, transmission and distribution components, and initiated retail customer choice of generation suppliers. In April 2008, Ohio Senate Bill 221 modified but did not repeal Senate Bill 3. All aspects of retail customer choice were preserved under SB221, including process mechanics, certification of suppliers, etc.

SB3 required a 5% residential rate reduction and a rate freeze for 5 years to allow a transition to competitive markets. The legislation contained consumer protections, environmental provisions, and labor protections; empowered the Public Utilities Commission of Ohio (PUCO) to determine the amount and recovery period for stranded costs; required that property taxes utilities paid would be replaced with an excise tax on consumer bills; and required that utilities spend $30 million over six years on consumer education programs. Ohio's law allowed communities to aggregate and strengthen their bargaining power in establishing electricity prices. Under aggregation, residents received a postcard in the mail notifying them of their new electricity choice, and those who choose to opt out and continue buying power from their current supplier had 21 days to act. Ohio was a model for aggregation with over 800,000 consumers receiving power in that manner in 2004-5.

As the end of the five-year transition approached, the PUCO was concerned that the market had not developed sufficiently to quickly move to market based rates. PUCO adopted rate stabilization plans of three to five years duration for each utility, which went into effect in 2006.

In May 2008, Ohio enacted electric industry legislation (SB 221) containing energy efficiency requirements for investor-owned utilities and establishing the Ohio Alternative Energy Portfolio Standard (AEPS) which set 2025 goals for renewable resources and advanced resources. SB221 fundamentally changed the way standard service offer (SSO) rates were set. Electric distribution utilities were required to choose one of two competitive approaches. They may offer SSO service based on an "electric security plan" (ESP), or based on a "market rate offer" (MRO) that is determined through competitive wholesale procurement. The focus is on disciplining price either by empowering the electric utilities to fully compete in the retail marketplace via the ESP, or by enabling them to channel wholesale competitive prices to retail SSO customers via the MRO.

Under the ESP option the utility proposes a retail rate for some term (generally three years) along with a comprehensive package of terms and conditions. The ESP itself is a competitive offering. There is no requirement or expectation that the ESP should be cost based. The proposed ESP is subject to a full hearing process. In order to be approved the Commission must determine that the rate plan is better in the aggregate than a market rate option. If approved by the Commission the ESP retail price offer then serves as a price cap with fuel cost adjustment allowed so long as the cap is not exceeded. Retail choice serves as a check against ESP SSO prices being too high. A high rate will invite retail competitors to enter the market and undercut the utility's price. This has happened over the last two years during which customer switching has gone from virtually nil at the outset of the first round of ESPs to 42% of sales in the commercial and industrial sector, and to 22% of sales for the residential sector on a statewide basis in June of 2010.

If the utility elects the MRO approach, then SSO rates will be based upon some wholesale market procurement mechanism such as a declining clock auction. The PUCO must approve the procurement mechanism and the result. The PUCO has approved such procurements and the resulting SSO prices, which are in effect for some utilities today. In addition to changing the way in which SSO rates are established, SB221 promulgated portfolio standards for renewable and advanced generation technologies, and portfolio standards for energy efficiency gains and peak demand reductions. These provisions address classic market failures for providing innovation and demand side management. Renewable benchmarks (mandated levels) apply to both utilities and competitors alike, while distribution utilities are responsible for reducing peak load and energy intensity of all wires customers.

Certain safeguards are specified in SB221, such as a prohibition against including generation costs in unbundled distribution rates. In addition, the law includes a new safeguard – the Significantly Excessive Earnings Test. This test applies at the enterprise level to serve as a check against all business segments, including generation, transmission and distribution, charging excessive rates. If the commission finds that earnings are excessive, it can end an ESP and take necessary measures to smooth the transition to another arrangement.

AEP filed an ESP application in January 2011 and in December 2011 the PUCO modified and approved a September 2011 agreement. Under the agreement, AEP would have transitioned to a market-based generation rate structure between January 2012 and May 2016. In February 2012, the PUCO revoked the ESP and directed AEP to file a modified ESP application. In March 2012, AEP-Ohio filed a modified ESP application that proposed to separate generation assets from distribution and transmission assets. In August 2012, the PUCO modified and approved AEP's ESP application. The PUCO ruling allows AEP to transition to a fully competitive market based structure by June 1, 2015, with base generation rates frozen through May 2015. AEP will auction increasing amounts of its standard service offer beginning in 2013. By June 2014, 60 percent will be provided by competitive auctions, and by January 2015 it will be 100% auctioned. A 12% rate increase cap was set during the term of the ESP.[62]

Between 2008 and 2010, the number of residential consumers participating in aggregation programs rose from 202,000 to 910,000. Nearly one quarter of the state's residential consumers participate in an aggregation program. Just over one million residential consumers have switched, and 91% of these participate through aggregation. Residential switching in three utility territories of First Energy Corp.—Cleveland Electric Illuminating, Ohio Edison, and Toledo Edison—increased dramatically, while residential switching in the Duke Energy Ohio area doubled in the past 12 months. Commercial and industrial switching increased in these areas and Dayton Power and Light, rising to more than a third of all state-wide sales. Almost all of the industrial switching was by individual companies, while 74% of commercial switching was the result of an aggregation program. The PUCO web site provides "apples to apples" price comparisons for natural gas and electricity. One region – Duke Energy Ohio – displays two price offers as alternatives to default service.

In 2012, legislation (S.B. 289 and S.B. 315) added new technologies to the list of eligible Renewable Energy Resources and Advanced Energy Resources. In July 2012, the PUCO created Docket 12-2156-EL-ORD to implement the changes.

On December 12, 2012, the PUCO initiated an investigation into its retail electric market. The PUCO "seeks comments addressing questions about market design and corporate separation with a focus on ensuring that no undue barriers exist that prevent a fully competitive market from operating."[63] PUCO case number 12-3151-EL-COI sets forth market design questions, labeled (a) through (k), and corporate separation questions, labeled (a) through (h). Comments are due on January 30, 2013.

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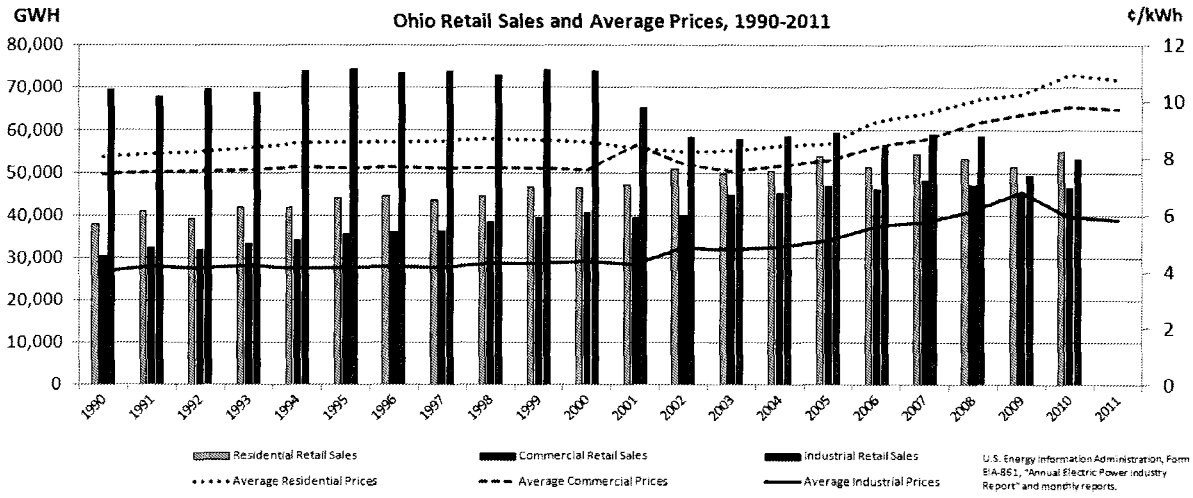
62 Source: http://www.puco.ohio.gov/puco/index.cfm/consumer-information/consumer-topics/aep-ohioe28099s-electric-security-plan/.

63 "PUCO initiates electric retail market investigation," press release, PUC of Ohio, December 12, 2012.

Ohio Number of Suppliers and Products in the Market November 2012	Residential Suppliers	Residential Products	Nonresidential*
First Energy Corp.	7	9	67
Duke Energy Ohio	17	27	67
Dayton Power and Light Company (DP&L)	10	17	67
Ohio Power Company (American Electric Power)	11	19	67
* Licensed marketers			

Ohio Percent Switching June 2012	Percent of Residential Customers*	Percent of Commercial Sales (MWH)	Percent of Industrial Sales (MWH)	Percent of Total Sales (MWH)
Cleveland Electric Illuminating Company (First Energy Corp.)	75.52%	89.48%	88.39%	85.13%
Duke Energy Ohio	33.72%	81.24%	95.64%	70.14%
American Electric Power Ohio (Columbus Southern Power Company and Ohio Power Company)	14.02%	49.04%	36.56%	34.12%
Dayton Power and Light Company	16.42%	72.91%	93.51%	58.57%
Ohio Edison Company (First Energy Corp)	68.17%	87.00%	80.53%	77.37%
Toledo Edison Company (First Energy Corp.)	67.42%	86.69%	75.61%	75.72%
State Total	42.19%	71.54%	66.61%	60.15 %
* Residential switching is predominately through opt out aggregation.				



Oregon

In late 1997 Portland General Electric proposed a pilot project to allow customers to select a generation supplier. A few months later, PacifiCorp proposed a pilot that would allow customers to select from a portfolio of pricing and resource options, including a Cost-of-Service (COS) rate called the Standard Offer Service. These pilots set the stage for SB 1149, the restructuring bill, enacted in July 1999. SB 1149 offered energy supplier choice to nonresidential customers by October 2001. Residential customers would be offered a portfolio of options including green power. In August 2001, two new bills amended the restructuring law (delaying the implementation date to March 2002 for nonresidential customers) and gave the Oregon PUC new powers to balance the interests of utility shareholder with electric customers.

Under the portfolio approach, residential customers can choose among renewable energy pricing plans that rely on existing geothermal and wind sources, or contribute to salmon habitat restoration, or purchase new wind resources. As of April 2008, approximately 7.9% of residential customers in Oregon were served through one of these options (106,366 of these options have been selected, with some double counting as one customer selects more than one option).

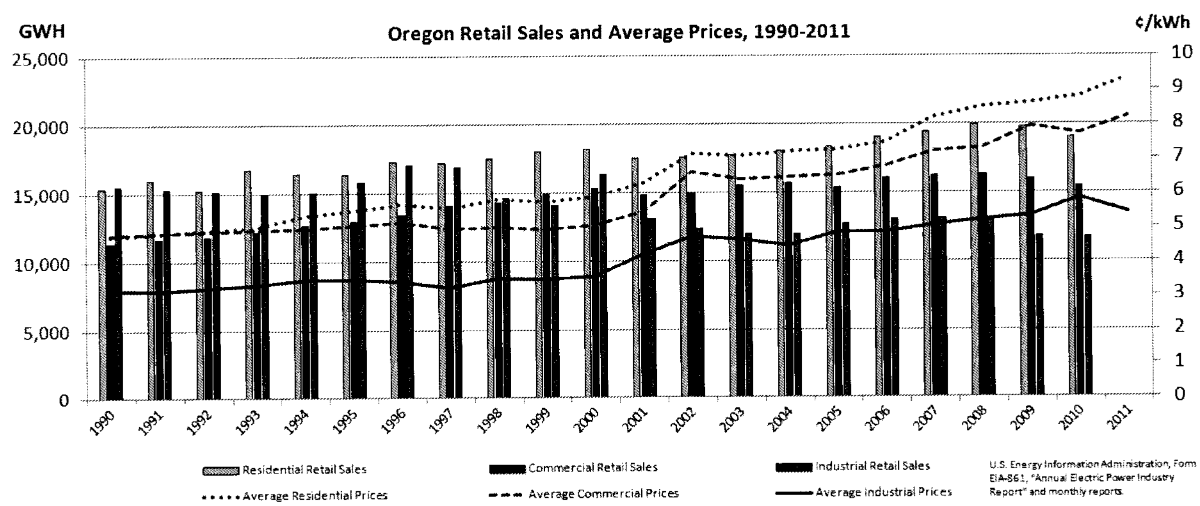
The Oregon PUC has conducted rate cases for both major utilities to resolve default service and stranded cost issues, and put in place programs for codes of conduct. At first, the transition charge was variable, and large customers were required to commit to not return to standard offer service for five years. There were also limitations with respect to when switching could occur. As a result, no switching occurred at first. By late 2002, the transition charge had been stabilized. Direct access-eligible (nonresidential) customers may choose service from an alternative electric service supplier for 1, 3, 4, in some cases a 5 year period.

Like many other states, Oregon is engaged in a consideration of climate change issues. Under a proposed rule, utilities would be required to handle CO2 risk by examining values that range from zero dollars to $40 per ton.

In January 2012, PGE, industrial customers, and retail suppliers entered into a stipulation to eliminate the 3rd and 4th quarter shopping windows (retaining the annual and second quarter window). Parties asked for a statewide investigation of direct access. Parties also asked the PUC to consider wholesale-based open access program for customers of 10 MW or greater.[64] In March 2012, the PUC opened an investigation into issues relating to direct access (Docket Order No. 12-057). Stakeholders comments were filed in September 2012.[65]

Oregon Number of Suppliers in the Market July 2012	Residential	Nonresidential
State	0	3

Oregon Percent Switching July 2012	Percent of Residential Customers	Percent of Nonresidential Load
Portland General Electric	0%	10.7%
PP&L (PacifiCorp)	0%	1.4%
State Total	0%	6%



[64] Source: http://apps.puc.state.or.us/orders/2012ords/12-057.pdf.

[65] Source: http://apps.puc.state.or.us/edockets/pdfs/785991081142145.pdf.

Pennsylvania

The Electricity Generation Customer Choice and Competition Act (HB 1509) was enacted in December 1996. A pilot phase began in late 1997, and then a phase-in allowed one-third of consumers to join each year. Different utilities received different treatment with respect to initial rate decreases and the size of stranded cost recovery and competitive transition charge. A shopping credit was advertised to allow customers to compare competitive rates with the "price to compare" or "shopping credit."

After several years the Pennsylvania Public Utility Commission (PUC) approved a change in default service rates because some consumers were gaming the system by returning to the utility rate for the summer when competitive prices typically rose, making default service rates more attractive. Under the revised system, utilities were able to impose switching restrictions and exit fees (a market based penalty called the "generation rate adjustment") to discourage this gaming.

Competitive Default Service was authorized for 2001 for PECO Energy customers and allowed customers to be assigned to a new supplier, New Power Company. PECO retained the customers after this non-utility provider left the state. Several other utilities had similar experiences with price caps in place. In March 2002, Duquesne Light became the first Pennsylvania utility to send bills without a competitive transition charge. Duquesne was no longer subject to the rate cap. Shopping credits rise as the CTC decreases, and thus customers have a greater opportunity to find suppliers who can sell below the default service price. Most residential customer rates were capped through 2010.

Load serving entities are required to satisfy the state's Alternative Energy Portfolio Standard which will rise to 18% of load over time. While the state as a whole is not using advanced metering, the PPL Electric service area has 100% penetration of AMI which could support competitive offers in the future. Pennsylvania committed $5 million dollars for consumer education, including education relating to retail choice and conservation of energy.

Like several other states, Pennsylvania is pursuing additional energy efficiency programs while aggressively fostering retail market development. In October 2008, HB 2200 became law as Act 129 of 2008. The Act expanded the PUC's responsibilities regarding the reduction of energy consumption and demand. The PUC must adopt an Energy Efficiency and Conservation Program, conduct rigorous evaluation of the program and analyze the costs and benefits subject to the total resource cost test. In the future the PUC is required to address electric distribution utility and default service provider responsibilities, conservation service providers, smart meter technology, time-of-use rates, real-time pricing plans, default service procurement, market misconduct, alternative energy sources, and cost recovery. Meetings in September and October 2009 addressed the draft audit plan for the statewide program. The PUC approved default service plans for PPL, PECO, and MetEd/Penelec, which include market-reflective pricing, purchase of receivables, and other tools to foster retail market development.

Pennsylvania initiated a major new project by order entered on April 29, 2011 to "assess the status of the current retail market and explore what changes need to be made to allow customers to best realize the benefits of competition." (*Investigation of Pennsylvania's Retail Electricity Market*, I-2011-2237952.) The Office of Competitive Market Oversight (OCMO) is studying how best to deal with issues relevant to the success of the retail market, including the phase out or elimination of default service. "The commission's goal is to make Pennsylvania the most competitive electricity market in the country," said PUC Chairman Robert Powelson. "I believe the order being voted on today provides an excellent roadmap for the commission's next steps toward achieving that goal."[66] The PUC provides regular updates of its Retail Markets Investigation on its website.[67]

Phase I of the project included presentations to the commission in a June 2011 *en banc* hearing, followed by comments in response to eleven questions regarding barriers to competition, the role of local distribution companies, and the design, delivery and future of default service. On July 28, 2011, the Commission issued and order and opinion and began Phase II of the project. The Commission concluded that Pennsylvania's retail market for electricity requires change in order to bring about the robust competitive market envisioned by the Electricity Generation Customer Choice and Competition Act in 1996. Phase II will be conducted by the OCMO to address the long range steps and structural changes to default service. OCMO will conduct technical conferences and present recommendations to the Commission. In its Phase I order, the commission rejected the notion that all consumers are participating in competitive electric supply markets based on the status of the wholesale market. The Commission further emphasized the need to make near-term reforms to market structure to address information access and switching; to make near-term and long-term changes to default service, and to address consumer education.

Significant progress has been made. In its March 2, 2012 final order, the commission adopted an Intermediate Work Plan.[68] The PUC ordered utilities to provide educational materials (a tri-fold flyer) to consumers in May 2012. Electric distribution utilities must institute a new/moving customer referral program by the end of 2012. The PAPowerSwitch.com website to will be expanded to provide small business customers with comparative pricing data. Call center scripts for new and moving customers will be developed and consistently used by electric distribution utilities and suppliers. Electric distribution utilities shall include price-to-compare information on electric bills. Sample bills will be made available on utility website to show a sample bill with default service and a sample bill with service by a competitive supplier. Parties will work on a standard letter of authorization to provide access to customer data and information and customer care service. These activities resulted in a big jump in the number of visits of the PAPowerSwitch.com website.[69]

In its September 27, 2012 secretarial letter, the PA PUC sets forth a Retail Markets Initiative "End State Proposal." It is envisioned that utilities will remain in the default service provider role, and offer a default service product that will become more efficient in the coming years. Medium and large C&I customers would pay hourly locational marginal prices. Other customers (C&I customers lacking advanced metering capabilities and residential consumers) will move to 90-day full requirements products that are acquired in quarterly auctions. This will go into effect in mid-2015. Utilities will also remain in the metering role. By October 2013, there will be a plan to allow switching between meter reads. By mid-2013, a plan will be developed to allow competitive parties to offer consolidated billing for power supply and distribution services.[70]

In February 2012, Governor Corbett signed Act 11 of 2012 amending Title 66 (Public Utilities) of Pennsylvania Consolidated Statutes. Utilities can petition the commission for approval to implement a

[66] Restructuring Today, July 29, 2011.

[67] See: http://www.puc.state.pa.us/utility_industry/electricity/retail_markets_investigation.aspx

[68] See: http://www.puc.state.pa.us/electric/Retail_Electricity_Market.aspx

[69] Communication with the staff of the Pennsylvania Public Utility Commission.

[70] Secretarial Letter, Retail Markets Investigation, Docket No. I-2011-2237952,

Distribution System Improvement Charge (DSIC). This gives utilities an additional rate mechanism to recover the capitalized utility infrastructure costs.[71]

Pennsylvania Number of Suppliers and Products in the Market November 2012	Residential Suppliers	Residential Products	Nonresidential
West Penn Power (Allegheny Power)	11	15	34
Duquesne Light	26	38	47
MetEd (First Energy Corp.)	19	28	41
Penelec (First Energy Corp.)	12	17	35
PECO Energy	47	59	56
Penn Power	4	4	21
PPL Electric	42	63	56
UGI	0	0	13

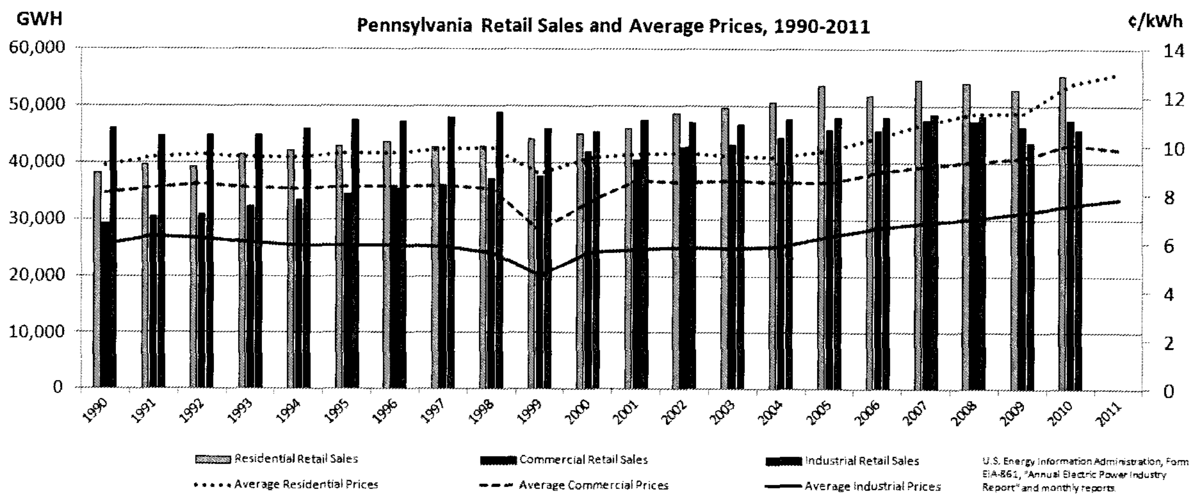
The Duquesne Light and Penn Power service areas maintained high rates of switching this past year (52.7% and 59.8%, respectively), while customers in the UGI and PPL Electric service areas increased switching from less than 1% to 15.2% and 63.5%, respectively.

[71] Source: http://www.puc.state.pa.us/filing_resources/issues_laws_regulations/system_improvement_charges_act_11_.aspx.

Pennsylvania Percent Switching in Utility Distribution Regions October 2012	Percent of Residential Customers	Percent of Commercial Load (MW)	Percent of Industrial Load (MW)	Percent of Total Load (MW)
Duquesne Light	41.5%	72.7%	94.4%	67.9%
MetEd*	24.7%	65.9%	96.9%	67.1%
PECO Energy	27.3%	66.6%	95.6%	59.9%
Penelec*	27.4%	65.8%	93.6%	69.3%
Penn Power	26.4%	69.8%	98.1%	65.2%
PPL	41.1%	90.1%	95.4%	71.5%
UGI	0%	38.3%	76.5%	20.7%
West Penn Power**	23.2%	62.3%	93%	61.9%
State Total	31.5%	73.3%	95.0%	65.5%

* Formerly reported as MetEd/Penelec

** Formerly reported as Allegheny Power

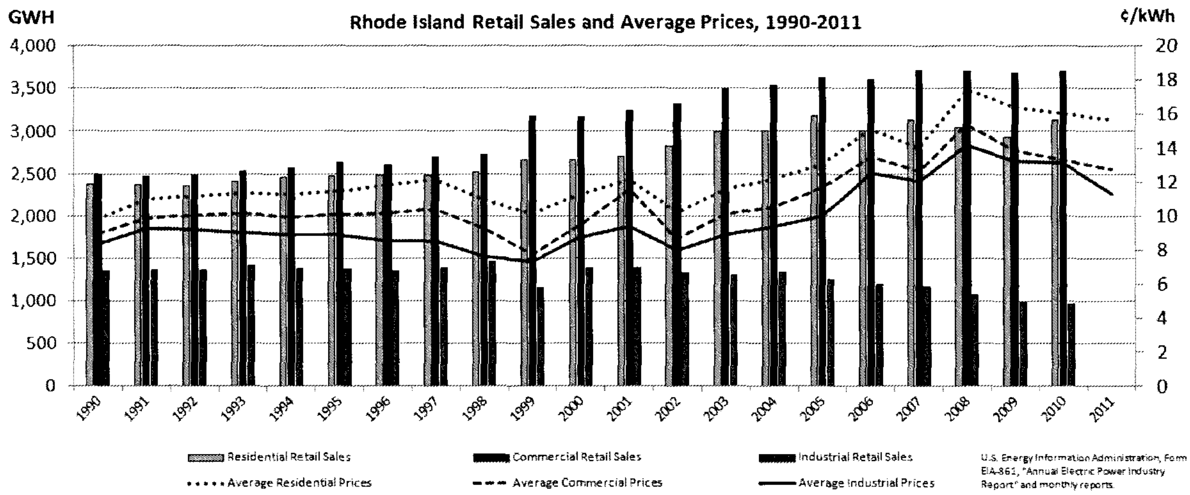


Rhode Island

In August 1996, legislation (HB 8124) passed, and Rhode Island became the first state to begin phase-in of statewide retail wheeling in July 1997 for industrial customers. Residential consumers were guaranteed retail access by July 1998. Very few customers switched because of the low standard offer service rate. SB 881, enacted May 2001, enabled non-residential customers enrolled in last resort service the option to return to standard offer service. These customers are required to sign a 2-year agreement prohibiting self-generation during non-emergency conditions and prohibiting remarketing of purchased electricity.

In February 2012, National Grid filed the proposed Standard Offer Service (SOS) and RES Procurement plans for 2013. National Grid proposed to continue to procure SOS through a combination of full requirements service contracts and spot purchases, with the mix of long-term and spot to depend on the customer group. The RI PUC issued an order in August 2012, stating that there is "no evidence in the record that the electricity supply market has changed in a way that would necessitate a change."[72]

Rhode Island Percent Switching June 2012	Percent of All Customers	Percent of All Load (MWH)
State Total	3.2%*	36.4*
* Estimate based on data filed by National Grid.		



Texas

Texas developed a strong independent power industry in the 1980s as a result of growth in industrial cogeneration. The implementation of PURPA under Texas law resulted in rapid cogeneration project development. The open-access transmission regime that began in 1996 is operated by the Electric Reliability Council of Texas (ERCOT), subject to the jurisdiction of the Public Utility Commission of Texas (PUCT). Legislation for retail choice was enacted in 1999 (SB 7), which set out to initiate competition

[72] Source: http://www.ripuc.org/eventsactions/docket/4315page.html.

with a pilot project in mid 2001, to be followed with a mandatory 6% rate cut and full customer choice implementation in January 2002. During 2001 pilot project enrollment, commercial and industrial classes exceeded the 5% participation limit, resulting in a lottery to determine which customers would be eligible. The pilot project started in the summer of 2001. Full retail choice began on January 1, 2002 for customers of investor-owned utilities within the ERCOT region of Texas. During the first eighteen months of competition there were some transitional issues primarily associated with customer switching and new service hookups, but these problems were resolved and the market moved forward.

Electric cooperative utilities and municipal electric utilities may decide whether and when to opt in to retail competition. Outside of ERCOT, but within Texas, the statute gives the PUCT authority to help determine when retail choice can be implemented. The customers of El Paso Electric Company, Entergy Texas (southeast Texas), AEP's Southwest Electric Power Company (northeast Texas) and Xcel's Southwest Public Service Company (Panhandle region) do not have retail choice. These decisions depend on the appropriate development of competitive wholesale markets. Approximately 36% of retail electric sales in Texas are ineligible because they are in service territories outside of ERCOT or provided by municipal electric utilities or electric cooperative utilities.

In most of Texas, ERCOT operates the high-voltage transmission wires, manages congestion, ensures that ancillary services are adequate, provides a market platform for wholesale competition, performs settlement, administers retail customer switching and administers the renewable energy certificate program. ERCOT's zonal congestion management system was replaced with a nodal pricing and congestion management system in 2010.

SB 7 required each investor-owned utility within ERCOT to separate business functions. Affiliated companies could provide retail electric service to customers, own and operate generating units, and provide transmission and distribution service. The law also required electric distribution utilities (which remain price regulated) to refrain from retail marketing or the provision of competitive services. Texas has achieved a high degree of structural separation that has reduced the incentives for corporate integration, and reduced the concerns of competitors that the incumbent utility holds unfair competitive advantage.

At the opening of the market, residential and small commercial customers could either remain a customer of the competitive retail electric provider (REP) affiliated with the incumbent utility, or switch to an alternative REP. Those who remained with the utility affiliate paid a regulated default service rate (this was called the "price-to-beat" or PTB) that could be adjusted up to twice a year. Default service was scheduled to last for five years, and ended in December 2006. Provider of last resort (POLR) is a separate service primarily for customers whose provider goes out of business. POLR service is the only remaining fully-regulated electricity rate in the areas of Texas open for retail choice. POLR price is determined by a PUCT-approved formula based on short-term wholesale energy costs.

In addition to a supportive wholesale market structure, the success of Texas' renewable portfolio standard (RPS) and renewable energy certificate (REC) trading program has provided the impetus (along with a federal renewable energy tax credit) for rapid growth in wind turbine generation. Texas leads the nation in wind turbine capacity (10,223 MW of new capacity as of September 2011) and wind energy production (8% of energy produced in ERCOT in 2010).

One of the issues related to wind power is transmission line capacity necessary to move wind energy from west Texas, where it is primarily produced, toward the population centers in central and southeast Texas. Competitive Renewable Energy Zones (CREZ) with the greatest potential for renewable energy development were identified in west Texas. In 2008, the PUCT selected its preferred plan to designate and expedite the certification process to build over 18,000 MW of transmission capacity to these zones.

In 2005, six REPs defaulted, and in 2008, five more went out of business, forcing some customers to take POLR service until they selected a new REP. Some of the failed REPs did not pay their energy bills to ERCOT, totaling more than $11 million in losses in the two years. In response to these and other issues, the PUCT opened four new projects to consider market rule revisions. In Project No. 35767, Rulemaking Relating to Certification of Retail Electric Providers, the PUCT strengthened the certification requirements and further protected customer deposits. In Project No. 35768, Rulemaking Relating to Retail Electric Providers Disclosures to Customers, the PUCT created three types of products (fixed, variable, and indexed), restricted certain changes in pricing, and established another rulemaking to reduce the amount of time it takes to complete a customer's switch request, among other items. In Project No. 35769, Rulemaking Relating to Electric Providers of Last Resort, the PUCT established additional protections for customers and for the REPs that provide POLR service. Project No. 36131, Rulemaking Relating to Disconnection of Electric Service and Deferred Payment Plans, updated protections for at-risk customer segments.

On issues relating to energy efficiency, advanced metering and innovation, the PUCT has submitted several reports for consideration by the Texas Legislature in recent years. Advanced metering (AMI) deployment is at or near completion in the Oncor (Dallas-Fort Worth) and CenterPoint (Houston) transmission and distribution service provider areas, and continues moving forward in the AEP and TNMP service territories. These deployments are helping facilitate a new wave of customer-focused innovation in ERCOT. The Texas market has already seen several innovations related to smart meters to date such as: more time-of-use rates, more prepay options, and more energy management devices and services. The Texas market has also produced several other innovations in the past couple years including: new offers for residential customers to lease rooftop solar systems, a new kind of rate plan that has its price capped but can go down if natural gas prices fall, and an all-in fixed price for residential that will not change for any reason during the contract term, among others.

Texas Number of Suppliers and Products in the Market October 2012	Residential Suppliers	Residential Products	Nonresidential Suppliers*
Oncor Electric Delivery	43	264	48
CenterPoint Energy	43	278	48
AEP Texas Central	43	260	48
AEP Texas North	39	239	48
Texas-New Mexico Power Company	41	243	48
*Estimate. Published data are not available. About one half this number serve small commercial customers.			

Switching rates continued to rise in Texas, reaching 73.7% of eligible retail sales in the state in June 2012. The remainder is provided by the traditional "incumbent" REPs at competitive rates. Over 80% of electricity sales to commercial and industrial customers are provided by a non-incumbent REPs.

In the 2012 ABACCUS report, it is declared that Texas has achieved 100% switching away from default service in those portions of the state that permit direct retail access. From a switching perspective, there are no longer any meaningful distinctions to be made between the traditional incumbent REPs and other REPs. That is not to suggest that the retail electricity market in Texas does not require oversight. It can be argued that all markets require some level of oversight to ensure that market rules are monitored and enforced.

Texas Percent Switching* June 2012	Percent of Residential Customers	Percent of Small Commercial Load (MWH)	Percent of Large Industrial Load (MWH)	Percent of Total Load (MWH)
Oncor Electric Delivery	54.40%	82.3%	**	71.62%
CenterPoint Energy	58.86%	75.3%	**	69.46%
AEP Texas Central	70.28%	96.4%	**	87.86%
AEP Texas North	67.45%	95.6%	**	88.15%
Texas-New Mexico Power Company	75.32%	98.4%	**	91.85%
State Total	58.76%***	81.70%	83.58%	73.7%

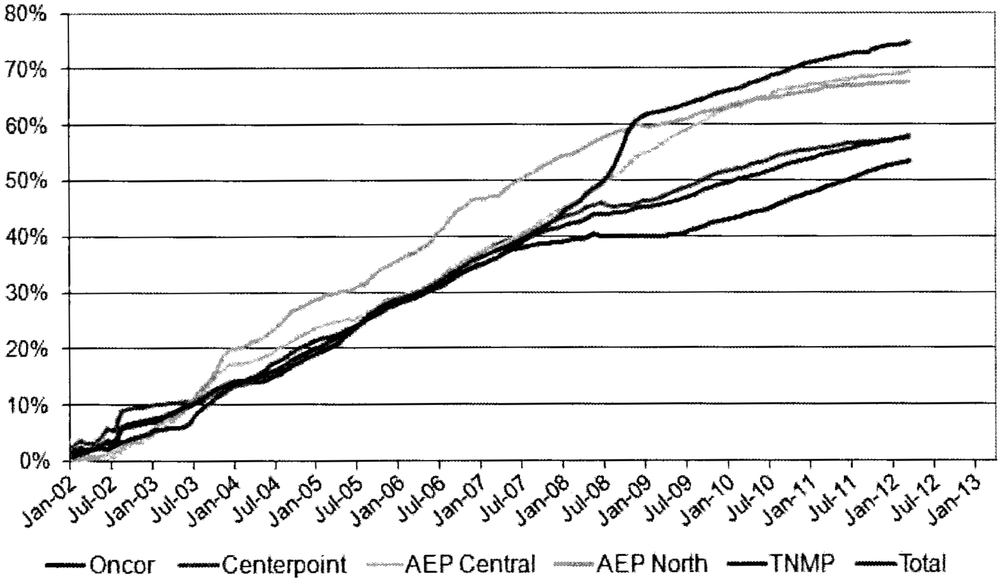
* The regulated default service tariff (referred to as the "price to beat") is no longer offered. Therefore, effectively all retail customers receive service at a competitive prices in the portions of the state with direct access. These switching statistics show the percent of customers and loads no longer served by the incumbent retail electricity provider. Others have made a decision to stay with (or return to) the incumbent retail electric provider on a competitive product.

** Large customer switching information is not separately reported to protect large industrial customers.

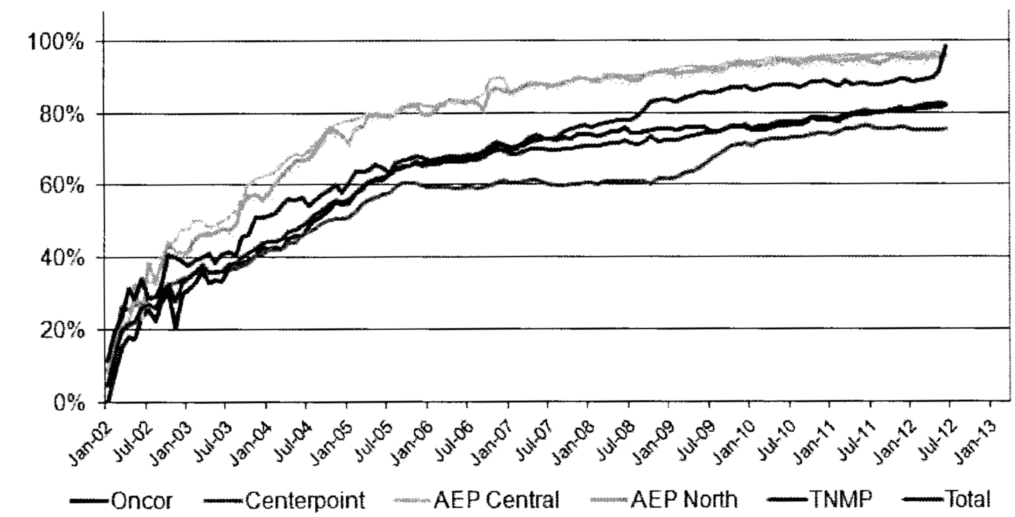
*** In a February 10, 2010 report to the PUC commissioners, 87.1% of the eligible residential consumers were shown to have made an observable choice in the market. Most of the difference between "switching" and "observable choice" can be attributed to consumers who have selected a new pricing plan with the affiliated REP (former incumbent).

Trend data by class for the ERCOT portion of the state since January 2002 is also compelling. The percentage of customers served by a non-incumbent retail electric provider (REP) has grown steadily.

Percentage of Residential Customers Served by Non-Legacy REPs by Service Territory[73]



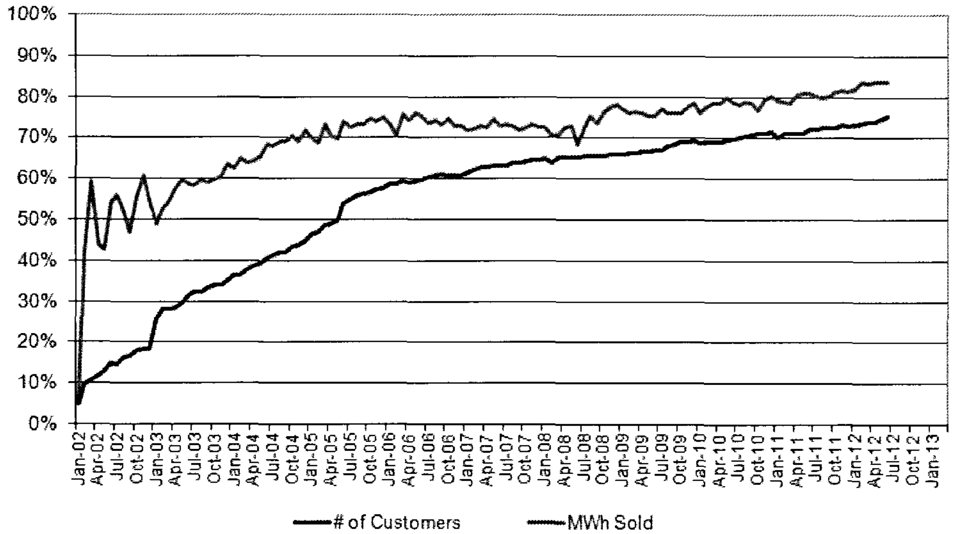
Percentage of Secondary Voltage MWh Served by Non-Legacy REPs by Service Territory[74]



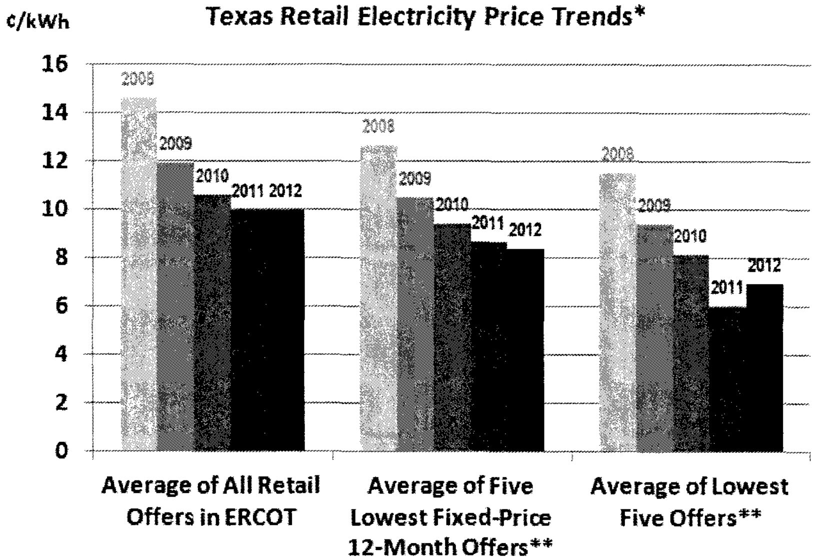
[73] Public Utility Commission of Texas, Market Share Data. See: http://www.puc.texas.gov/industry/electric/reports/RptCard/Default.aspx

[74] Ibid.

Percentage of Primary Voltage Customers and MWh Served by Non-Legacy REPs[75]

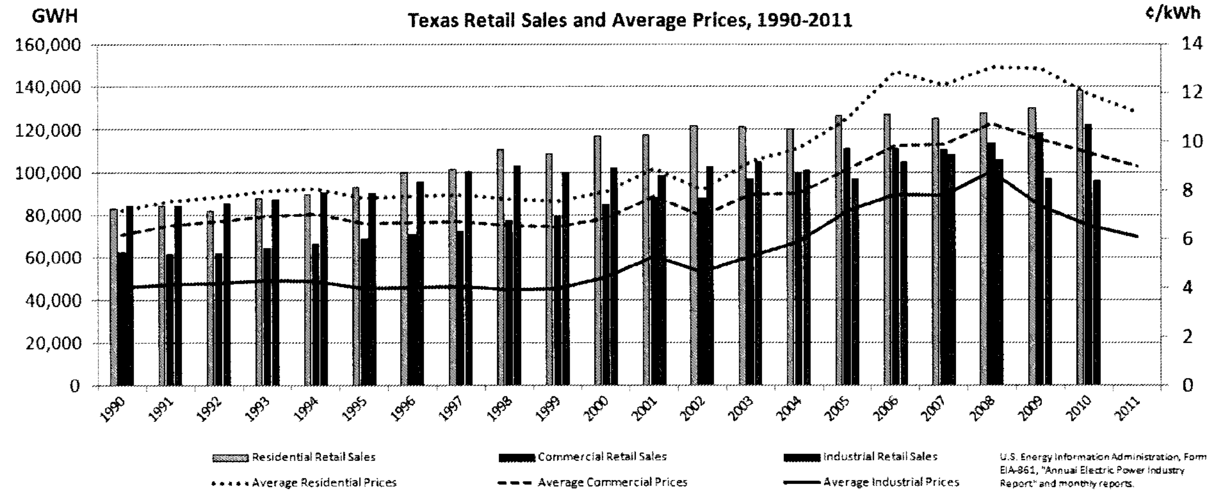


Retail electricity prices can timely adjust to commodity market conditions. That is, consumers (demand) and generators (supply) interact fairly efficiently. Retail suppliers help manage the risks of extreme prices for small consumers. The following data are from the online price comparison tool, www.powertochoose.org. The data represent the average of weekly observations, aggregated in three ways.



* Texas electricity prices include all wires charges. (See: powertochoose.com)
** This represents the five largest utility service territories: Oncor, Centerpoint, AEP North, AEP Central and TNMP. These data represent the average of 52 weeks of offers. 2012 prices are through early October.

[75] Ibid.



Virginia

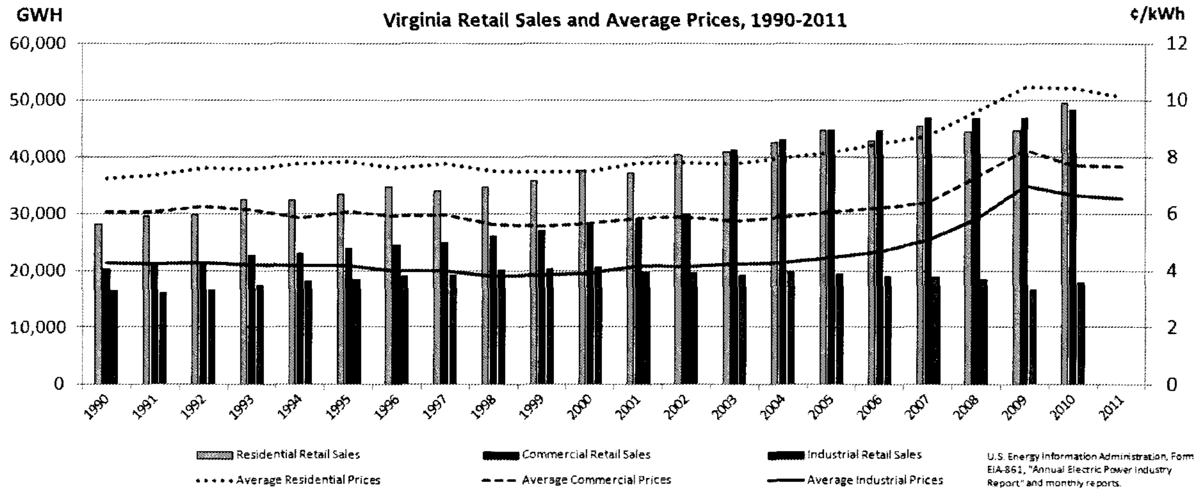
In July 1999, legislation (SB 1269) was enacted that permitted choice for retail electric customers in the state. Virginia's pilot program began in 2000 for the two largest investor-owned utilities (Dominion and American Electric Power) and one cooperative. Full retail access began to be phased-in during January 2002, with full choice to be implemented no later than January 2004. Utilities were required to functionally separate, and Allegheny Power and Connective voluntarily divested generation as part of the functional separation case.

Competitive suppliers are licensed by the State Corporation Commission (SCC) and must register with each utility. In 2001, the Virginia General Assembly amended portions of restructuring legislation to cap default service rates only until January 2007. If there are capped rates, the utility is the default provider. After January 2007, the SCC would set rates based on competitive regional electricity markets. The Legislature created a Transition Task Force and Consumer Advisory Board, which worked collaboratively with SCC. The Legislation authorized alternative providers to directly bill customers beginning January 2003. Competitive metering began January 2002 for large commercial and industrial customers, and on January 2003 for residential and small commercial customers.

The practical result of below-market capped rates was that there was no ability to choose a lower-cost alternative provider in Virginia. Only about 2,500 residential and 24 small commercial customers were served by an alternative supplier (green power choice for residential customers). A contract was awarded for a statewide consumer education program. A survey indicated that awareness was raised, but given the slow development of actual competition, the budget for the second year was reduced. The SCC issued orders to address competitive metering, consolidated billing, minimum stay provisions, distributed generation, aggregation, and market price determination.

In early 2003, legislative activity included a bill to allow Kentucky Utilities to suspend retail choice in five counties in Virginia (HB 2637); a bill to allow the SCC to experiment with "opt in" options for municipalities (HB 2319); and a bill that defers a requirement to join an RTO to the utility with an adequate showing (HB 2453). In 2007, HB 3068 and SB 1416 were enacted and signed by Governor Kaine, and Virginia suspended retail choice.

Since December 2008, most consumers cannot purchase electric generation service from competing suppliers. Large customers (> 5 MW) can purchase power from competitive service providers (CSP). Nonresidential customers can aggregate load up to 5 MW with commissioner approval. Residential consumers can seek competitive power that is 100% renewable if the utility does not offer power that is 100% renewable. Currently, no competitive service providers serve customers in Virginia.[76]



Alberta

In 1995, Alberta passed the Electric Utilities Act to initiate retail electric market restructuring in the Canadian province. Wholesale competition began in 1996. Capacity reserves were very tight in 1998 as a result of rapid growth in electricity usage. Within the competitive market framework, over 2,000 MW of new capacity were added in 1998-2001, and an additional 2,400 MW were constructed by the end of 2007. Presently there are over 12,000 MW of generating capacity in Alberta. Coal power plants generate more than one-half the electricity.

Energy-related industry is key to Alberta's economy, including oil, oil sands, natural gas, coal and minerals, and petrochemicals. Alberta serves electric demand with coal, natural gas (industrial cogeneration), hydropower, wind power and imports (transmission interconnections with British Columbia and Saskatchewan).

A 1999 pilot program gave large customers direct access to the power pool. Retail competition offered attractive options to large industrial and commercial customers enabling more than 80% of these customers to switch to competitive providers by 2008. Retail competition for customers of all sizes began on January 2001. Just prior to market opening, the wholesale market prices rose to very high levels, causing the regulators to institute a price cap – as a temporary shield against high prices – and a rate rider to collect any shortfall in revenue collection. By 2002, the wholesale prices had fallen to 1999 levels.

The Alberta Department of Energy embarked on a Retail Assessment Program to make mid-course corrections in the retail access program. The Electric Utilities Act was revised in 2003. A code of conduct addresses electric and natural gas service providers. Access to customer data is equal for competitive retailers and utility affiliates. A new independent system operator, the Alberta Electric System Operator (AESO), is responsible for market operations: power pool, system control, long-term transmission system planning and management and load settlement. In 2006, the Alberta Energy Utilities Board

[76] Source: http://www.scc.virginia.gov/comm/reports/2012_veur.pdf.

approved a standard tariff billing code for distribution utilities to ensure that retailers would receive information in a standard format. In 2007, the Legislature passed the Alberta Utilities Commission Act and divided the Energy Utilities Board into the two new regulatory bodies. The Alberta Utilities Commission continues to regulate utilities and a new conservation agency is focused on energy resource development.

For smaller customers, the energy portion of default service is calculated monthly based on forward monthly prices for locked in volumes forecast and purchased in advance of the month, encouraging risk and volatility/adverse customers to switch to competitive retailers that provide a fixed price for a term. For users of greater than 250,000 kWh per year, default service is based on spot prices.

The AESO operates an energy-only electricity market. In an energy only market design, the market determines the appropriate level of resource adequacy over the long term. The Electric Utilities Act mandates the collection and dissemination of information relating to the capacity of the interconnected electric system to meet future electricity needs. The AESO is conducting an investigation into long term resource adequacy to determine whether to create a bridging mechanism if adequacy becomes an issue. The AESO conducts two-year forecasts and has authority to take short term actions to maintain adequacy. As part of its review, the AESO is examining market conditions and incentives for investments in generation.

In a March 27, 2008 letter, Alberta's Premier Stelmach outlined five priorities to the Cabinet Ministers, including "Ensure Alberta's energy resources are developed in an environmentally sustainable way." Development of the oil sands region should rely on "processes that use less energy, less water, reduce tailings ponds and improve land reclamation." Alberta is examining carbon capture and storage research and demonstration, and implementation of a climate change strategy, including "conservation, energy efficiency and adaptation initiatives."

In a March 22, 2012 press release, the Alberta government announced the appointment of an independent committee to review the electricity retail market to help address the volatility and costs associated with the variable or default rate. "As part of its review, the four-person committee will examine how the default rate is calculated and determine ways to mitigate price fluctuations. The committee will also review whether we need a default rate, and if needed, discuss ways it could be better designed and delivered. The committee will also look at the all-in cost of electricity, and consider how charges other than energy use are determined and approved for payment by consumers."[77] The committee reported to the government in September 2012, and the Minister of Energy has stated that government will respond and release the report by the end of 2012.[78]

Alberta Number of Suppliers in the Market October 2012	Residential	Residential Products	Nonresidential
Province	14	44	15

[77] "Independent committee to review electricity retail market," Government of Alberta News Release, March 22, 2012. See: www.rmrc.ca

[78] "Alberta Energy minister promises to release electricity market report by end of year," The Edmonton Journal, October 16, 2012. See:
http://www.edmontonjournal.com/news/edmonton/Alberta+Energy+minister+promises+release+electricity/7399125/story.html

Alberta Percent Switching May 2012	Percent of Residential Customers	Percent of Small Commercial Load (< 250 MWH/yr) (MWH)	Percent of Large Industrial Load (> 250 MWH/yr) (MWH)	Percent of Total Load (MWH)
Province	34.7%	63.01%	94.43	79.74%

Ontario

In 1998, legislation was enacted to provide authority for retail restructuring in Ontario. In April 1999, Ontario Hydro's assets were split into five successor entities. Ontario Power Generation, Inc. (OPG) assumed the generation business formerly operated by Ontario Hydro. Hydro One Inc. (formerly Ontario Hydro Services Company) assumed the network business and operated the transmission, distribution, and energy services businesses. The remaining three, operating on a not-for-profit basis, were the Electrical Safety Authority (the industry's safety inspection agency), the Independent Market Operator (responsible for operating and administering the new market and ensuring reliability and access to transmission and distribution systems), and the Ontario Electricity Financial Corporation (responsible for managing and retiring Ontario Hydro's outstanding debt and other obligations).

While future stranded costs were prohibited at that time, two types of payments by users were used to retire stranded costs incurred before restructuring: (1) a phased divestiture of the generation assets over a 10-year period to mitigate Ontario Power Generation's market power in Ontario, and (2) a per-kilowatt-hour charge (referred to as debt retirement charge) on the monthly bills to all electricity users to retire the outstanding debt held by the Ontario Electricity Financial Corporation.

In May 2002, Ontario opened its retail electricity market to all consumers. A high switching rate was attributed to the establishment of a formal Electronic Business Transactions (EBT) process, which included retail customer enrollment, testing, and scrubbing prior to market open. Ontario identified and corrected a large number of errors prior to full implementation. Ontario also initiated competitive billing and pass-through of default provider price risk, where majority of default providers sought exemption from a fixed reference price. In July 2002, the Energy Consumers' Bill of Rights came into effect, creating new rules to protect low-volume consumers.

Record temperatures in summer of 2002 drove up the demand and market price. Concerns over these prices led to the passage in December 2002 of the Electricity Pricing Conservation and Supply Act 2002. This act mandated a fixed generation price of 4.3 cents per kWh for the electricity of low-volume consumers. Refunds were to be provided for amounts paid above 4.3 cents, retroactive to May 2002. Taxpayers were expected to make up the difference between market price and the capped rate.

In December 2004, the Government of Ontario passed the Electricity Restructuring Act of 2004, which reorganized the province's electricity sector, amended the Ontario Energy Board Act of 1998, and the Electricity Act of 1998. The act created a new Ontario Power Authority to ensure supply adequacy, created a new Conservation Bureau to set targets for conservation and renewable energy, redefined the role of the Independent Electricity Market Operator and renamed it the Independent Electricity System Operator (IESO), and regulated certain prices to ensure price stability.

The Regulated Price Plan (RPP) sets stable prices for small consumers with an inverted block schedule (use more, pay more) and a seasonal schedule that is updated every six months. In April 2008, the May 2008 – April 2009 prices were set. The prices are based on forecast hourly prices with an adjustment for the balancing account (unexpected variance) for past months. Customers with advanced meters are exposed to different prices than those with conventional meters. Effective May 1, 2012, the lower tier price is 7.1 cents and the higher tier price is 8.8 cents. This amount is reflected on the "electricity" line on consumer's bills. The price threshold is 600 kWh per month in the summer and 1,000 kWh per month in the winter.

Ontario has a Smart Metering Initiative to create a culture of conservation and a platform for demand management. Province-wide deployment of smart meters is almost complete through the Smart Metering System Implementation Program (SMSIP). A pilot time-of-use rate was available to residential customers. The local distribution utilities own the meters, and the IESO maintains the interfaces and the meter data management and data repository (MDM/R) functions. On August 4, 2010, the Board issued a determination (EB-2010-0218) under section 1.2.1 of the Standard Supply Service Code to mandate time-of-use pricing for RPP customers.

As of June 2012, there were 4,770,289 installed smart meters, 4,424,439 meters enrolled with the MDM/R and 4,258,094 customers on TOU billing. (That is, 99% of Regulated Price Plan (RPP) eligible consumers have a smart meter installed, 92% have a smart meter that is enrolled with the MDM/R and 89% are on TOU pricing.)[79] The "Regulated Price Plan (RPP) Time-of-use (TOU)" prices are currently (Sept. 2012) 6.5 cents off peak, 10.0 cents mid-peak, and 11.7 cents on peak. (Average power costs for the province were 8.2 cents according to the OEB's "2011 Yearbook of Electricity Distributors" dated September 12, 2012.) These prices are reviewed every May 1 and November 1 by the Ontario Energy Board (OEB). The OEB reviews the rates based on electricity prices over the previous six months, as well as its forecast of future prices over the next year.[80]

The Energy Consumer Protection Act, 2010 (ECPA), adopted May 18, 2010, became effective on January 1, 2011. ECPA established a new framework for greater consumer protection and for the regulation of licensed electricity retailers. On October 27, 2010 the Board issued a letter to stakeholders regarding "A Renewed Regulatory Framework for Electricity." The letter described significant levels of investment in generation (especially renewable resources), transmission and distribution over the next few years. The Board will focus on long-term outcomes that ensure that the Province's electricity system provides value to consumers.

Under new legal and regulatory requirements that come into force on January 1, 2011, licensed electricity retailers/suppliers may not enter into, renew, amend or extend the term of a contract with a low-volume consumer until such time as the supplier has filed with the Board a "Certificate of Compliance" and received written acknowledgement of it. The certificate of compliance sets forth the marketing approaches to be used (door to door, direct mail, Internet, telephone, etc.) and the protections relating to disclosures, verifications, contract renewals, and remediation processes. While sixteen companies are listed by the OEB as serving low volume consumers, several of these only sell related energy services (such as the "greening" of default service power). Others describe electricity plans for residential consumers but do not provide prices, and thus do not meet the ABACCUS report standard regarding what constitutes a comparable offer for residential consumers.

[79] Source: http://www.ontarioenergyboard.ca/OEB/_Documents/SMdeployment/Monthly_Monitoring_Report_June2012.pdf.

[80] Source: OEB website http://www.ontarioenergyboard.ca/OEB/Consumers/Electricity/Smart+Meters.

Ontario Number of Active Suppliers and Products in the Market September 2012	Residential	Residential Products	Nonresidential *
Province	5	5	45
* Licensed electricity retailers.			

Switching statistics (data regarding the number or percent of consumers who have chosen a pricing plan other than the default price) are not accessible on the Ontario Energy Board website and not provided to the public.[81]

Ontario Selected Electric Distribution Utilities*	Residential Customers December 2012	Residential Sales 2012 (GWH)	Distribution Revenue Cents/ Billed kWh**	Nonresidential Sales 2012 (GWH)
Enersource Hydro Mississauga Inc.	173,444	1,583	2.6	5,992
Horizon Utilities Corporation	215,025	1,658	3.7	2,969
Hydro One Brampton Networks Inc.	127,956	1,171	2.8	2,636
Hydro One Networks Inc.	1,091,935	12,008	6.5	9,817
Hydro Ottawa Limited	278,056	2,235	3.6	5,308
London Hydro Inc.	134,714	1,129	3.2	2,158
PowerStream Inc.	297,962	2,728	3.0	5,595
Toronto Hydro-Electric System	629,049	5,204	4.2	19,352

[81] A data request is made each year.

Limited				
Veridian Connections Inc.	104,060	956	3.1	1,571
Province Total	4,354,381	40,391	4.3	77,079

* Ontario has 76 Electric Distribution Utilities. Those shown have more than 100,000 residential customers. All data are from the OEB's "2011 Yearbook of Electricity Distributors" dated September 12, 2012, with some calculations by DEFG.

** Canadian dollars.

Appendix H: ABACCUS Methodology

ABACCUS applies an analytical tool to measure progress in implementing retail electricity choice in North America. The methodology poses about twenty-eight questions that are considered important to the success of electricity restructuring for residential consumers, and a similar set of questions relating to commercial and industrial consumers opportunities. Data are collected from U.S. states and Canadian provinces and points (zero to ten on a ten-point scale) are associated with each response. Options that advance retail electricity choice receive more points. Weights are assigned to each score to balance the numerous factors that affect the success of electricity restructuring. The weighted average scores are calculated and each jurisdiction is ranked.

ABACCUS is designed to highlight the best policies, market structures and business practices that support sustained market performance and individual consumer choice. A hallmark of the methodology is the breadth of issues explored because retail electricity choice cannot be understood in terms of one measure or metric. Qualitative judgment is then applied to assess whether a jurisdiction is improving or falling behind in the implementation of electricity restructuring.

Element List and Weights

Residential Elements and Weights

The residential elements are presented in four groups: A) Status of Retail Choice, B) Wholesale Competition, C) Default Service, and D) Facilitation of Choice of Retailer.

Residential Elements and Key Questions

No.	*Residential Element*	*Key Question*
A.1	Eligibility of Residential Customers for Retail Electric Choice	What percentage of residential consumers in the jurisdiction was eligible for retail electricity choice on September 1, 2012?
A.2	Number of Retailers Making Offers to Residential Customers	How many retailers are actively making offers to residential customers in the jurisdiction on September 1, 2012?
A.3	Residential Customers Receiving Competitive Rate	What percentage of eligible residential consumers receives service at a competitive retail rate as of September 1, 2012?
A.4	Market Switching Measure	Does the jurisdiction measure market switching in residential markets and regularly publish the result?
A.5	Market Size	What is the level of annual retail electricity sales in the jurisdiction as of September 1, 2012?
A.6	Number of Distinct Offers	How many distinct offers were available from competitive suppliers to residential consumers in the jurisdiction as of September 1, 2012?
A.7	Categories of Products	Are these four categories of products – month to-month, fixed-price, indexed price, and green – available from competitive suppliers to residential consumers in the jurisdiction as of September 1, 2012?
B.1	Wholesale Market Competition	Does the jurisdiction operate in a regional wholesale electric market that satisfies nationally established statutory criteria for open-market competition?
B.2	Responsive Demand	Are large and small retail electricity customers allowed to fully participate in wholesale reliability and capacity markets?

No.	Residential Element	Key Question
C.1	Default Service Supplier	What type of company provides default service as of September 1, 2012?
C.2	Default Service Product Options	To what extent is default service designed to provide a substitute for the choices provided in a competitive retail market?
C.3	Default Service Rate Mechanism	How frequently is the default rate adjusted to reflect the cost of service in the wholesale market?
C.4	Default Service Resource Portfolio	Does the default service provider hedge resources or match the term of the resource contracts to the term of the default service?
C.5	Default Service Switching Options	Are consumers restricted in switching away from default service?
C.6	Default Service Cost Allocation	Does the default service rate reflect the cost of service?
C.7	Stranded Cost Recovery	How is stranded costs recovery treated?
C.8	Nondiscriminatory Public Purpose Programs	Are public purpose programs – such as resource portfolio standards and conservation program requirements – applied fairly to all retailers?
D.1	Distribution Utility Structure	Is the regulated distribution service function separate from competitive services?
D.2	Competitive Safeguards	Do distribution utilities operate under a code of conduct that governs relations with affiliates and is that code consistently enforced?
D.3	Consumer Education & Awareness	Is there a program to educate consumers about retail choice and to measure the results?
D.4	Access to Residential Customer Information	Do qualified retailers have easy access to basic customer information?
D.5	Uniformity of Standards	Does the jurisdiction apply uniform standards for the operation of competitive retail markets?
D.6	Transaction Standards	Does the jurisdiction require the use of a standard electronic data exchange for business transactions?
D.7	Billing Protocols	Does the jurisdiction treat access to billing systems in a manner that promotes the development of retail choice?
D.8	Access to Electricity Usage Data	Do retailers have timely access to detailed electricity usage data?
D.9	Advanced Metering Infrastructure	To what level has the jurisdiction deployed advanced metering infrastructure?
D.10	Electricity Usage Data Security and Customer Privacy	Has the jurisdiction established clear policies regarding the security of customer usage data, customer data privacy, and the appropriate uses of customer usage data?
D.11	Consumer Access to Price Comparisons	Can residential consumers easily compare the terms and prices of the offers from energy suppliers?

Each element is assigned a weight that is used to calculate a weighted average score for each jurisdiction. All 28 weights total to 100 percent. With a large number of elements, the specific weight assigned to each element is less important than if there were just a few data points. Nevertheless, a transparent methodology allows the reader to see the relative weights and therefore the relative importance of each element.

The following table presents the weights used in the 2010-2012 residential ABACCUS reports.

The four general topics are weighted as follows:

A. Status of Retail Choice: 18%

B. Wholesale competition: 8%

C. Default Service: 47%

D. Facilitation of Choice of Retailer: 27%

Residential Element Weights

No.	Residential Element	2010 Weight	2011 Weight	2012 Weight
A.1	Eligibility of Residential Customers for Retail Electric Choice	3%	3%	3%
A.2	Number of Retailers Making Offers to Residential Customers	4%	4%	4%
A.3	Residential Customers Receiving Competitive Rate	3%	3%	3%
A.4	Market Switching Measure	1%	1%	1%
A.5	Market Size (New in 2010)	4%	4%	4%
A.6	Number of Distinct Offers (New in 2010)	2%	2%	2%
A.7	Categories of Products (New in 2010)	1%	1%	1%
B.1	Wholesale Market Competition	6%	6%	6%
B.2	Responsive Demand	2%	2%	2%
C.1	Default Service Supplier	8%	8%	8%
C.2	Default Service Product Options	6%	6%	6%
C.3	Default Service Rate Mechanism	12%	10%	10%
C.4	Default Service Resource Portfolio	10%	10%	10%
C.5	Default Service Switching Options	6%	6%	6%
C.6	Default Service Cost Allocation	6%	6%	6%
C.7	Stranded Cost Recovery[82]	--	--	--
C.8	Nondiscriminatory Public Purpose Programs	1%	1%	1%
D.1	Distribution Utility Structure	4%	4%	4%
D.2	Competitive Safeguards	3%	3%	3%
D.3	Consumer Education & Awareness	--	1%	1%
D.4	Access to Residential Customer Information	3%	3%	3%
D.5	Uniformity of Standards	3%	3%	3%
D.6	Transaction Standards	2%	2%	2%
D.7	Billing Protocols	4%	3%	3%
D.8	Access to Electricity Usage Data	2%	2%	2%
D.9	Advanced Metering Infrastructure	2%	2%	2%
D.10	Electricity Usage Data Security and Customer Privacy (New)	2%	2%	2%
D.11	Consumer Access to Price Comparisons	--	2%	2%
	Total	100%	100%	100%

[82] Stranded cost recovery is not given any weight at this time, but is retained for future use.

Residential Elements Weights (image from the model)

Residential Element Weights

New or significantly revised in 2011

Topic A	Status	18%
Topic B	Wholesale	8%
Topic C	Default	47%
Topic D	Facilitation	27%
	Total	100%

Topic A	A.1	A.2	A.3	A.4	A.5	A.6	A.7
Element	Eligible%	Retailer#	Switch%	Stats	GWH	Offers#	Types
% Weight	3%	4%	3%	1%	4%	2%	1%

Topic B	B.1	B.2
Element	WhlsIMrkt	Responsive
% Weight	6%	2%

Topic C	C.1	C.2	C.3	C.4	C.5	C.6	C.7	C.8
Element	Dprovider	Dproduct	Drate	Dportfolio	Dswitch	Dcostallo	Stranded	PublicReqt
% Weight	8%	6%	10%	10%	6%	6%	0%	1%

Topic D	D.1	D.2	D.3	D.4	D.5	D.6	D.7	D.8	D.9	D.10	D.11
Element	Structure	Safeguards	Education	InfoAccess	UniformStds	TransactStds	Billing	MeterAccess	AMI	UsageData	Webprice
% Weight	4%	3%	1%	3%	3%	2%	3%	2%	2%	2%	2%

C&I Elements and Weights

The commercial and industrial elements are presented in four groups: A) Status of Retail Choice, B) Wholesale Competition, C) Default Service, and D) Facilitation of Choice of Retailer.

C&I Elements and Key Questions

No.	C&I Element	Key Question
A.1	Eligibility of C&I Customer Load (%)	What percentage of commercial and industrial load in the state/province is eligible for retail electricity choice on September 1, 2012?
A.2	Number of Retailers Making Large C&I Offers (#)	How many retailers are active in making offers to large C&I customers on September 1, 2012?
A.3	Number of Retailers Making Medium C&I Offers (#)	How many retailers are active making offers to medium C&I customers on September 1, 2012?
A.4	Large C&I Customer Load Switching (%)	What percentage of eligible large C&I load has switched on September 1, 2012?
A.5	Medium C&I Customer Load Switching (%)	What percentage of eligible medium C&I load has switched on September 1, 2012?
A.6	Market Switching Measures	Does the state/province measure and regularly publish market switching or migration statistics?
A.7	Market Size	What is the level of annual retail electricity sales in the jurisdiction as of September 1, 2012?
B.1	RTO/ISO Existence	Is the jurisdiction within an organized wholesale market (RTO or ISO)?
B.2	Market Monitor	Is the market monitoring functioning in an independent and transparent manner?
B.3	Reliability Demand Response	Can C&I loads participate in markets for capacity/reliability? Does the participation of demand-side resources occur on a level playing field with generating resources?
B.4	Economic Demand Response	Can C&I loads participate in day-ahead and real time markets for energy?

No.	C&I Element	Key Question
B.5	Ancillary Services	Can C&I loads participate in markets for operating reserves and responsive reserves?
C.1	Default Service for Large C&I	Is a regulated default service rate offered to large C&I loads as of September 1, 2012? What, if any, size limits have been set? (I.e., above which large customers must contract for market prices.)
C.2	Default Service Cost Tracking Large C&I	With what frequency is large C&I load default service rate realigned to wholesale market costs? (Hourly? Monthly? Etc.)
C.3	Default Service Provider Medium C&I	What type of company (utility; affiliate; retailer) provides default service to medium C&I load (as of September 1, 2012)?
C.4	Default Service Cost Tracking Medium C&I	With what frequency is medium C&I load default service rate realigned to wholesale market costs? (Monthly? Annually? Etc.)
C.5	Default Service Product Options Medium C&I	Is the default service rate for medium C&I load a generic or "plain vanilla" offering? Or are there variations that could be provided in the market?
C.6	Default Service Cost Allocation Medium C&I	Is the default service rate for medium C&I load discounted to include only some costs? Is it capped? Does it reflect the full power costs?
C.7	Default Service Resource Hedging Medium C&I	Is the default service provider allowed to hedge the resource portfolio? Of do the terms of the resource contracts match the terms of the default service?
C.8	Default Service Switching Options Medium C&I	Are consumers restricted in switching away from default service?
D.1	Electric Distribution Utility Structure	Does the jurisdiction have vertically-integrated, functionally separated, or wires-only electric utilities?
D.2	Electric Distribution Utility Regulation	Are the electric distribution utility functions (wires) regulated and appropriately separated from the competitive market functions (the customer premises services)?
D.3	Electric Distribution Utility Types of Services	What types of services are provided by the electric distribution utility?
D.4	Competitive Safeguards	Do the electric distribution utilities operate under a code of conduct that governs relations among affiliates and is that code consistently enforced?
D.5	Administration of Switching	Does a central, fully-independent organization handle all customer switching requests?
D.6	Uniformity of Standards	Does the jurisdiction apply uniform standards for the operation of competitive retail markets?
D.7	Transaction Standards	Does the jurisdiction require the use of a standard electronic data exchange (EDI) for business transactions?
D.8	On-site Generation Alternatives	Do C&I customers have interconnection and distribution system access that facilitates the use of DG as an alternative?
D.9	Electricity Usage Data Security and Customer Privacy	Has the jurisdiction established clear policies regarding the security of customer usage data, customer data privacy, and the appropriate uses of customer usage data?

Each element is assigned a weight that is used to calculate a weighted average score for each jurisdiction. All 29 weights total to 100 percent. With a large number of elements, the specific weight assigned to each element is less important than if there were just a few data points. Nevertheless, a transparent methodology allows the reader to see the relative weights and therefore the relative importance of each element.

The four general topics are weighted as follows:

E. Status of Retail Choice: 25%

F. Wholesale competition: 16%

G. Default Service: 32%

H. Facilitation of Choice of Retailer: 27%

C&I Element Weights

No.	Element	2010 Weight	2011 Weight	2012 Weight
A.1	Eligibility of C&I Customer Load (%)	3%	3%	3%
A.2	Number of Retailers Making Large C&I Offers (#)	4%	4%	4%
A.3	Number of Retailers Making Medium C&I Offers (#)	4%	4%	4%
A.4	Large C&I Customer Load Switching (%)	4%	4%	4%
A.5	Medium C&I Customer Load Switching (%)	4%	4%	4%
A.6	Publish Market Switching, Migration or Choice Statistics	2%	2%	2%
A.7	Market Size	4%	4%	4%
B.1	RTO/ISO Existence	5%	5%	5%
B.2	Market Monitor	3%	3%	3%
B.3	Reliability Demand Response	3%	3%	3%
B.4	Economic Demand Response	3%	3%	3%
B.5	Ancillary Services	2%	2%	2%
C.1	Default Service for Large C&I	4%	4%	4%
C.2	Default Service Cost Tracking Large C&I	4%	4%	4%
C.3	Default Service Provider Medium C&I	4%	4%	4%
C.4	Default Service Cost Tracking Medium C&I	4%	4%	4%
C.5	Default Service Product Options Medium C&I	4%	4%	4%
C.6	Default Service Cost Allocation Medium C&I	4%	4%	4%
C.7	Default Service Resource Hedging Medium C&I	4%	4%	4%
C.8	Default Service Switching Options Medium C&I	4%	4%	4%
D.1	Electric Distribution Utility Structure	3%	3%	3%
D.2	Electric Distribution Utility Regulation	3%	3%	3%
D.3	Electric Distribution Utility Types of Services	3%	3%	3%
D.4	Competitive Safeguards	3%	3%	3%
D.5	Administration of Switching	3%	3%	3%
D.6	Uniformity of Standards	3%	3%	3%
D.7	Transaction Standards	3%	3%	3%
D.8	On-site Generation Alternatives	3%	3%	3%
D.9	Electricity Usage Data Security and Customer Privacy	3%	3%	3%
	Total	100%	100%	100%

C&I Elements Weights (image from the model)

C&I Element Weights

New or significantly revised in 2011

Topic A	Status	25%
Topic B	Wholesale	16%
Topic C	Default	32%
Topic D	Facilitation	27%
	Total	100%

Topic A	A.1	A.2	A.3	A.4	A.5	A.6	A.7
Element	LoadElig	LgOffers	MedOffers	LgSwitch%	MedSwitch%	Stats	GWH
% Weight	3%	4%	4%	4%	4%	2%	4%

Topic B	B.1	B.2	B.3	B.4	B.5
Element	RTOISO	Monitor	ReliDR	EconDR	AncilDR
% Weight	5%	3%	3%	3%	2%

Topic C	C.1	C.2	C.3	C.4	C.5	C.6	C.7	C.8
Element	LgDS	LgDScost	MedProvider	MedCost	MedProduct	MedAlloc	MedHedge	MedSwitch
% Weight	4%	4%	4%	4%	4%	4%	4%	4%

Topic D	D.1	D.2	D.3	D.4	D.5	D.6	D.7	D.8	D.9
Element	UtilStructure	Separation	Wires	Safeguards	SwitchAdmin	UniformStds	TransactStds	DG	UsageData
% Weight	3%	3%	3%	3%	3%	3%	3%	3%	3%

Residential Methodology

A hallmark of the ABACCUS methodology is the breadth of issues explored. Retail electricity choice cannot be understood in terms of one issue or a single outcome. The provision of electric service is fairly complex and there are numerous important design issues.

The Residential ABACCUS methodology considers the issues or elements of importance to mass market retail electricity choice, and sets forth reasonable options or paths that each jurisdiction might select. Data are collected from each affected state and province, and points are assigned to the different options, depending upon the degree to which an option helps or hinders retail choice. Weights are then assigned to each issue or element to balance the numerous factors that affect the success of retail competition. A weighted average of score is calculated for each jurisdiction. These values are ranked to show which states have made the greatest progress toward successful implementation of retail electricity choice.

The residential methodology for ABACCUS gathers facts on twenty-eight issues. The methodology is organized into four general topics: A) Status of Retail Choice, B) Wholesale Competition, C) Default Service, and D) Facilitation of Choice of Retailer.

Unless otherwise noted, all references to "electricity customer" or "consumer" or "customer" means residential or mass market electricity consumers in the relevant jurisdiction.

Topic A: Status of Retail Choice

ABACCUS takes a snapshot of each state to assess eligibility, numbers of retailers and products, and percent switching. The specific measures consider the percentage of residential customers eligible to participate in retail electricity choice, the number of active retailers, the percentage of eligible customers receiving a competitive product (switching), the extent to which the jurisdiction tracks and publishes statistics relating to switching, the size of the market, the number of distinct offers, and whether four particular products are offered. These residential elements are labeled A.1 to A.7.

Residential Elements for Status of Retail Choice

No.	*Residential Element*	*Key Question*
A.1	Eligibility of Residential Customers for Retail Electric Choice	What percentage of residential consumers in the jurisdiction was eligible for retail electricity choice on September 1, 2012?
A.2	Number of Retailers Making Offers to Residential Customers	How many retailers are actively making offers to residential customers in the jurisdiction on September 1, 2012?
A.3	Residential Customers Receiving Competitive Rate	What percentage of eligible residential consumers receives service at a competitive retail rate as of September 1, 2012?
A.4	Market Switching Measure	Does the jurisdiction measure market switching in residential markets and regularly publish the result?
A.5	Market Size	What is the level of annual retail electricity sales in the jurisdiction as of September 1, 2012?
A.6	Number of Distinct Offers	How many distinct offers were available from competitive suppliers to residential consumers in the jurisdiction as of September 1, 2012?
A.7	Categories of Products	Are these four categories of products – month to-month, fixed-price, indexed price, and green – available from competitive suppliers to residential consumers in the jurisdiction as of September 1, 2012?

Status of Retail Choice takes a snapshot of each jurisdiction to consider the percentage of residential customers eligible to participate in the market, the number of active retailers making offers in the market, the percentage of eligible customers on a competitive price (not on an aggregated or regulated rate), and the extent to which the jurisdiction tracks and publishes statistics relating to switching. These elements are labeled A.1 – A.4 in this report.

A.1 Eligibility of Residential Customers for Retail Electricity Choice

Key Question: What percentage of residential consumers in the jurisdiction is eligible for retail electricity choice as of September 1, 2012?

Options and Points: Each jurisdiction receives a numeric data entry equal to the number of eligible residential electricity customers in the jurisdiction divided by the total number of residential electricity customers in the jurisdiction. This number is converted to percent, and rounded to the nearest 10%. Each 10% receives one point; the maximum is 10 points.

Note that in several states, a report of "100% eligibility" may overstate reality by a small percentage. Depending on the state, residential consumers served by municipal utilities or electric cooperatives may be exempt by operation of law. In other instances, a small percentage of the rural population may be located off the transmission grid, raising a distinction between percent on the grid and percent on or off the grid. While these issues are important to each jurisdiction, these differences are not substantial, and the effort to track these minor distinctions outweighs the value to ABACCUS.

Relationship between Points and Retail Market Success: Each jurisdiction with retail electricity choice ought to open its electricity markets to all residential customers. A greater percentage of eligible customers results in a greater the market size and greater market opportunities.

A.1 Eligibility of Residential Customers for Retail Electricity Choice (List of Options)	*Data (Abbreviation)*	*Points*
100% of the residential customers in the jurisdiction are eligible for retail choice	100%	10

A.1 Eligibility of Residential Customers for Retail Electricity Choice (List of Options)	***Data (Abbreviation)***	***Points***
Score is calculated as the percentage of residential customers eligible for retail choice, rounded to the nearest 10%, expressed in decimal form, times 10 points maximum	(percent)	formula
No retail residential customer choice	0%	0

A.2 Number of Retailers Making Offers to Residential Customers

Key Question: How many retailers are actively making offers to residential customers in the jurisdiction as of September 1, 2012?

Options and Points: Each jurisdiction receives a numeric data entry equal to the number of "active retailers"; that is, the number of retailers actively making offers to residential customers in the jurisdiction. "Twenty or more" was selected as a proxy to indicate a fully competitive retail market. "Twenty or more" receives 10 points. (Note: Through 2008 this was based on eight active retailers. This number was increased to twenty for the 2012 report.)

Relationship between Points and Retail Market Success: A significant number of retailers making offers to residential customers are an indication of healthy competition. A small number of retailers indicate a problem with the market; therefore, a small number of points are assigned to those jurisdictions that have failed to attract competitive retailers. It is acknowledged that this method is merely a proxy for what could be a thorough and detailed analysis of retail energy provider participation in the market. A detailed analysis would require the definition of the appropriate market and a calculation of market concentration. These data are not available for each jurisdiction and the study is beyond the scope of this report.

A.2 Number of Retailers Making Offers to Residential Customers (List of Options)	***Data (Abbreviation)***	***Points***
Twenty or more retailers offer a product to at least 50% of eligible residential customers in the jurisdiction	(number)	10
Etc. (straight line interpolation from 1 to 19)	(number)	1-9
No retailers are making offers to residential customers	0	0
No retail residential customer choice	NA	0

A.3 Customers on Competitive Rates

Key Question: What percentage of eligible residential consumers receives service at a competitive retail rate as of September 1, 2012?

Options and Points: Each jurisdiction receives a numeric data entry calculated as the total number of residential customers who receive a competitive retail rate divided by the total number of eligible residential customers in the jurisdiction. This number is converted to percent, and rounded to the nearest 10%. Each 10% receives one point; the maximum is 10 points.

Relationship between Points and Retail Market Success: A greater percent of customers on a competitive rate, as compared to a regulated rate, is assumed to be highly correlated with robust and successful competition. Under retail electricity choice, a residential customer can switch to a competitive provider, can be assigned to a competitive provider, or can make a transition to a competition rate when rate regulation (of default or basic service) has ended, etc. This element is indifferent to how customers got on a competitive rate. The focus is on whether they are on a competitive rate, as compared to a rate that is set by a regulatory commission.

Different jurisdictions maintain different types of "switching statistics" that may consider, for example, the frequency of customer switching to and from default service. The measure of retail competition presented in this element takes a snapshot of the percent of eligible customers on a competitive rate without regard to how they got there or how long they have been there.

Note that "opt-out aggregation" does not count as a competitive rate under this element. That is, aggregated customers are assumed to be on a regulated rate. Several jurisdictions with active aggregation believe that this measure undercounts the percentage of customers on a competitive rate.

A.3 Customers On Competitive Rates (List of Options)	***Data (Abbreviation)***	***Points***
100% of the consumers in the jurisdiction who are eligible for retail choice are on a competitive product (off the regulated rate)	100%	10
Score is calculated as the percentage of consumers eligible for retail choice that are on a competitive product, rounded to the nearest 10%, expressed in decimal form, times 10 points maximum	(percent)	Formula
All residential customer eligible for retail choice are on a regulated rate	0%	0
No retail residential customer choice	0%	0

A.4 Market Switching Measure

Key Question: Does the jurisdiction measure market switching in residential markets and regularly published the result?

Options and Points: Each jurisdiction receives a data entry reflecting the degree to which a measure of switching is clearly defined, consistently calculated, and periodically published. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: Measurement and publication of switching statistics is useful for nascent retail electricity markets. Information about switching is useful to market monitors, retail customers and retailers; therefore, this element rewards jurisdictions that consistently track and measure switching statistics and publish the results.

A.4 Market Switching Measure (List of Options)	***Data (Abbreviation)***	***Points***
There is a robust retail market; "switching" is clearly defined; switching is consistently and periodically measured across the jurisdiction; the measure of switching is widely published	Robust	10
Switching is clearly defined and switching is consistently and	Measure	7

A.4 Market Switching Measure (List of Options)	Data (Abbreviation)	Points
periodically measured across the jurisdiction		
Switching is tracked but the measures are inconsistently applied across the jurisdiction	Track	3
Switching is not tracked	NoTrack	0
No retail choice	NA	0

A.5 Market Size (New in 2010)

Key Question: What is the level of annual retail electricity sales in the jurisdiction as of September 1, 2012?

Options and Points: Each jurisdiction receives a numeric data entry equal to the GWH sales to retail consumers in a recent year. The same element is applied to both the residential and commercial portions of ABACCUS. "100,000 GWH or more" is the proxy to indicate a "sufficiently large retail market" (that is, retail sales approximately equal to those of Michigan). Twelve will receive a top score of ten points and smaller jurisdictions will receive proportionately less.

Relationship between Points and Retail Market Success: A large market is more attractive for stakeholders to enter, assuming consistent treatment throughout the jurisdiction in how an energy retailer will conduct business. How large is "large enough" and how large is "not large enough to attract retailers"? For this element, a threshold is established of approximately the size (megawatt-hour retail sales) of the electricity market in Michigan. For comparison, note that eleven U.S. states sell more electricity than Michigan at the retail level. This brings attention to the need for small jurisdictions (in particular) to establish policies and business practices which are coordinated with other states. This consistency reduces marketplace transactions costs. It should be noted that some jurisdictions have different business practices with the state. This impediment to retail choice is not considered by this simple measure of size.

A.5 Market Size (List of Options)	Data (Abbreviation)	Points
100,000 or greater GWH retail sales	(number)	10
Etc. (straight line interpolation)	(number)	0-9
No retail choice	NA	0

A.6 Number of Distinct Offers (New in 2010)

Key Question: How many distinct offers were available from competitive suppliers to residential consumers in the jurisdiction as of September 1, 2012?

Options and Points: Each jurisdiction receives a numeric data entry equal to the "number of distinct offers" available to residential consumers. This includes the number of distinct pricing offers or contracts available from various energy retailers for month-to-month power, fixed rates of various terms, green power, indexed prices, prepaid service, special services and rebate offers, etc. Only non-regulated offers are counted; that is, regulated default service is counted. "Fifty or more distinct offers" is the proxy that indicates a competitive retail market. This number may be adjusted as we learn more.

Relationship between Points and Retail Market Success: A significant number of distinct offers to residential consumers indicates healthy competition and a maturing market. A very small number of offers indicates a problem or an immature market. Consequently, a small number of points is assigned to jurisdictions that have failed to attract numerous offers from numerous retailers. It is acknowledged that this method is merely a proxy for determining the level of innovation, the degree of market differentiation and the level of market maturity.

A.6 Number of Distinct Offers (List of Options)	***Data (Abbreviation)***	***Points***
Fifty or more distinct offers to at least 50% of eligible residential customers in the jurisdiction	(number)	10
45 to 49 distinct offers	(number)	9
Etc. (straight line interpolation from 5 to 44)	(number)	Etc.
0 to 4 distinct offers in addition to the option(s) under default service	(number)	0
No retail residential customer choice	NA	0

A.7 Categories of Products (New in 2010)

Key Question: Are these four categories of products – month to-month, fixed-price, indexed price, and green – available from competitive suppliers to residential consumers in the jurisdiction as of September 1, 2012?

Options and Points: Each jurisdiction receives a score based on whether the four categories of offers are available to residential consumers. These categories of products are 1) month-to-month products, 2) fixed-price products (minimum six-month term), 3) indexed price products, and 4) clean/green products. A top score is awarded when all four categories plus other innovative products are offered. These innovations could include such things as prepay service, a time-of-use product, renewable energy purchase products (e.g., from rooftop PV), curtailable service product (e.g., air conditioner cycling), or non-commodity energy management offerings (e.g., appliance maintenance contracts, mobile phone energy apps, in-home devices).

Relationship between Points and Retail Market Success: Healthy competition and a maturing market are indicated by the variety of product offers to residential consumers. Although we cannot know which products and services will be preferred by consumers in the future, certain product categories have emerged. The four listed categories serve as a proxy for the innovation which is occurring. Numerous offers are desirable, and product differentiation measures another dimension because different residential consumers prefer different things. A smaller number of points is assigned to jurisdictions that have failed to develop product differentiation.

A.7 Categories of Products (List of Options)	***Data (Abbreviation)***	***Points***
All four listed categories of products (month-to-month, fixed price, indexed, green) plus at least one other innovative product are offered to at least 50% of eligible residential customers in the jurisdiction	5	10
All four listed categories of products is offered ...	4	8
Three of the four listed categories of products is offered ...	3	6
Two of the four listed categories of products is offered ...	2	4
One of the four listed categories of products is offered ...	1	2
No retail residential customer choice	NA	0

Topic B: Wholesale Competition

Wholesale or bulk market competition can facilitate robust retail electricity choice. Policies to support fully integrated electricity markets include the adoption of advanced market policies and the integration of retail customers into demand response activities. Wholesale competition is important to retail electricity choice because retailers require access to competitive supplies of power. Retail customers who are allowed to participate in wholesale markets make choices that are good for their individual operations (lowering of costs) and good for the network (participation in demand response markets). These elements are labeled B.1 to B.2 in this report.

Residential Elements for Wholesale Competition

No.	***Residential Element***	***Key Question***
B.1	Wholesale Market Competition	Does the jurisdiction operate in a regional wholesale electric market that satisfies nationally established statutory criteria for open-market competition?
B.2	Responsive Demand	Are large and small retail electricity customers allowed to fully participate in wholesale reliability and capacity markets?

"Wholesale Competition" refers to the degree to which the bulk power or wholesale electricity market is competitive. Wholesale competition is important to retail electricity choice because retailers must have access to competitive supplies of power, and retail customers must be allowed to participate in wholesale markets. Retail customer participation is wholesale markets for ancillary service (such as responsive reserves) is appropriate if demand and supply are to interact. These elements are labeled B.1 – B.2 in this report.

B.1 Wholesale Market Competition

Key Question: Does the jurisdiction operate in a regional wholesale electric market that satisfies nationally established statutory criteria for open-market competition?

Options and Points: Each jurisdiction receives a data entry consistent with the status of wholesale market competition in the dominant electric region in the jurisdiction. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: Electric regions in North America have made progress during the past 15 years in adopting competitive practices through the adoption of open access transmission service and rules that facilitate wholesale market transactions and support the operation of a reliable grid. Access to competitive wholesale markets is important to the success of retail electricity choice. Advanced wholesale market features are valuable for successful retail electricity choice.

B.1 Wholesale Market Competition (List of Options)	***Data (Abbreviation)***	***Points***
Wholesale market operates with FERC-approved Regional Transmission Organization (RTO)/Independent System Operator (ISO) (or equivalent) including (a) market-based congestion management, (b) markets for balancing energy, regulation, and reserves, and (c) congestion management based on a nodal design, and (d) FERC	Advanced	10

B.1 Wholesale Market Competition (List of Options)	***Data (Abbreviation)***	***Points***
exemption from PURPA purchase requirements (if relevant).		
Jurisdiction operated within several wholesale markets, some organized markets as described above, and some as described below.	Mixed	7
Wholesale market operates with FERC-approved RTO/ISO and exemption from PURPA purchase requirements (or equivalent).	Open	5
Wholesale market operates in a manner consistent with or equivalent to FERC Order 888.	Restricted	0

B.2 Responsive Demand

Key Question: Are large and small retail electricity customers allowed to fully participate in wholesale reliability and capacity markets?

Options and Points: Each jurisdiction receives a data entry that indicates the degree to which demand response is integrated into ISO activities. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: Greater direct participation of loads in wholesale markets helps to reduce price spikes, reduces the ability of generators to exercise market power, and provides a greater degree of service differentiation to retail customers. Full integration of demand and supply is essential for healthy and robust competition.

B.2 Responsive Demand (List of Options)	***Data (Abbreviation)***	***Points***
All customer loads are allowed to fully participate in the wholesale market	All	10
Large customer loads are allowed to fully participate in the wholesale market and small loads participate in a limited manner	Both	6
Large customer loads only are allowed to participate to a limited degree	Large	3
Customer loads are not allowed to participate in the wholesale market	None	0

Topic C: Default Service

Default service refers to the basic or standard rates that are established and periodically adjusted by regulators. Default service has been established as a mechanism to ease the transition from regulated tariffs to competitive electricity prices. The design and implementation of default service is the most significant issue affecting the success of retail choice. If regulators are determined to design default service so as to attempt to address all residential consumer needs, or price the service below market cost, or bundle risks and spread the risk premium to all consumers, then it is unlikely that retail electricity providers will enter the market. That is, default service designed to mimic traditional, regulated service can undermine retail competition.

Provider of last resort (POLR) is a separate safety-net service for customers whose retail energy provider goes out of business.

The elements in this topic include: which company provides default service, how default service is designed, how frequently default service is adjusted to wholesale market prices, what resources are used to supply default service (Does the supplier hedge resources?), whether restrictions are placed on customers who wish to leave default service, and whether the default service rate tracks the cost of service. Also addressed under this topic are stranded cost recovery and public purpose programs that may be required by the jurisdiction. These elements are labeled C.1 to C.8 in this report.

Residential Elements for Default Service

No.	***Residential Element***	***Key Question***
C.1	Default Service Supplier	What type of company provides default service as of September 1, 2012?
C.2	Default Service Product Options	To what extent is default service designed to provide a substitute for the choices provided in a competitive retail market?
C.3	Default Service Rate Mechanism	How frequently is the default rate adjusted to reflect the cost of service in the wholesale market?
C.4	Default Service Resource Portfolio	Does the default service provider hedge resources or match the term of the resource contracts to the term of the default service?
C.5	Default Service Switching Options	Are consumers restricted in switching away from default service?
C.6	Default Service Cost Allocation	Does the default service rate reflect the cost of service?
C.7	Stranded Cost Recovery	How is stranded costs recovery treated?
C.8	Nondiscriminatory Public Purpose Programs	Are public purpose programs – such as resource portfolio standards and conservation program requirements – applied fairly to all retailers?

Default service has generally been established as a mechanism to ease the transition from regulated rates and tariffs to competitive electricity prices and bilateral contracts. Retailers have identified default service as the most significant issue affecting the success of retail electricity choice.

The elements in this topic include what company provides default service, how it is designed, how frequently it is adjusted to wholesale market prices, whether providers can hedge resources and contract term, whether restrictions are placed on customers who wish to leave default service, and whether the rates track the cost of service. Also addressed are stranded cost recovery and public purpose programs that may be required by the jurisdiction. These elements are labeled C.1 – C.8 in this report.

C.1 Default Service Provider

Key Question: What type of company provides default service as of September 1, 2012?

Options and Points: Each jurisdiction receives a data entry that indicates the type of company that provides default (basic or standard) service. (Default service and POLR service are considered the same service in many, but not all, jurisdictions.) The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: Fully competitive markets are characterized by numerous service providers and a variety of services. Generally speaking, fully competitive markets do not require government regulated services such as default service. In the electric industry, the mass market has been regulated for a century, and customers are accustomed to regulation. Change takes time, and it is understandable that government regulators will want to ensure that basic services are provided to everyone. The appropriate period of time for a market to make the transition from one approach to another is subject to debate.

A competitive market with default service could be deemed successful if the percentage of customers receiving default service grew smaller and smaller over time. That is, a large percent of customers who receive competitive services is one mark of a healthy market. (See also Element A.3, Customers on Competitive Rates.)

Due to the history and past market structure of the regulated electric utility industry, it is reasonable that the provision of default service by an entity other than the electric distribution utility will improve the ability of customers to understand that markets are in a transition period. Consequently, the options provide an indication of the preference associated with a non-utility or non-affiliated as default service provider.

C.1 Default Service Provider (List of Options)	***Data (Abbreviation)***	***Points***
Default service (basic or standard or provider-of-last-resort) is a backstop service provided by a non-utility retailer with less than 5% of residential customers on the service	Minor	10
The default provider is a non-utility retailer	Retailer	9
The default provider is an affiliate of the local distribution utility	Affiliate	5
The default provider is the local distribution company	LDC	2
No retail choice	NA	0

C.2 Default Service Product Options

Key Question: To what extent is default service designed to provide a substitute for the choices provided in a competitive retail market?

Options and Points: Each jurisdiction receives a data entry that indicates whether default service is designed as basic service, or whether the jurisdiction has determined that default service ought to mimic the differentiated services that the regulated market used to provide in the past, or that a fully competitive market may provide in the future. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: Default service that is simple and basic is rewarded with more points. There is a preference for simple services that do not mimic or compete with the competitive market. The existence of default service is an impediment to competition because residential customers may stay with default service due to inertia or uncertainty. Greater differentiation and complexity in default service may infringe upon the pricing options and services that competitive retailers would provide in a competitive market.

C.2 Default Service Product Options (List of Options)	***Data (Abbreviation)***	***Points***
Default service (basic or standard or provider-of-last-resort) is a backstop service provided by a non-utility retailer with less than 5% of	Minor	10

C.2 Default Service Product Options (List of Options)	***Data (Abbreviation)***	***Points***
residential customers on the service		
One product (a "plain vanilla" product offering)	One	7
Multiple default provider product options that closely track the historical tariff offerings to similar consumers	Multiple	3
New product offerings include a range of product options that retail markets can provide	Range	0
No retail choice	NA	0

C.3 Default Service Rate Mechanism

Key Question: How frequently is the default rate adjusted to reflect the cost of service in the wholesale market?

Options and Points: Each jurisdiction receives a data entry that reflects the manner in which default service prices are aligned to the cost of power in the wholesale market. Greater frequency of adjustment means that retail customers who take default service are exposed to wholesale market prices to a greater degree. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: Default service that tracks the cost of power in wholesale markets is rewarded with more points. Default service already provides a substitute to the competitive market. Averaging of costs over time provides a price risk management service that competitive retailers may attempt to provide. Rates that are frozen or set below cost may prevent retail competition from taking hold by moving cost recovery to future time periods and using regulatory powers, not market mechanisms, to recover costs.

C.3 Default Service Rate Mechanism (List of Options)	***Data (Abbreviation)***	***Points***
Default service (basic or standard or provider-of-last-resort) is a backstop service provided by a non-utility retailer with less than 5% of residential customers on the service	Minor	10
Default service rate is realigned to market prices at least monthly	Monthly	9
Default service rate is realigned to market prices at least quarterly	Quarterly	6
Default service rate is realigned to market prices at least biannually (twice a year)	SixMonth	3
Default service rate is realigned to market prices at least annually	Annual	2
Default service rate is realigned to market prices only occur through a formal regulatory proceeding with no set minimum frequency of change	Regulated	1
Default service rate is realigned to market prices on a fixed schedule, but less than one rate change per year	Multiyear	0
Default service rates are frozen due to an administrative or legislative decision	Frozen	0
No retail choice	NA	0

C.4 Default Service Resource Portfolio

Key Question: Does the default service provider hedge resources or match the term of the resource contracts to the term of the default service?

Options and Points: Each jurisdiction receives a data entry that indicates the degree to which the default provider hedges a portfolio to serve default service customers. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: Default service that tracks the term of the service contract (monthly or shorter) with the term of power contracts in wholesale markets is rewarded with more points. Hedging provides risk management services that competitive markets can provide efficiently. Consumers will find a variety of hedging services through the market that are not available in a regulated default rate.

C.4 Default Service Resource Portfolio (List of Options)	***Data (Abbreviation)***	***Points***
Default service (basic or standard or provider-of-last-resort) is a backstop service provided by a non-utility retailer with less than 5% of residential customers on the service	Minor	10
The term of resource purchases matches the term of the default provider product (hour to hour, month to month, etc.)	Match	7
The default provide is allowed to hedge the resource portfolio or to "ladder" the terms for periods longer than the term of the default provider product	Hedge	3
Default provider uses its own resource supply to serve default service customers	Own	1
No retail choice	NA	0

C.5 Default Service Switching

Key Question: Are consumers restricted in switching away from default service?

Options and Points: Each jurisdiction receives a data entry that reflects the degree to which switching away from the default provider is restricted. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: Jurisdictions that allow customers to switch at any time without penalty or fee receive more points because this is consistent with the operation of a market. Each customer should be free to contract for whatever terms are preferred. Restrictions on switching from default service constitute government contracting on behalf of the retail customers and should be avoided.

C.5 Default Service Switching (List of Options)	***Data (Abbreviation)***	***Points***
Default service (basic or standard or provider-of-last-resort) is a backstop service provided by a non-utility retailer with less than 5% of residential customers on the service	Minor	10

C.5 Default Service Switching (List of Options)	***Data (Abbreviation)***	***Points***
Leave at any time; no exit or switching fees apply; the switch typically begins at the date of the next regular meter read	Open	8
Monthly opportunity to leave; no exit or switching fees apply	Monthly	7
Monthly opportunity to leave; exit and/or switching fees apply	MonthlyFee	5
Annual window of opportunity to leave; no exit or switching fees apply	Annual	2
Annual window of opportunity to leave; exit and/or switching fees apply	AnnualFee	1
Periodic window of opportunity to switch of greater than one year	Multiyear	0
No opportunity to leave default service	Restricted	0
No retail choice	NA	0

C.6 Default Service Cost Allocation

Key Question: Does the default service rate reflect the cost of service?

Options and Points: Each jurisdiction receives a data entry that indicates the degree to which default service is priced at full retail cost so that residential customers can compare services and prices in a fair environment. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: Points are awarded for default service that is designed to fully reflect wholesale power costs, and include the full retail costs incurred in competitive markets (e.g., bad debt, marketing, administration, etc.). Rates that are capped below the cost of service are a detriment to retail competition and are not awarded points. Rates that are frozen or set below cost may prevent retail competition from taking hold by moving cost recovery to future time periods and using regulatory powers, not market mechanisms, to recover costs.

C.6 Default Service Cost Allocation (List of Options)	***Data (Abbreviation)***	***Points***
Default service (basic or standard or provider-of-last-resort) is a backstop service provided by a non-utility retailer with less than 5% of residential customers on the service	Minor	10
Default provider rates reflect wholesale power costs, and provide "gross margin" for default provider, and provide allocation of "competitive elements" of distribution rate (e.g., bad debt)	WhlslBoth	9
Default provider rates reflect wholesale power costs, and provide "gross margin" for default provider	WhlslGM	7
Default provider rates reflects wholesale power costs, and provide allocation of "competitive elements" of distribution rate (e.g., bad debt)	WhlslAlloc	5
Default provider rates reflects wholesale power costs, but do not provide a "gross margin" and do not allocate "competitive elements"	WhlslOnly	3
Default provider rates do not fully reflect wholesale power costs, and the residual is allocated to a wires charge	WhlslPart	0
Default provider rates are capped at a level below the cost of wholesale power	Capped	0

C.6 Default Service Cost Allocation (List of Options)	*Data (Abbreviation)*	*Points*
No retail choice	NA	0

C.7 Stranded Cost Recovery

Key Question: How is the recovery of stranded costs treated?

Options and Points: Each jurisdiction receives a data entry that indicates the degree to which stranded costs recovery affects the pricing of default service. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: More points are awarded when stranded costs are calculated in a predictable manner and recovered in way that does not impact retail competition. Stranded cost recovery that affects the ability of retails to offer alternatives will make it difficult for retailers to offer competitive products.

C.7 Stranded Cost Recovery (List of Options)	*Data (Abbreviation)*	*Points*
Stranded benefits exist or no stranded costs were created	None	10
Stranded costs have been fully recovered (regardless of amount, calculation methodology, or recovery mechanism)	Recovered	10
Stranded costs being recovered through non-bypassable distribution-based charge with an upfront determination of amount and mechanism and recovery does not impact the "shopping credit"	NoImpact	8
Stranded costs being recovered through non-bypassable distribution-based charge with an upfront determination of amount and mechanism; however, recovery does impact the "shopping credit"	ChangeCredit	3
Stranded costs being recovered through non-bypassable distribution-based charge with on-going adjustment of stranded cost and recovery impacts the "shopping credit"	Adjustment	0
No retail choice	NA	0

C.8 Nondiscriminatory Public Purpose Requirements

Key Question: Are public purpose programs – such as resource portfolio standards and energy efficiency program requirements – applied fairly to all retailers?

Options and Points: Each jurisdiction receives a data entry that indicates whether public purpose programs, if imposed, treat all market participants fairly. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: In general, public purpose programs ought to be imposed on regulated entities such as local distribution companies. Competitive providers may be placed at a disadvantage if they are required to provide particular services that are desired by government. If required, public purpose program requirements and their costs should be imposed equally on all retail service providers.

C.8 Nondiscriminatory Public Purpose Requirements (List of Options)	Data (Abbreviation)	Points
No public purpose requirements	None	10
Public purpose requirements (resource portfolio standards, energy efficiency programs, environmental initiatives) are imposed consistently on all retailers	Fair	8
Some retailers must satisfy public purpose requirements, but other retailers are not required to do so	Unfair	0
No retail choice	NA	0

Topic D: Facilitation of Choice of Retailer

Facilitation of choice of retailer refers to the market structures, infrastructure and programs that support retail electricity choice. First, the jurisdiction's policies with regard to electric distribution market structure and code of conduct are examined. Next we consider customer education, retailer access to customer information, and uniformity of transaction standards. Finally, this element includes billing protocols, access to meter information, and advanced metering infrastructure. These elements appear as D.1 to D.9 in this report.

Residential Elements for Facilitation of Choice of Retailer

No.	Residential Element	Key Question
D.1	Distribution Utility Structure	Is the regulated distribution service function separate from competitive services?
D.2	Competitive Safeguards	Do distribution utilities operate under a code of conduct that governs relations with affiliates and is that code consistently enforced?
D.3	Consumer Education & Awareness	Is there a program to educate consumers about retail choice and to measure the results?
D.4	Access to Residential Customer Information	Do qualified retailers have easy access to basic customer information?
D.5	Uniformity of Standards	Does the jurisdiction apply uniform standards for the operation of competitive retail markets?
D.6	Transaction Standards	Does the jurisdiction require the use of a standard electronic data exchange for business transactions?
D.7	Billing Protocols	Does the jurisdiction treat billing in a manner that inhibits retail choice?
D.8	Access to Electricity Usage Data	Do retailers have timely access to detailed electricity usage data?
D.9	Advanced Metering Infrastructure	Has the jurisdiction invested in advanced metering and communications?
D.10	Electricity Usage Data Security and Customer Privacy	Has the jurisdiction established clear policies regarding the security of customer usage data, customer data privacy, and the appropriate uses of customer usage data?
D.11	Consumer Access to Price Comparisons	Can residential consumers easily compare the terms and prices of the offers from energy suppliers?

"Facilitation of Choice of Retailer" refers to the market structures, infrastructure and programs that support retail electricity choice. First, the jurisdiction's policies with regard to electric distribution market structure and the code of conduct are examined. Next, we consider customer education, retailer access to customer information, uniformity of transaction standards. Finally, this element includes billing protocols, access to meter information and advanced metering infrastructure. These elements appear as D.1 – D.9 in this report.

D.1Distribution Utility Structure

Key Question: Is the regulated distribution service function separate from competitive services?

Options and Points: Each jurisdiction receives a data entry that indicates the degree to which electric distribution utilities and their affiliates are allowed to participate in the provision of competitive retail services. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: A market structure that limits regulated electric utilities to the provision of transmission and distribution services (the network) presents a clean separation between regulated and unregulated functions. A wires only utility conducts transactions with all market participants, including its affiliates, on an arm's length basis.

Local electric distribution utilities that provide competitive services may use the network services to affect the behavior of consumers. In this context, competitive service may include the marketing of electricity, the sale of appliances or control devices, distributed generation services, bulk generation service, and other services that can be provided competitively. If affiliates of the local electric distribution utility offer competitive services, then, at a minimum, there is the perception of the potential for unfair practices. A formal separation of the regulated business units from competitive affiliates is appropriate. Oversight of these relationships through a code of conduct is likely to provide value to all competitive market participants. Elements D.1 and D.2 assess these issues.

D.1 Distribution Utility Structure (List of Options)	***Data (Abbreviation)***	***Points***
Distribution utilities are "wires only" (pure disco) and do not provide competitive retail service or competitive generation service	WiresOnly	10
About one-half of the residential retail choice customers receive distribution service from a wires-only distribution utility, while the other half receives distribution service from a utility with separate business units or affiliates that provide competitive retail service or competitive generation service	PartWires	8
Distribution utilities are separated from business units or affiliates that provide competitive retail service or competitive generation service	Separated	5
About one-half of the residential retail choice customers receive distribution service from a utility with separate business units or affiliates, while the other half receives distribution service from integrated utilities	PartInteg	3
Distribution utilities are part of integrated utilities that offer competitive retail service or competitive generation service	Integrated	0

D.2 Competitive Safeguards

Key Question: Do distribution utilities operate under a code of conduct that governs relations with affiliates and is that code consistently enforced?

Options and Points: Each jurisdiction receives a data entry that indicates the degree to which electric distribution utilities interact with business units and affiliates on an arm's length basis under a strict code of conduct. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: The greater the degree of separation – either physical or through a strict code of conduct – the greater the points awarded to the jurisdiction. A formal separation of regulated business units from competitive affiliates may be required. Regulation of these relationships through a code of conduct will help to address the concerns of competitive market participants. Elements D.1 and D.2 assess these issues.

D.2 Competitive Safeguards (List of Options)	***Data (Abbreviation)***	***Points***
Distribution utilities are "wires only" (pure disco) and do not provide retail services	WiresOnly	10
Distribution utilities interact with retail affiliates or retail business units under a strict code of conduct that is consistently enforced and that includes (a) prohibition on sharing employees and assets, (b) prohibition on affiliate using creditworthiness, (c) prohibition on joint marketing and advertising, (d) restriction on use of names and logos	Strict	7
Distribution utilities interact with retail affiliates or retail business units under a code of conduct that is consistently enforced and that includes two of the four items listed above	Moderate	5
Distribution utilities interact with retail affiliates or retail business units under a code of conduct that is consistently enforced and that includes many of the elements above	Weak	3
Distribution utilities are not restricted by a code of conduct or are part of integrated utilities	Integrated	0

D.3 Consumer Education and Awareness

Key Question: Is there a program to educate consumers about retail choice and to measure the results?

Options and Points: Each jurisdiction receives a data entry that reflects the seriousness of the consumer education effort relating to retail electric choice. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: A comprehensive education program includes consumer education and an evaluation of the results. It is generally agreed that consumer education is an appropriate role for government to play in a nascent market.

D.3 Consumer Education and Awareness (List of Options)	***Data (Abbreviation)***	***Points***
Jurisdiction has a comprehensive education program including a	Comprehensive	10

D.3 Consumer Education and Awareness (List of Options)	Data (Abbreviation)	Points
periodic evaluation of customer awareness		
Jurisdiction has a government-directed consumer education program	Govt	5
Jurisdiction has a utility-directed consumer education program	Utility	2
No consumer education program	NoEducation	0
No retail choice	NA	0

D.4Access to Residential Customer Information (revised in 2010)

Note: This element was revised in 2010 to limit its scope to customer contact information necessary for initial contact and marketing efforts by energy retailers.

Key Question: Do qualified retailers have easy access to basic customer information?

Options and Points: Each jurisdiction receives a data entry that reflects the ease with which basic customer information – address, monthly usage, etc. – is made available to qualified retailers. Each jurisdiction must balance access to sensitive data with a desire to make basic data available on a consistent basis to all retailers. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: Greater access to information reduces the transaction costs and facilitates retail electricity choice. Policies that restrict access to customer data may impose costs on some market participants but not others.

D.4 Access to Residential Customer Information (List of Options)	Data (Abbreviation)	Points
Standardized, comprehensive information is provided to all qualified retailers	Comprehensive	10
Standardized information is provided to all qualified retailers and retail customers are allowed to opt out of any list	OptOut	8
Standardized, comprehensive information provided to qualified retailers for customers who "opt in" to a list that is distributed	OptIn	5
Standardized, comprehensive information provided to qualified retailers for customers who affirmatively permit dissemination of information (e.g., provide their account number at a trade show)	Permission	4
Customer information provided to qualified retailers, but it is not standardized or comprehensive	Limited	2
No customer information dissemination plan	Restricted	0
No retail choice	NA	0

D.5Uniformity of Standards

Key Question: Does the jurisdiction apply uniform standards for the operation of competitive retail markets?

Options and Points: Each jurisdiction receives a data entry that corresponds to the degree to which it has adopted standard approaches for conducting the retail business in its jurisdiction. Jurisdictions that allow numerous electric distribution utilities to maintain separate, unique standards and approaches are imposing costs on retailers that operate across the jurisdiction, requiring that they adapt to different standards for each utility service area. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: More points are assigned to jurisdictions that work toward uniform business standards. No jurisdiction has achieved the goal of supporting the creation and adoption of standards for North America, but that seems to be an appropriate goal.

D.5 Uniformity of Standards (List of Options)	***Data (Abbreviation)***	***Points***
Adoption of North American Energy Standards Board consensus standards for retail electricity	Continental	10
Adoption of comprehensive and uniform standards that are consistently applied with a jurisdiction	Jurisdictional	5
Standards vary by distribution utility	Utility	0
No retail choice	NA	0

D.6Transaction Standards

Key Question: Does the jurisdiction require the use of a standard electronic data exchange for business transactions?

Options and Points: Each jurisdiction receives a data entry to indicate the degree of standardization for electronic data interchange in the jurisdiction. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: A standard electronic data interchange (EDI) greatly reduces transactions costs. With large customers, the faxing or manual entry of data is a small cost relative to the size of the customer. However, in the mass market (residential customers) frequent, repetitive transactions can become very costly. A non-standard, utility-by-utility approach increases the cost of each transaction and reduces the viability of retail electricity choice.

D.6 Transaction Standards (List of Options)	***Data (Abbreviation)***	***Points***
Standard EDI set for retail transactions	StdEDI	10
Standard customer information set for retail transactions	StdInfo	5
Utility-by-utility transaction processing	Utility	1
No retail choice	NA	0

D.7Billing Protocols (revised in 2012)

Key Question: Does the jurisdiction treat access to billing systems in a manner that promotes the development of retail choice?

Options and Points: Each jurisdiction receives a data entry that indicates whether billing is considered in a manner that serves the development of a retail market. There is no consensus on whether utility billing or retailer billing is an essential component of retail electricity choice. "Utility consolidated billing" (UCB) refers to a system that allows the utility to continue to bill customers on behalf of retail suppliers. An advantage of UCB is that a small retail supplier can enter a market without investing in a billing system. On the other hand, an advantage of requiring retail suppliers to acquire billing on their own will result in a closer relationship with customers and competition among billing systems and approaches. In general, retail suppliers appear comfortable with either approach as long as the rules treats retail suppliers fairly.

Another issue is responsibility for bad dept. In a "purchase of receivables" (POR) approach, the risk is pooled and shared among all market participants. Without POR, each retail supplier is at risk for bad debt, including the collection of power costs and wires charges. The number of points assigned to each option is set forth in the table.

Relationship between Points and Retail Market Success: Two approaches are assigned maximum points because there is not yet a consensus on which is best. This element presents two approaches that are problematic, and assigns fewer points to signal the problems that may be created by adopting one approach or the other.

D.7 Billing Protocols (List of Options)	***Data (Abbreviation)***	***Points***
Retailer supplier bills directly, and bears all the credit risk	Retailer	10
Retailer supplier has the option of billing directly and bearing all credit risk, or participating in UCB	Both	10
Utility consolidated billing with purchase of receivables with 0% discount	UCBPOR	10
Utility consolidated billing with credit exposure/bad debt expense on the retailer	UCB	3
Mandatory dual billing with utility billing for the wires and the retail supplier billing for the energy commodity	Dual	0
No retail choice	NA	0

D.8Access to Electricity Usage Data (revised in 2010)

Key Question: Do retailers have timely access to detailed electricity usage data?

Options and Points: Each jurisdiction receives a data entry that indicates whether retailers have immediate (same day) access to metered usage data, or whether it is available the next day or at the end of the month. For the purposes of this element, we can disregard the percent of consumers who have advanced meters with detailed interval data.

Relationship between Points and Retail Market Success: The capability to provide direct, real-time access to customer usage data to the customer and the customer's electricity retailer is valuable. An enhanced ability to measure and manage customer data in real time will improve the ability of retailers to provide services to customers, manage customer loads, manage price risk, and manage their resource portfolio and cost structure. More points are associated with enhanced access to real time usage data.

D.8 Access to Electricity Usage Data (List of Options)	***Data (Abbreviation)***	***Points***
Retailers have access to detailed customer usage data from advanced meters in close-to-real-time (same day)	SameDay	10
Retailers have access to detailed customer usage data by the next day	NextDay	7
Retailers have access to detailed customer usage data at month's end (e.g., traditional interval data recorders)	Month	3
Little to no detailed usage data are available	NoData	0
No retail choice	NA	0

D.9Advanced Metering Infrastructure

Key Question: To what level has the jurisdiction deployed advanced metering infrastructure?

Advanced metering infrastructure (AMI) is an important addition to the electric network as utilities incorporate more intelligence into the wires, enable smart grid functions, and create a platform for consumer engagement. AMI enables time-based pricing (time-of-use, critical peak, real-time), demand response programs, prepaid energy service and other advanced services. Advanced meters are defined as meters that are capable of measuring and storing as least *hourly* (or more frequent/shorter periods) consumption data and communicating these data at least once every *24 hours* (or more frequently).

Options and Points: Each jurisdiction receives a numeric data entry equal to the number of residential electricity customers in the jurisdiction with advanced meters divided by the total number of residential electricity customers in the jurisdiction (advanced meter penetration rate). This number is converted to percent, rounded to the nearest 5%. Each 10% receives two points and the maximum is 10 points. (While 100% advanced meter penetration is desirable, this element treats 50% penetration as the near-term goal to receive all 10 points.)

Relationship between Points and Retail Market Success: Advanced metering infrastructure is considered an important part of improving the ability of consumers to engage with market participants, including new pricing approaches and better cost allocation. Improved pricing will increase the ability of retailers to offer differentiated services to residential customers.

Note: Data are based on FERC biennial survey of advanced meter market penetration. 2010 results are the most current such survey, and while not up-to-date, it presents comparable state-level data.

D.9 Advanced Metering Infrastructure (List of Options)	***Data (Abbreviation)***	***Points***
50% penetration of advanced meters	50%	10
Score is calculated as the percentage penetration of advanced meters, rounded to the nearest 5%, expressed in decimal form, times two, times 10, up to a maximum of 10 points.	[percent]	Formula
Less than 2.5% penetration of advanced meters	[percent]	0

D.10 Electricity Usage Data Security and Customer Privacy

Key Question: Has the jurisdiction established clear policy and practice regarding the security of customer usage data, customer data privacy, and the appropriate uses of customer usage data?

Options and Points: Each jurisdiction receives a data entry that indicates how many of the following five issues are clearly defined in the jurisdiction's rules or practice to balance consumer protection with ease of access to data by appropriate market participants. The jurisdiction ought to define: 1) data ownership, 2) responsibility for handling data to protect consumer privacy, 3) cyber security, 4) open standards and protocols that comply with nationally recognized non-proprietary standards, and 5) the communication of meters with customer-owned devices (such as those inside a building for usage monitoring, load control, prepayment, etc.). Regarding standards and protocols, we need "bank industry consistency" so that retailers can work across the continent just as ATM cards work in most locations. Jurisdictions with a pending rulemaking proceeding on these topics are also recognized.

Relationship between Points and Retail Market Success: The ownership and protection of consumer usage data must be defined. Cyber security standards ought to be in place. There is a diversity of approaches in the states to with respect to data access, and this is a problem which can be addressed though open standards and protocols. Appropriate public policy balanced the efficiency of data access to retailers with longer-term benefits that address consumer needs, cyber security and abuses by certain retailers.

D.10 Electricity Usage Data Security and Customer Privacy (List of Options)	***Data (Abbreviation)***	***Points***
The jurisdiction has clear policies for all five issues: 1) data ownership, 2) responsibility for handling data to protect consumer privacy, 3) cyber security, 4) open standards and protocols that comply with nationally recognized non-proprietary standards, and 5) the communication of meters with customer-owned devices	All	10
Four of the five issues have been defined by rule/policy	Four	8
Three of the five issues have been defined by rule/policy	Three	6
The jurisdiction has a pending comprehensive rulemaking proceeding on these issues	Rule	5
Two of the five issues have been defined by rule/policy	Two	4
One of the five issues has been defined by rule/policy	One	2
None of the issues has been defined by rule/policy	None	0
No retail choice	NA	0

D.11 Consumer Access to Price Comparisons (New in 2011)

Key Question: Can residential consumers easily compare the terms and prices of the offers from energy suppliers?

Options and Points: Each jurisdiction receives a data entry that reflects the ease with which consumers can gain access to and compare the terms and electricity prices of offers from energy suppliers. When retail electricity choice began in the 1990s in North America, no one anticipated that a government-sponsored Web site with transparent price information would be valuable for the development of retail competition. Internet access has expanded and Web-based price comparisons have become commonplace for many products and services, including electricity. Some of the healthiest residential electric marketplaces are be associated with a government-sponsored Web site such as powertochoose.com, ctenergyinfo.com and papowerswitch.com.

A government-maintained Web site is one approach to facilitate a comparison of offers on the basis of their price and other attributes of service (percent green power, length of term for fixed-price contracts, etc.). Alternative approaches are acceptable.

Relationship between Points and Retail Market Success: In addition to a government-sponsored Web site, competing information providers have created other Web sites which attract consumers and advertisers. A robust market appears to require easy access to online information. When markets first opened, it is generally agreed that consumer education was an appropriate role for government. Now it appears that government can provide confidence and price transparency by sponsoring a Web site. Eventually it may be sufficient to gauge the access to information in a more fully competitive market.

D.11 Consumer Access to Price Comparisons (List of Options)	***Data (Abbreviation)***	***Points***
Consumers have access to a government-sponsored Web site with up-to-date power offers, price comparisons, the ability to compare other attributes of service from retail suppliers, sorting capabilities, and the ability to link to the supplier site to complete the switch.	Excellent	10
Consumers have access to a government-sponsored Web site but it lacks one or more of the list capabilities	Good	7
Consumers have access to a Web site but some suppliers and offers are missing (e.g., a commercial Web site).	Adequate	3
Consumers in the jurisdiction must call individual retail suppliers to learn their prices. Government Web site provides contact information.	None	0
No retail choice	NA	0

Commercial & Industrial Methodology

A hallmark of the ABACCUS methodology is the breadth of issues explored. Retail electricity choice cannot be understood in terms of one issue or a single outcome. The provision of electric service is fairly complex and there are numerous important design issues.

The Commercial & Industrial (C&I) ABACCUS methodology considers the issues or elements of importance to mass market retail electricity choice, and sets forth reasonable options or paths that each jurisdiction might select. Data are collected from each affected state and province, and points are assigned to the different options, depending upon the degree to which an option helps or hinders retail choice. Weights are then assigned to each issue or element to balance the numerous factors that affect the success of retail competition. A weighted average of score is calculated for each jurisdiction. These values are ranked to show which states have made the greatest progress toward successful implementation of retail electricity choice.

The residential methodology for ABACCUS gathers facts on twenty-nine issues. The methodology is organized into four general topics: A) Status of Retail Choice, B) Wholesale Competition, C) Default Service, and D) Facilitation of Choice of Retailer.

Topic A: Status of Retail Choice

"Status of Retail Choice" refers to the essential statistics regarding customer load eligibility, number of retail providers, and switching/migration. The C&I ABACCUS takes into account:

- The percentage of C&I load eligible to participate in retail electricity choice
- The number of retailers actively making offers of C&I customers of various sizes
- The percentage of eligible customer load that is not on a regulated rate (a proxy for switching or migration statistics)
- The extent to which the jurisdiction tracks and publishes switching/migration statistics

ABACCUS takes a snapshot of each state to assess eligibility, numbers of retailers, and percent switching. The specific measures consider the percentage of C&I customers eligible to participate in retail electricity choice, the number of active retailers, the percentage of eligible customers receiving a competitive product (switching), the extent to which the jurisdiction tracks and publishes statistics relating to switching, and the size of the market. These residential elements are labeled A.1 to A.7.

ABACCUS first takes a snapshot of each state to determine the percentage of commercial and industrial customers eligible to participate in retail electricity choice. Next, ABACCUS considers the number of active retailers making offers in the state and the percentage of eligible customers on a competitive price. These two measures are outcomes of a successful program and result from other appropriate actions by the state or province. ABACCUS also considers the extent to which the jurisdiction tracks and publishes statistics relating to switching. These elements are labeled A.1 to A.6 in this report.

C&I Elements for Status of Retail Choice

No.	C&I Element	Key Question
A.1	Eligibility of C&I Customer Load (%)	What percentage of commercial and industrial load in the state/province is eligible for retail electricity choice on September 1, 2012?
A.2	Number of Retailers Making Large C&I Offers (#)	How many retailers are active in making offers to large C&I customers on September 1, 2012?
A.3	Number of Retailers Making Medium C&I Offers (#)	How many retailers are active making offers to medium C&I customers on September 1, 2012?
A.4	Large C&I Customer Load Switching (%)	What percentage of eligible large C&I load has switched on September 1, 2012?
A.5	Medium C&I Customer Load Switching (%)	What percentage of eligible medium C&I load has switched on September 1, 2012?
A.6	Market Switching Measures	Does the state/province measure and regularly publish market switching or migration statistics?
A.7	Market Size	What is the level of annual retail electricity sales in the jurisdiction as of September 1, 2012?

Summary Table – Description of the Elements

Commercial/Industrial ABACCUS Topic A: Retail Market Status				
No.	**C&I Element**	**Key Question**	**Options**	**Notes**
A.1	Eligibility of C&I Customer Load (%)	What percentage of commercial and industrial load in the state/province is eligible for retail electricity choice?	Number (0 to 100%) – Percentage of C&I load in the jurisdiction eligible to choose a retailer	Less than 100% if portions of the jurisdiction of are ineligible, or if certain utility types (municipal utilities or electric cooperatives) are not required to offer choice and have not "opted in."
A.2	Number of Retailers Making Large C&I Offers (#)	How many retailers are active in making offers to large C&I customers?	Number (0 to large #) – Number of retailers in the jurisdiction actively making offers to large C&I customers	Determining how many retailers are active requires a judgment call. "Active" is almost always a number less than "registered," "licensed," or "certified."
A.3	Number of Retailers Making Medium C&I Offers (#)	How many retailers are active making offers to medium C&I customers?	Number (0 to large #) – Number of retailers in the jurisdiction actively making offers to medium C&I customers	Determining how many retailers are active requires a judgment call. "Active" is almost always a number less than "registered," "licensed," or "certified."
A.4	Large C&I Customer Load Switching (%)	What percentage of eligible large C&I load has switched?	Number (0 to 100%) – Percentage of eligible large C&I customer load that has switched from the incumbent or default service	Use the published switching statistics or calculate by subtracting the percent of large C&I load on default service from 100%. Default service or standard offer service is a regulated rate or tariff if the regulator in the jurisdiction approves the rate or rate formula. It does not matter if the default service is competitively acquired in the bulk power market.
A.5	Medium C&I Customer Load Switching (%)	What percentage of eligible medium C&I load has switched?	Number (0 to 100%) – Percentage of eligible medium C&I customer load that has switched from the incumbent or default service	Use the published switching statistics or calculate by subtracting the percent of medium C&I load on default service from 100%.

Commercial/Industrial ABACCUS Topic A: Retail Market Status				
No.	**C&I Element**	**Key Question**	**Options**	**Notes**
A.6	Market Switching Measure	Does the state/province measure and regularly publish market switching or migration statistics?	• Does not collect (NoTrack) • Collects but does not routinely publish (Track) • Collects and publishes quarterly statistics or its monthly statistics are delayed by a quarter or more (Quarter) • Collects and publishes up-to-date statistics monthly (Month) • Publishes monthly and actively promotes dissemination (Promote) • Publishes monthly, actively promotes dissemination, and uses the result as a measure of success for the agency or a goal for the jurisdiction (Success)	Jurisdictions that regularly promote the statistics demonstrate a level of engagement with the issues.
A.7	Market Size	What is the level of annual retail electricity sales in the jurisdiction as of September 1, 2012?	• 100,000 or greater GWH retail sales • Straight line interpolation • No retail choice	For this element, a threshold is established of approximately the size (megawatt-hour retail sales) of the electricity market in Michigan. This brings attention to the need for small jurisdictions to establish policies and business practices which are coordinated with other states.

Topic B: Wholesale Competition

Effective wholesale (bulk power) market competition is essential for robust retail electricity choice. Large C&I customers have sophistication and the ability to interact with the bulk power market if they are permitted to do so. This choice gives them a range of options that affect their exposure to risk. The wholesale market structure and rules defines what large customers can and cannot do within the market. Market structure determines the customers' level of access to other market participants.

Effective supply-side market policies are only one-half of an effective wholesale market. ("Supply-side efficiency is the sound of one hand clapping" is on point.) The full development of robust wholesale competition requires the integration of both demand and supply. Power suppliers must offer a range of contract options that satisfy the needs of retailers and retail customers with respect to risk management over an appropriate planning horizon. Many of the largest C&I customers will interact directly with the bulk power market. This leads to the full integration of retail and wholesale markets to ensure the success of competitive electricity markets. The wholesale market platform must consider customer loads as something to be managed by customers or their designated representatives: retailers and specialized energy service companies.

The C&I ABACCUS methodology takes into account:

- Structure of the wholesale market platform
- Market monitoring
- Participation of loads in markets for energy, power and ancillary services

Wholesale or bulk market competition can facilitate robust retail electricity choice. Policies to support fully integrated electricity markets include the adoption of advanced market policies and the integration of retail customers into demand response activities and the provision of ancillary services. Retail customers who are allowed to participate in wholesale markets make choices that are good for their individual operations (lowering of costs) and good for the network (participation in markets for ancillary services such as responsive reserves, reduction in price spikes, and reduction in congestion). These elements are labeled B.1 to B.5 in this report.

C&I Elements for Wholesale Competition

No.	C&I Element	Key Question
B.1	RTO/ISO Existence	Is the jurisdiction within an organized wholesale market (RTO or ISO)?
B.2	Market Monitor	Is the market monitoring functioning in an independent and transparent manner?
B.3	Reliability Demand Response	Can C&I loads participate in markets for capacity/reliability? Does the participation of demand-side resources occur on a level playing field with generating resources?
B.4	Economic Demand Response	Can C&I loads participate in day-ahead and real time markets for energy?
B.5	Ancillary Services	Can C&I loads participate in markets for operating reserves and responsive reserves?

Detail – Options and Scoring for Each Element

Commercial/Industrial ABACCUS Topic B: Wholesale Market Structure				
No.	**C&I Element**	**Key Question**	**Options**	**Notes**
B.1	RTO/ISO Existence	Does the jurisdiction operate its retail choice activities in a RTO/ISO?	• No functional RTO or ISO in the jurisdiction (No) • Jurisdiction is served by an RTO/ISO (Yes)	

Commercial/Industrial ABACCUS Topic B: Wholesale Market Structure				
No.	**C&I Element**	**Key Question**	**Options**	**Notes**
B.2	Market Monitor	Is the market monitoring functioning in an independent and transparent manner?	• No RTO/ISO • No independent market monitor • Weak market monitor functions with a lack of independence • Market monitor experiences some problems with independence and effectiveness • Effective and independent market monitor	Each jurisdiction is tagged with the name of the RTO/ISO (or "none") and the assessment is based on the functions performed by the market monitor.
B.3	Reliability Demand Response	Can C&I loads participate in markets for reliability? Is the participation on a level playing field with generation resources?	• C&I loads cannot participate in reliability DR and cannot receive the same market price as a generator, not a deflated amount • C&I loads can participate fully in reliability DR	Consider the features of the DR program that open or restrict load participation.
B.4	Economic Demand Response	Can C&I loads participate in day-ahead and real time markets for energy?	• C&I loads cannot participate in economic DR • C&I loads can participate fully in economic DR	
B.5	Ancillary Services	Can C&I loads participate in markets for operating and responsive reserves?	• C&I loads cannot participate in ancillary service markets • C&I loads can participate fully in ancillary service markets	

Topic C: Default Service

Default service, standard offer service, and basic service are names given to regulated electricity service products in restructured electricity markets. When used effectively, default service provides a transition service for small customers as the market matures. The length of the transition varies, and some jurisdictions do not create default service products for large C&I customers, recognizing that large customers are sophisticated and able to arrange immediately for competitive electric service.

Medium sized and smaller customers require a transition. In the C&I ABACCUS, we focus on default service for medium-sized C&I customers, testing whether the design of default service supports the transition to competition. As we discussed, a utility has acted like a risk insurer through average ratemaking and going to market for an aggregated class. As retailers shop for individual C&I customers their own risk profile will drive the pricing, and risk management tools need to be put in place during the transition.

The C&I ABACCUS methodology takes into account:

- Large C&I customer default service – its existence and costing
- Medium C&I customer default service

Default service refers to the basic or standard rates that are established and periodically adjusted by regulators. Default service has been established as a mechanism to ease the transition from regulated tariffs to competitive electricity prices. The design and implementation of default service is often the most significant issue affecting the success of retail choice. If regulators are determined to design default service so as to attempt to address all consumer needs, or price service below market cost, or bundle risks and spread the risk premium to all consumers, then it is unlikely that retail electricity providers will enter the market. That is, default service designed to mimic fully-regulated service can undermine retail competition.

Provider of last resort (POLR) is a separate safety-net service for customers whose retail energy provider goes out of business.

The elements in this topic include: which company provides default service, how default service is designed, how frequently default service is adjusted to wholesale market prices, what resources are used to supply default service, whether the supplier hedges resources, whether restrictions are placed on customers who wish to leave default service, and whether the default service rate tracks the cost of service. These elements are labeled C.1 to C.8 in this report.

C&I Elements for Default Service

No.	C&I Element	Key Question
C.1	Default Service for Large C&I	Is a regulated default service rate offered to large C&I loads as of September 1, 2012? What, if any, size limits have been set? (I.e., above which large customers must contract for market prices.)
C.2	Default Service Cost Tracking Large C&I	With what frequency is large C&I load default service rate realigned to wholesale market costs? (Hourly? Monthly? Etc.)
C.3	Default Service Provider Medium C&I	What type of company (utility; affiliate; retailer) provides default service to medium C&I load (as of September 1, 2012)?
C.4	Default Service Cost Tracking Medium C&I	With what frequency is medium C&I load default service rate realigned to wholesale market costs? (Monthly? Annually? Etc.)
C.5	Default Service Product Options Medium C&I	Is the default service rate for medium C&I load a generic or "plain vanilla" offering? Or are there variations that could be provided in the market?
C.6	Default Service Cost Allocation Medium C&I	Is the default service rate for medium C&I load discounted to include only some costs? Is it capped? Does it reflect the full power costs?
C.7	Default Service Resource Hedging Medium C&I	Is the default service provider allowed to hedge the resource portfolio? Of do the terms of the resource contracts match the terms of the default service?
C.8	Default Service Switching Options Medium C&I	Are consumers restricted in switching away from default service?

Detail – Options and Scoring for Each Element

Commercial/Industrial ABACCUS Topic C: Default Service (Standard Offer)				
No.	**C&I Element**	**Key Question**	**Options**	**Notes**
C.1	Default Service for <u>Large</u> C&I	Is a regulated default service rate offered to large C&I loads as of September 1, 2012? What, if any, size limit has been set? (Above which large customers must contract for market prices.)	• Yes, all large C&I customers are eligible to receive regulated default service (All) • Yes, a few C&I customers above 1 MW peak load are eligible to receive service (Few) • No, default service is only available to customers below 1 MW (1000kw) • No default service is only available to customers below 500 kW (500kw) • No default service is only available to customers below ~200 kW (200kw) • Only the smallest C&I customer loads are eligible to receive default service (tiny percent of C&I load) (Minor)	Jurisdictions that provide default service to the largest C&I customers are misunderstanding the purpose of default service. The largest customers do not need a transitional period.
C.2	Default Service Cost Tracking <u>Large</u> C&I	With what frequency is large C&I load default service rate realigned to wholesale market costs? (Hourly? Monthly? Etc.)	• Default service rate is realigned to market prices only occur through a formal regulatory proceeding with no set minimum frequency of change (Regulated) • Power contracts exceed one year (Multiyear) • Annually (Annual) • Six Monthly (Half) • Quarterly (Quarter) • Mix of spot and short term contracts not to exceed one year (Mix) • Monthly (Month) • Default service tracks costs on a hourly basis (Hour) • Less than 5% of C&I customer load receives default service (Minor)	This is the same approach as used in the Residential ABACCUS methodology but focused on default service for the <u>larger</u> C&I
C.3	Default Service Provider <u>Medium</u> C&I	What type of company (utility; affiliate; retailer) provides default service to medium C&I load (as of September 1, 2012)?	• Local electric distribution company (Utility) • Affiliate of the local distribution company (Affiliate) • Non-utility competitive retailer (Retailer) • Less than 5% of C&I customer load receives default service (Minor)	This is the same approach as used in the Residential ABACCUS methodology but focused on default service for the medium C&I

Commercial/Industrial ABACCUS Topic C: Default Service (Standard Offer)				
No.	**C&I Element**	**Key Question**	**Options**	**Notes**
C.4	Default Service Cost Tracking <u>Medium</u> C&I	With what frequency is medium C&I load default service rate realigned to wholesale market costs? (Monthly? Annually? Etc.)	• Default service rate is realigned to market prices only occur through a formal regulatory proceeding with no set minimum frequency of change (Regulated) • Power contracts exceed one year (Multiyear) • Annually (Annual) • Six Monthly (Half) • Quarterly (Quarter) • Mix of spot and short term contracts not to exceed one year (Mix) • Monthly (Month) • Default service tracks costs on a hourly basis (Hour) • Less than 5% of C&I customer load receives default service (Minor)	This is the same approach as used in the Residential ABACCUS methodology but focused on default service for the medium C&I
C.5	Default Service Product Options <u>Medium</u> C&I	Is the default service rate for medium C&I load a generic or "plain vanilla" offering? Or are there variations that could be provided in the market?	• Includes new product offerings that retail markets could provide (Range) • Includes multiple product options that closely track the historical tariff offerings to similar consumers (Multiple) • One product ("plain vanilla") offering (One) • Less than 5% of C&I customer load receives default service (Minor)	This is the same approach as used in the Residential ABACCUS methodology but focused on default service for the medium C&I
C.6	Default Service Cost Allocation <u>Medium</u> C&I	Is the default service rate for medium C&I load discounted to include only some costs? Is it capped? Does it reflect the full power costs?	• Default provider rates are capped at a level below the cost of wholesale power (Capped) • Default provider rates do not fully reflect wholesale power costs, and the residual is allocated to a wires charge (WhlslPart) • Default provider rates reflects wholesale power costs, but do not provide a "gross margin" and do not allocate "competitive elements" (WhlslOnly) • Default provider rates reflects wholesale power costs, and provide allocation of "competitive elements" of distribution rate (e.g., bad debt) (WhlslAlloc) • Default provider rates reflect wholesale power costs, and provide "gross margin" for default provider (WhlslGM) • Default provider rates reflect wholesale power costs, and provide "gross margin" for default provider, and provide allocation of "competitive elements" of distribution rate (e.g., bad debt) (WhlslBoth) • Less than 5% of C&I customer load receives default service (Minor)	This is the same approach as used in the Residential ABACCUS methodology but focused on default service for the medium C&I

Commercial/Industrial ABACCUS Topic C: Default Service (Standard Offer)				
No.	**C&I Element**	**Key Question**	**Options**	**Notes**
C.7	Default Service Resource Hedging Medium C&I	Is the default service provider allowed to hedge the resource portfolio? Of do the terms of the resource contracts match the terms of the default service?	• Default provider uses its own resource supply (Own) • The default provide is allowed to hedge the resource portfolio or to "ladder" the terms for periods longer than the term of the default provider product (Hedge) • The term of resource purchases matches the term of the default provider product (hour to hour, month to month, etc.) (Match) • Less than 5% of C&I customer load receives default service (Minor)	This is the same approach as used in the Residential ABACCUS methodology but focused on default service for the medium C&I
C.8	Default Service Switching Options Medium C&I	Are consumers restricted in switching away from default service?	• No opportunity to leave default service (Restrict) • Periodic window; greater than one year (Multiyear) • Annual window of opportunity to leave; exit and/or switching fees apply (AnnualFee) • Annual window of opportunity to leave; no exit or switching fees (Annual) • Monthly opportunity to leave; exit and/or switching fees apply (MonthFee) • Monthly opportunity to leave; no exit or switching fees apply (Month) • Leave at any time; no exit or switching fees; the switch typically begins at the date of the next regular meter read (Open) • Less than 5% of C&I customer load receives default service (Minor)	This is the same approach as used in the Residential ABACCUS methodology but focused on default service for the medium C&I

Topic D: Facilitation of Choice of Retailer

Facilitation of choice of retailer refers to the market structures, infrastructure and programs that support retail electricity choice.

A key addition, as compared to the Residential ABACCUS methodology, is the treatment of on-site generation. Distributed generation and combined heat and power can serve as an alternative to power purchases from the grid and can provide a physical hedge, on-site energy efficiency and enhance reliability.

Facilitation of choice of retailer includes the following:

- Electric distribution system structure
- Electric distribution utility services and regulation
- Competitive safeguards and a code of conduct
- Administration of switching

- Uniformity of standards; transaction standards
- Distributed generation policies (including interconnection)

Facilitation of choice of retailer refers to the market structures, infrastructure and programs that support retail electricity choice. First, the jurisdiction's policies with regard to electric distribution market structure, functions regulated and types of service provided. We consider the code of conduct and administration of switching. Next we consider uniformity of transaction standards, treatment of distributed generation and ownership of metering information. These elements appear as D.1 to D.9 in this report.

C&I Elements for Facilitation of Choice of Retailer

No.	C&I Element	Key Question
D.1	Electric Distribution Utility Structure	Does the jurisdiction have vertically-integrated, functionally separated, or wires-only electric utilities?
D.2	Electric Distribution Utility Regulation	Are the electric distribution utility functions (wires) regulated and appropriately separated from the competitive market functions (the customer premises services)?
D.3	Electric Distribution Utility Types of Services	What types of services are provided by the electric distribution utility?
D.4	Competitive Safeguards	Do the electric distribution utilities operate under a code of conduct that governs relations among affiliates and is that code consistently enforced?
D.5	Administration of Switching	Does a central, fully-independent organization handle all customer switching requests?
D.6	Uniformity of Standards	Does the jurisdiction apply uniform standards for the operation of competitive retail markets?
D.7	Transaction Standards	Does the jurisdiction require the use of a standard electronic data exchange (EDI) for business transactions?
D.8	On-site Generation Alternatives	Do C&I customers have interconnection and distribution system access that facilitates the use of DG as an alternative?
D.9	Electricity Usage Data Security and Customer Privacy	Has the jurisdiction established clear policies regarding the security of customer usage data, customer data privacy, and the appropriate uses of customer usage data?

Summary Table – Description of the Elements

Commercial/Industrial ABACCUS Topic D: Facilitation of Choice of Retailer				
No.	**C&I Element**	**Key Question**	**Options**	**Notes**

Commercial/Industrial ABACCUS Topic D: Facilitation of Choice of Retailer				
No.	**C&I Element**	**Key Question**	**Options**	**Notes**
D.1	Electric Distribution Utility Structure	Does the jurisdiction have vertically-integrated, functionally separated, or wires-only electric utilities?	• Vertically integrated utilities provide electric distribution service (Integrated) • ~½ integrated utilities and ~½ functionally separated utilities (PartInteg) • Functionally separated utilities provide electric distribution service (Separated) • ~½ functionally separated utilities and ~½ wires only utilities (PartWires) • Wires only electric distribution utilities in competitive regions (WiresOnly)	
D.2	Electric Distribution Utility Regulation	Are the electric distribution utility functions regulated and separated from the competitive market functions on the customer's premises?	• Electric distribution utilities provide competitive services on customer premises which are not regulated or separated from wires functions (Unsupervised) • Electric distribution utilities provide competitive services on customer premises which are fully regulated (Regulated) • Electric distribution utilities provide competitive services on customer premises which are fully regulated and fully separated (Separated) • Electric distribution utilities provide wires related services only service (WiresOnly)	What costs and risks do retailers face if the local distribution utility is able to offer value added services that are not regulated? This element helps to determine whether the jurisdiction separates regulated services from competitive services.
D.3	Electric Distribution Utility Types of Services	What types of services are provided by the electric distribution utility?	• Wires service plus metering, billing, value-added services and default service (All) • Wires service plus metering, billing, and value-added services (Value) • Wires service plus metering and billing (Billing) • Wires service plus metering (Metering) • Wires service only (WiresOnly)	This element helps to determine where the jurisdiction draws a line between regulated services and competitive services. What "value added" services provided by the utility are the most detrimental to the success of retail choice?

Commercial/Industrial ABACCUS Topic D: Facilitation of Choice of Retailer				
No.	**C&I Element**	**Key Question**	**Options**	**Notes**
D.4	Competitive Safeguards	Do the electric distribution utilities operate under a code of conduct that governs relations among affiliates and is that code consistently enforced?	• Integrated utilities (no code or restriction their sharing of information) (Integrated) • Weak code of conduct (Weak) • Strong code of conduct (full "arm's length" separation of affiliated consistently enforced) (Strong) • Wires (delivery) service only throughout the jurisdiction (that is, no affiliates) (WiresOnly)	This element applies to the portions of the jurisdiction where functional separation occurs.
D.5	Administration of Switching	Does a central, fully-independent organization handle all customer switching requests?	• Administered by each electric distribution utility (Utility) • Administered by more than one entity in the jurisdiction (Multiple) • Administered by one independent entity across the entire jurisdiction (One)	
D.6	Uniformity of Standards	Does the jurisdiction apply uniform standards for the operation of competitive retail markets?	• Standard vary by utility • Uniform standards throughout the jurisdiction • NAESB consensus standards	
D.7	Transaction Standards	Does the jurisdiction require the use of a standard electronic data exchange (EDI) for business transactions?	• Utility specific processing (Utility) • Standard customer information set throughout jurisdiction (StdInfo) • Standard Electronic Data Interchange (EDI) for all transactions (StdEDI)	

Commercial/Industrial ABACCUS Topic D: Facilitation of Choice of Retailer				
No.	**C&I Element**	**Key Question**	**Options**	**Notes**
D.8	On-site Generation Alternatives	Do C&I customers have interconnection and distribution system access that facilitates the use of DG as an alternative?	• Jurisdiction does not have DG interconnection rules and procedures for all utilities and/or the jurisdiction allows utilities discretion (inconsistencies within the state/province) (Limited) • Fair interconnection rules but a few restrictive DG policies remain (Fair) • Fair interconnection and fair policies plus incentive payments or portfolio standards that encourage DG (Incentive) • Fair interconnection and policies plus incentives/portfolio standards to encourage DG, plus power export allowed on the distribution system (Full)	Independent rating of state interconnection rules, standby pricing tariffs, and policies favorable to DG is prepared every by ACEEE in its scorecard on energy efficiency. ACEEE also assessed CHP during the past five years. ABACCUS score is a weighted average of the following: ½ State scorecard, 20% # projects in five years, and 30% # of MW in five years.
D.9	Electricity Usage Data Security and Customer Privacy (revised in 2012)	Has the jurisdiction established clear policies on five key issues relating to usage data?	• Data ownership • Responsibility for handling data to protect consumer privacy • Cyber security • Open standards and protocols that comply with nationally recognized non-proprietary standards • Communication of meters with customer-owned devices	How many of the five issues are clearly defined in the jurisdiction's rules or practice? The objective is to balance consumer protection with ease of access to data by appropriate market participants. Give credit for jurisdictions with a pending comprehensive rulemaking proceeding on these issues

A10

Retail Electricity Customers Benefit When Suppliers Compete to Serve Them

Based on recent results is clear that competition is helping to drive prices lower for customers in a number of states.

States with competitive retail power markets typically require competitive processes to determine electricity rates for customers who elect default or standard offer service.

And standard offer service rates are dropping in several states where competitive processes were used to obtain electricity supplies for customers who, for whatever reasons, opt not to take advantage of the competitive market by shopping.

Standard offer electric rates in Maine are decreasing thanks to what Maine Public Utilities Commission Chairman Tom Welch called **"a robust auction process"** expected to save residential and business customers $50 million next year.

In Ohio, a 14-round competitive auction was used to lower by 17.5 percent standard service rates for residential customers in Duke Energy Ohio's service territory, where competitive retail suppliers now serve almost 70 percent of the electricity consumed by retail customers.

"Duke's first generation supply auction has secured significantly lower electric prices for customers," Todd Snitchler, chairman of the Public Utilities Commission of Ohio, **said in a press release**.

"As we have seen with similar auctions in other parts of Ohio, market forces have consistently led to lower rates. Ultimately, Ohio's emerging competitive marketplace will provide families, business, and industry alike with new and innovative supplier options to meet their electricity needs," Snitchler said.

In Connecticut, where 80 percent of the electricity consumed is provided by competitive suppliers, falling prices in New England's competitive wholesale power are being passed along to consumers through the standard service rate.

The **Public Utilities Regulatory Authority reported** that residential customers taking standard service from Connecticut Light & Power will save about 1.2 cents per kilowatt-hour, saving the average customer about $108 annually. Residential standard service customers of United Illuminating will see a nearly 2 cents per kilowatt-hour decrease, saving the average customer $162 annually. The savings for standard service businesses customers of the two utility distribution companies will be even greater.

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Joel Malina | December 21, 2011

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Ohio | Public Utilities Commission
John R. Kasich, Governor
Todd A. Snitchler, Chairman

For Immediate Release
Contact: Jason Gilham
614 | 466 7750

Duke Energy auction leads to lower electric prices in 2012

COLUMBUS, OHIO (Dec. 15, 2011) – The Public Utilities Commission of Ohio (PUCO) today approved the results of the first of five auctions that will determine Duke Energy Ohio's electric generation rates through May 2015. Based on the results of the auction and Duke's recently approved electric security plan, a residential customer using 1,000 kilowatt hours (kWh) of electricity will see their total monthly electric bill decrease by approximately 17.5 percent in 2012.

"Duke's first generation supply auction has secured significantly lower electric prices for customers," PUCO Chairman Todd A. Snitchler stated. "As we have seen with similar auctions in other parts of Ohio, market forces have consistently led to lower rates. Ultimately, Ohio's emerging competitive marketplace will provide families, business, and industry alike with new and innovative supplier options to meet their electricity needs."

During yesterday's 14-round auction, competitive suppliers submitted bids for the opportunity to provide electricity to Duke customers. The auction resulted in three distinct clearing prices that the PUCO blended to determine Duke's new generation price of $52.68 per megawatt hour (MWh) for January 2012 through May 2013.

- Six suppliers submitted winning bids that resulted in a clearing price of $49.72 per MWh for the January 2012 through May 2013 delivery period.
- Seven suppliers submitted winning bids that resulted in a clearing price $51.10 per MWh for the January 2012 through May 2014 delivery period.
- Four suppliers submitted winning bids for a clearing price $57.08 per MWh for the January 2012 through May 2015 delivery period.

The PUCO will blend the results of this auction with the results of auctions scheduled for May 2012, November 2012, May 2013 and November 2013 to finalize Duke's generation prices for June 2013 through May 2015.

CRA International served as the independent auction manager, and the PUCO staff monitored the auction process. The names of the winning bidders will be released by the PUCO in 21 days.

Today's Commission finding and order and a redacted version of the report issued by the auction manager will be available later today at **www.PUCO.ohio.gov**. Click on the link to DIS, and enter the case number 11-6000-EL-UNC.

-30-
11-6000-EL-UNC

The Public Utilities Commission of Ohio (PUCO) is the sole agency charged with regulating public utility service. The role of the PUCO is to assure all residential, business, and industrial consumers have access to adequate, safe, and reliable utility services at fair prices while facilitating an environment that provides competitive choices. Consumers with utility-related questions or concerns can call the PUCO Call Center at (800) 686-PUCO (7826) and speak with a representative.

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A12

OFFICE OF RETAIL MARKET DEVELOPMENT
ILLINOIS COMMERCE COMMISSION

2012 ANNUAL REPORT

Submitted Pursuant to Section 20-110 of the
Illinois Public Utilities Act

June 2012

Printed by authority of the State of Illinois
45c. - June 2012 - #691

STATE OF ILLINOIS

ILLINOIS COMMERCE COMMISSION

June 30, 2012

The Honorable Pat Quinn
Governor

The Honorable Members of the Illinois General Assembly

The Honorable Members of the Illinois Commerce Commission

Please find enclosed the ICC's Office of Retail Market Development's annual report. This report is submitted in compliance with Section 20-110 of the "Retail Electric Competition Act of 2006" [220 ILCS 5/20-110]. Section 20-110 requires the Director of the Office of Retail Market Development to annually report specific accomplishments in promoting retail electric competition.

Sincerely,

Torsten Clausen
Director, Office of Retail Market Development

160 North LaSalle, Suite C-800, Chicago, Illinois 60601 [312] 814-1629

Annual Report to the General Assembly, the Governor, and the Illinois Commerce Commission

Submitted pursuant to Section 20-110 of the Illinois Public Utilities Act

Office of Retail Market Development

Illinois Commerce Commission

June 2012

I. Introduction

Section 20-102 of the Retail Electric Competition Act of 2006 ("Retail Competition Act") states that

> "a competitive wholesale electricity market alone will not deliver the full benefits of competition to Illinois consumers. For Illinois consumers to receive products, prices and terms tailored to meet their needs, a competitive wholesale electricity market must be closely linked to a competitive retail electric market. To date, as a result of the Electric Service Customer Choice and Rate Relief Law of 1997, thousands of large Illinois commercial and industrial consumers have experienced the benefits of a competitive retail electricity market. Alternative electric retail suppliers actively compete to supply electricity to large Illinois commercial and industrial consumers with attractive prices, terms, and conditions.
>
> A competitive retail electric market does not yet exist for residential and small commercial consumers. As a result, millions of residential and small commercial consumers in Illinois are faced with escalating heating and power bills and are unable to shop for alternatives to the rates demanded by the State's incumbent electric utilities. The General Assembly reiterates its findings from the Electric Service Customer Choice and Rate Relief Law of 1997 that the Illinois Commerce Commission should promote the development of an effectively competitive retail electricity market that operates efficiently and benefits all Illinois consumers."

To further the goal of developing an effectively competitive retail electricity market, the Retail Competition Act created the Office of Retail Market Development ("ORMD") within the Illinois Commerce Commission ("ICC"). Section 20-110 of the Retail Competition Act provides that on or before June 30 of each year, the Director of the ORMD submit a report to the Commission, the General Assembly, and the Governor, that details specific accomplishments achieved by the Office in the prior 12 months in promoting retail electric competition and that suggests administrative and legislative action necessary to promote further improvements in retail electric competition.

II. Recent competitive activity

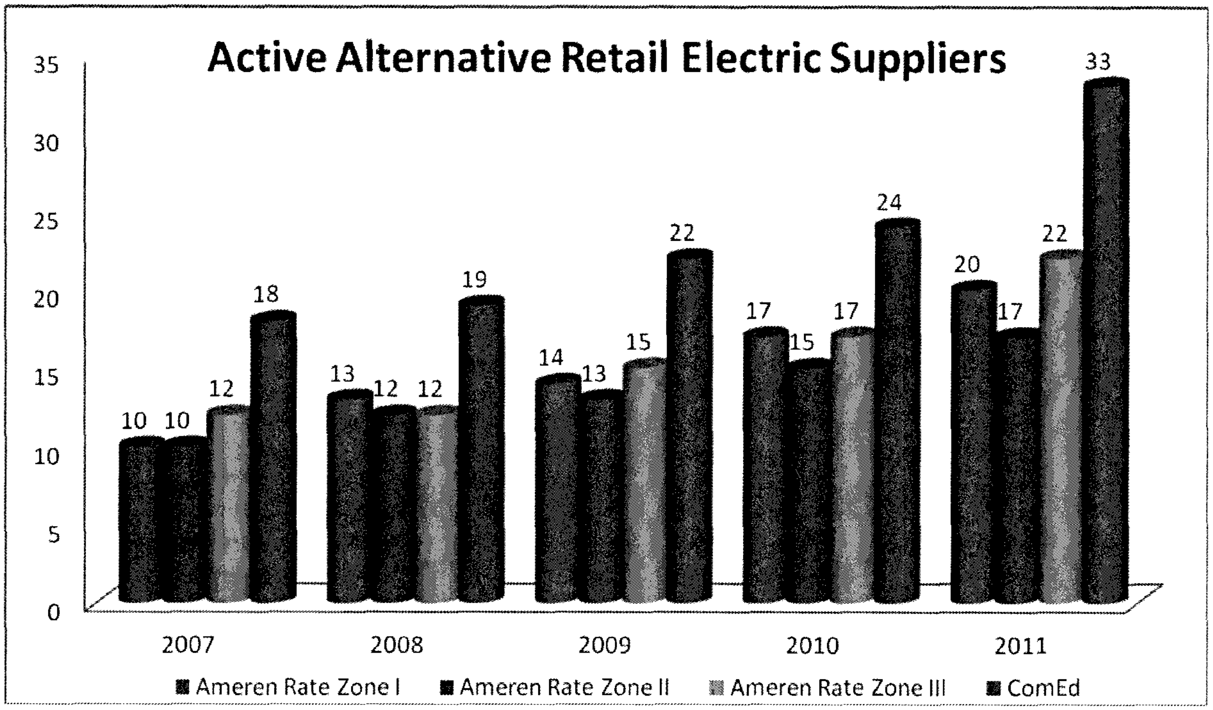
A. Number of certified and registered suppliers

Statewide, there are currently 70 alternative retail electricity suppliers ("ARES") that have obtained ICC certification pursuant to Section 16-115[1]. This is up from 54 suppliers at the same time last year. Forty ARES have obtained certification to serve residential and small commercial customers, which is up from 22 as of last year. Aside from receiving a certificate from the Commission, suppliers must also register with the electric utility and complete certain technical testing before they can start offering retail electric service in Illinois. Twenty-six suppliers have completed the registration process with Ameren Illinois, compared to 18 at the same time last year. Twenty-four of those suppliers were actively selling electricity in the territory as of December 2011, up from seventeen as of December 2010. In Commonwealth Edison's ("ComEd's") territory, forty-four suppliers have completed the registration process, which is almost double the number from last year (there were 24 suppliers last year). Thirty-five of those suppliers were actively selling electricity as of December 2011, compared to 24 as of December 2010. Four of the active suppliers are either electric utilities or affiliates of electric or natural gas utilities.

The following shows the number of active ARES from 2007 to the end of 2011 by utility service territory:[2]

[1] Twelve of the 70 suppliers are certified to serve only themselves or their affiliates.

2 In order to maintain consistency with the reporting of previous years, the graph includes ARES providing power to themselves or their subsidiaries for the Ameren Illinois territories. Also, several suppliers operate in more than one utility service territory.



B. Customer switching to alternative electric suppliers

For the past few years, more than half of the total electric consumption of ComEd's and Ameren Illinois's customers has been provided by alternative retail electric suppliers. However, this year marks the first time that more than 60% of the total electric usage of ComEd customers as well as the customers of all three Ameren Illinois rate zones has been provided by retail electric suppliers. Looking specifically at ComEd, February 2008 marked the first time more than 50% of the total electric usage was provided by competitive suppliers and October 2011 was the month that the number had crossed the 60% mark for the first time. Given the recent substantial increase in residential usage provided by the suppliers, it is likely that the 70% mark will be reached fairly soon.

Also worth pointing out is that the amount of ARES-provided electric usage to the 0-100 kW customer class has crossed the 50% mark in both ComEd and Ameren Illinois' territories for the first time this year.

One additional indicator of competitive activity is the steadily rising number of Agents, Brokers, and Consultants ("ABCs") seeking a license pursuant to Section 16-115C of the Public Utilities Act ("PUA"). There are currently 211 licensed ABCs, up from 133 reported in June 2011. There are eight additional license applications currently pending at the Commission.

The following provides detailed non-residential usage information for the four utility service areas.

1. ComEd

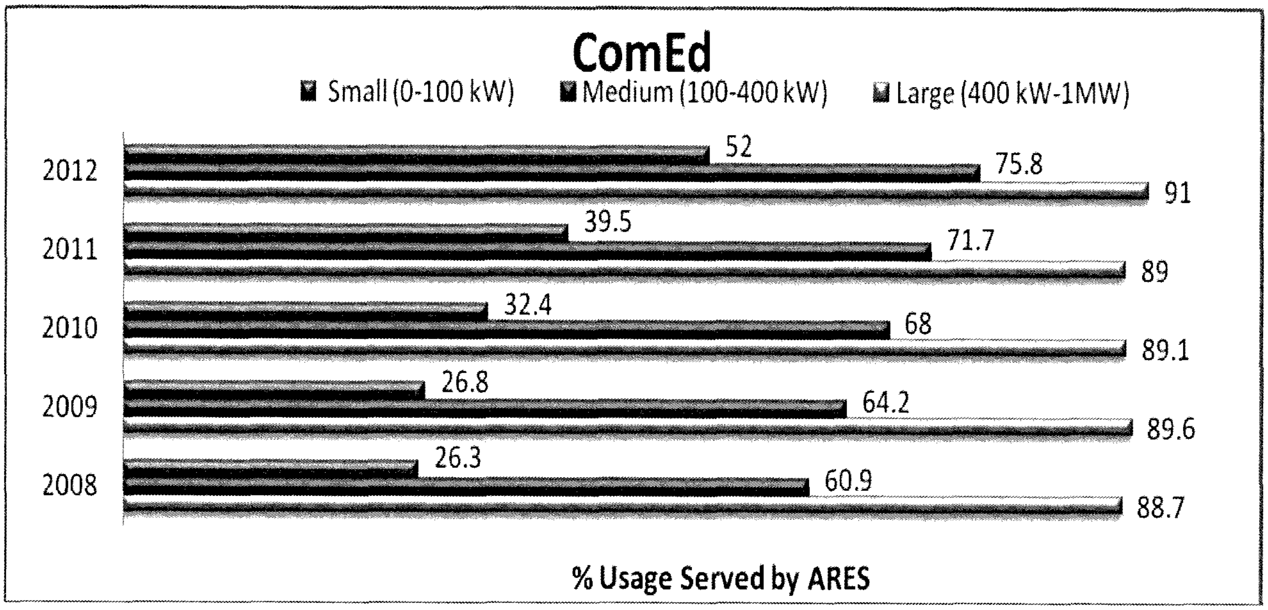
As of May 31, 2012, 64% of the total electric usage of ComEd's customers was provided by alternative retail electric suppliers (up from 58% a year ago). Breaking it down further, about 52% of the electric usage of ComEd's small commercial customers[3] (up from about 40% a year ago) and almost 76% of its medium commercial and industrial customers[4] (up from about 72%) was provided by ARES. For large customers[5] it was 91% (up from 89% last year), and about 97% of customers with a demand of over 1MW received service from an ARES (the same as last year). Together, 83% (up from 79.5%) of all non-residential load was provided by alternative retail electric suppliers as of May 31, 2012. The following shows the electric usage provided by ARES for the various commercial and industrial customer classes for the past four years[6].

[3] Non-residential customers with demand up to 100kW.

[4] Non-residential customers with demand between 100kW and 400kW.

[5] Non-residential customers with demand between 400kW and 1MW.

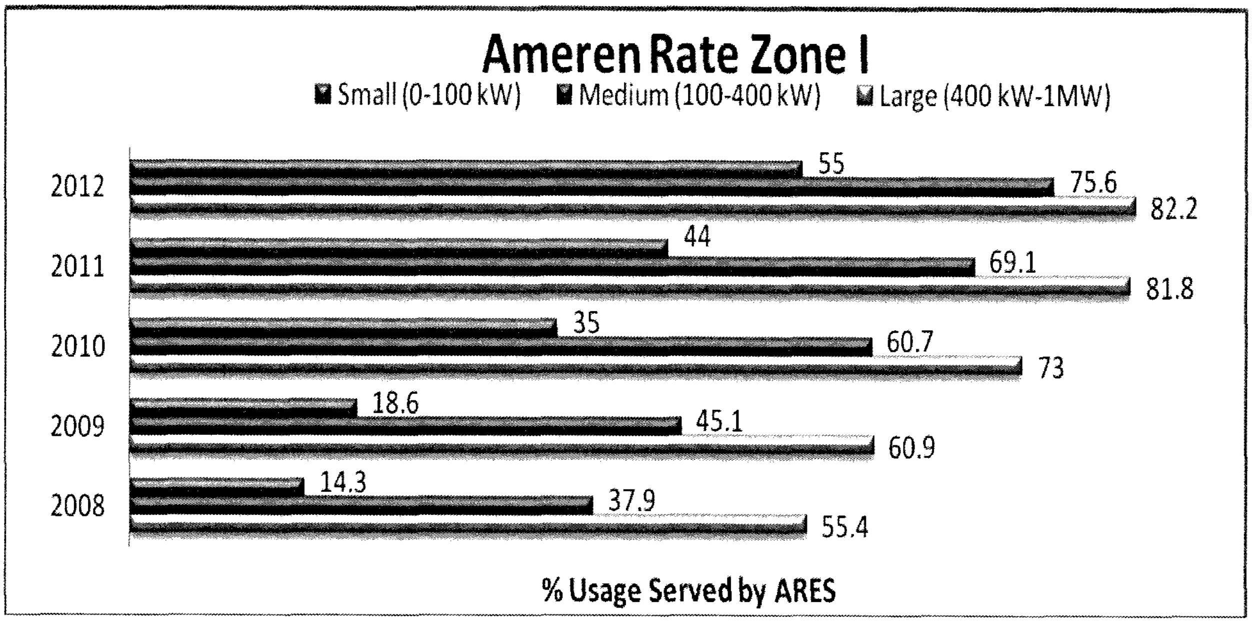
[6] Data as of May 31 of each year.



2. AIC Rate Zone I (formerly AmerenCIPS)

As of May 31, 2012, 60% of the total electric usage of Rate Zone I customers was provided by alternative retail electric suppliers (up from 54% a year ago). Fifty-five percent of the electric usage of small commercial customers in Rate Zone I (up from 44% a year ago) and approximately 76% of electric usage of its medium commercial and industrial customers (up from 69%) was provided by ARES. For large customers it was 82% (about the same as last year), and for customers with a demand of over 1MW, 80% of the usage was served by alternative electric suppliers (unchanged from last year). Together, 76% of all non-residential load was provided by alternative retail electric suppliers as of May 31, 2012 (up from 73%). The following shows the electric usage provided by ARES for the various commercial and industrial customer classes for the past four years[7].

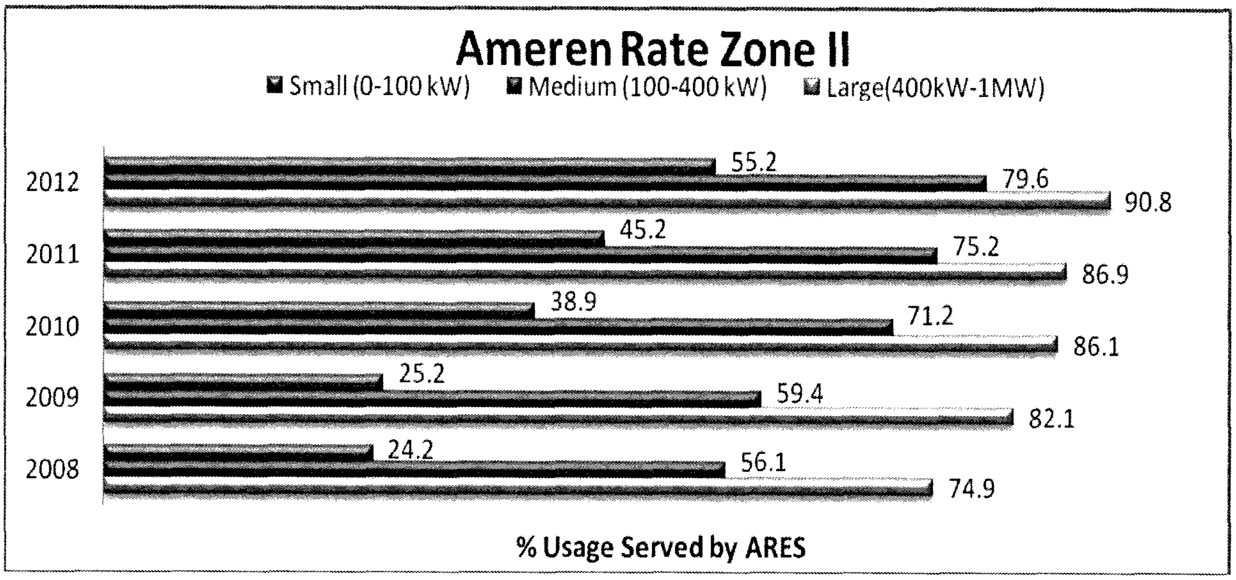
[7] Data as of May 31 of each year.



3. AIC Rate Zone II (formerly AmerenCILCO)

As of May 31, 2012, 65% of the total electric usage of Rate Zone II customers was provided by alternative retail electric suppliers (up from 60% last year). About 55% of the electric usage of small commercial customers in Rate Zone II (up from 45%) and approximately 80% of electric usage for its medium commercial and industrial customers (up from 75%) was provided by ARES. For large customers it was 91% (up from 87%), and for customers with a demand of over 1MW, over 93% of the usage was served by alternative retail electric suppliers (about the same as last year). Together, 86% of all non-residential load was provided by alternative retail electric suppliers as of May 31, 2012 (up from 83%). The following shows the electric usage provided by ARES for the various commercial and industrial customer classes for the past four years[8].

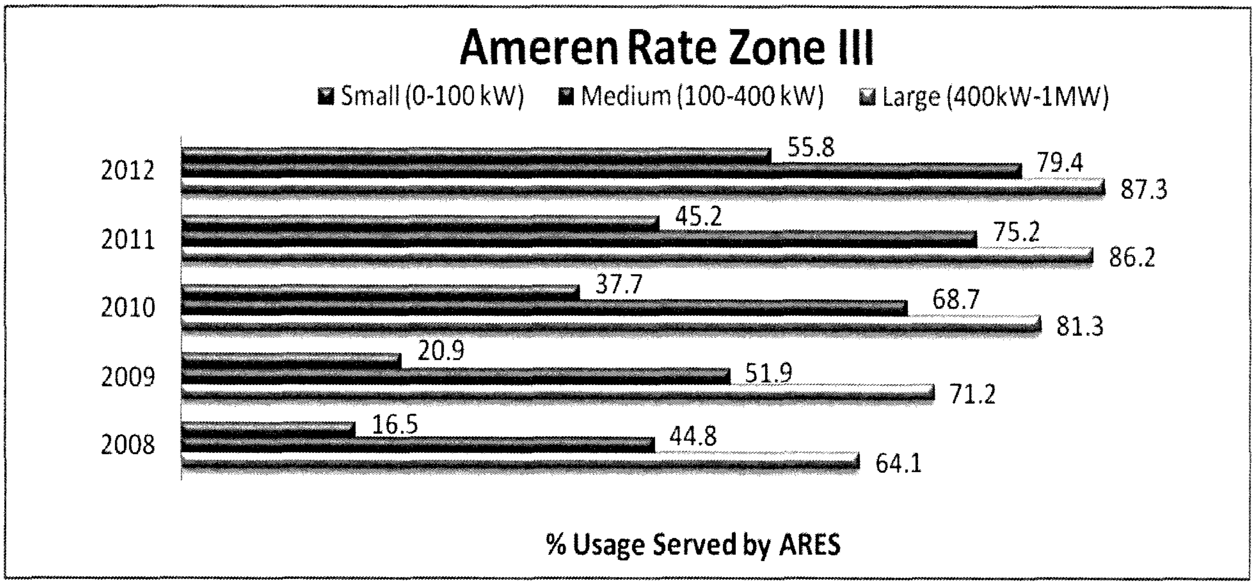
[8] Data as of May 31 of each year.



4. AIC Rate Zone III (formerly AmerenIP)

As of May 31, 2012, 68% of the total electric usage of Rate Zone III customers was provided by alternative retail electric suppliers (up from 63% last year). About 56% of the electric usage of small commercial customers in Rate Zone III (up from 45%) and approximately 79% of electric usage for its medium commercial and industrial customers (up from 75%) was provided by ARES. For large customers it was 87% (up from 86%), and for customers with a demand of over 1MW, about 94% of the usage was served by alternative retail electric suppliers (down from about 96%). Together, about 87% of all non-residential load was provided by alternative retail electric suppliers as of May 31, 2012 (up from 85%). The following shows the electric usage provided by ARES for the various commercial and industrial customer classes for the past four years[9].

[9] Data as of May 31 of each year.



5. Competitive Declarations

As of August 2007, Section 16-113(f) of the Act declared the provision of electric power and energy to retail customers of ComEd and Ameren Illinois with peak demands of at least 400 kilowatts to be a competitive service. The legislation resulted in ComEd's discontinuation of providing fixed-price bundled service to those customers after the end of the May 2008 billing period. The law similarly provided that Ameren Illinois does not need to provide fixed-price bundled service to that class of customers after the end of the May 2010 billing period.

In addition, Section 16-113(g) gives both ComEd and Ameren Illinois the ability to declare the provision of power and energy to customers with peak demands of at least 100 kilowatts but less than 400 kilowatts to be competitive if certain conditions are met. In 2007, ComEd filed a petition for competitive declaration and the Commission found that ComEd had satisfied the statutory requirements and therefore the provision of power and energy to those customers has been declared competitive as of November 2007[10]. As a result of the competitive declaration, after the end of the May 2010 billing period, all customers in the 100-400kW class, with the exception of some statutorily exempted condominium

10 ICC Docket No. 07-0478.

associations, are taking supply service from the utility on an hourly-pricing basis or they receive service from an alternative retail electric supplier.

On March 1, 2011, Ameren Illinois filed a petition for competitive declaration of its customers with peak demands above 150 kilowatts but less than 400 kilowatts[11]. Ameren's petition stated that 67% of its customers with peak demands between 150 and 400 kilowatts were currently being served by an ARES. The Commission approved Ameren's petition on March 23, 2011 with the competitive declaration to be effective on May 1, 2011. Customers in this class will continue to receive fixed-price bundled utility service until May 2014 unless they elect to receive service from a retail electric supplier before that date. Going forward, the only non-residential customers still receiving a fixed-price supply service from the utility are ComEd customers with demand below 100kW and AIU customers with demand below 150kW. All other non-residential customers will receive their power from a competitive supplier or they will be on the utility's hourly-pricing option.

6. Market concentration

Until the 2010 annual report, we had only reported on the share of electrical usage that is not provided by the utilities. Until then, we had looked exclusively at the usage provided by ARES as a whole. While those numbers show that more and more of the total non-residential consumption is being provided by retail electric suppliers, it does not tell us whether that usage is provided by a few dominant providers or whether that usage is more evenly divided among many providers competing in that market.

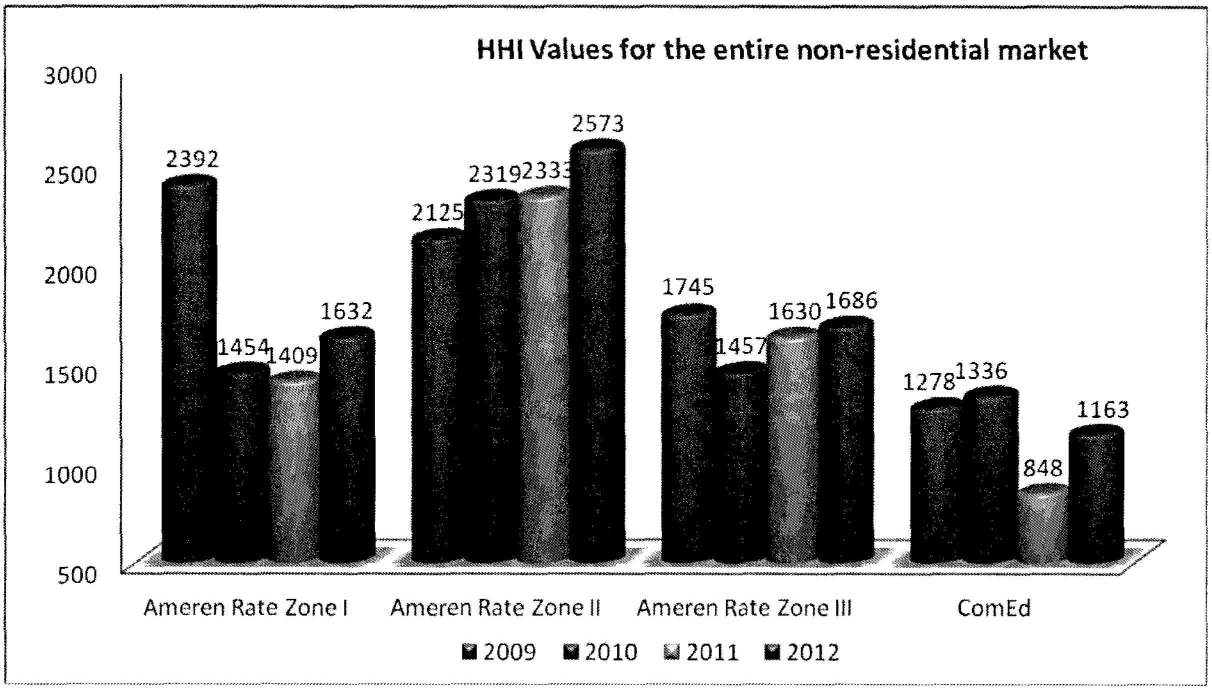
Similar to the last two reports, this year's report again analyzes the non-residential market shares of the individual ARES by looking at the share of electric usage provided by an ARES instead of the share of customers served by individual ARES. We believe either approach would be informative but we assume the amount of kWh served might be more closely related to an ARES' financial success than the number of customers it serves. In addition, when calculating market shares based on customer counts, we did not find significant differences from the values derived from using ARES-provided usage. We again used the Herfindahl-Hirschmann index, or HHI, which is a common indicator to measure

[11]ICC Docket No. 11-0192.

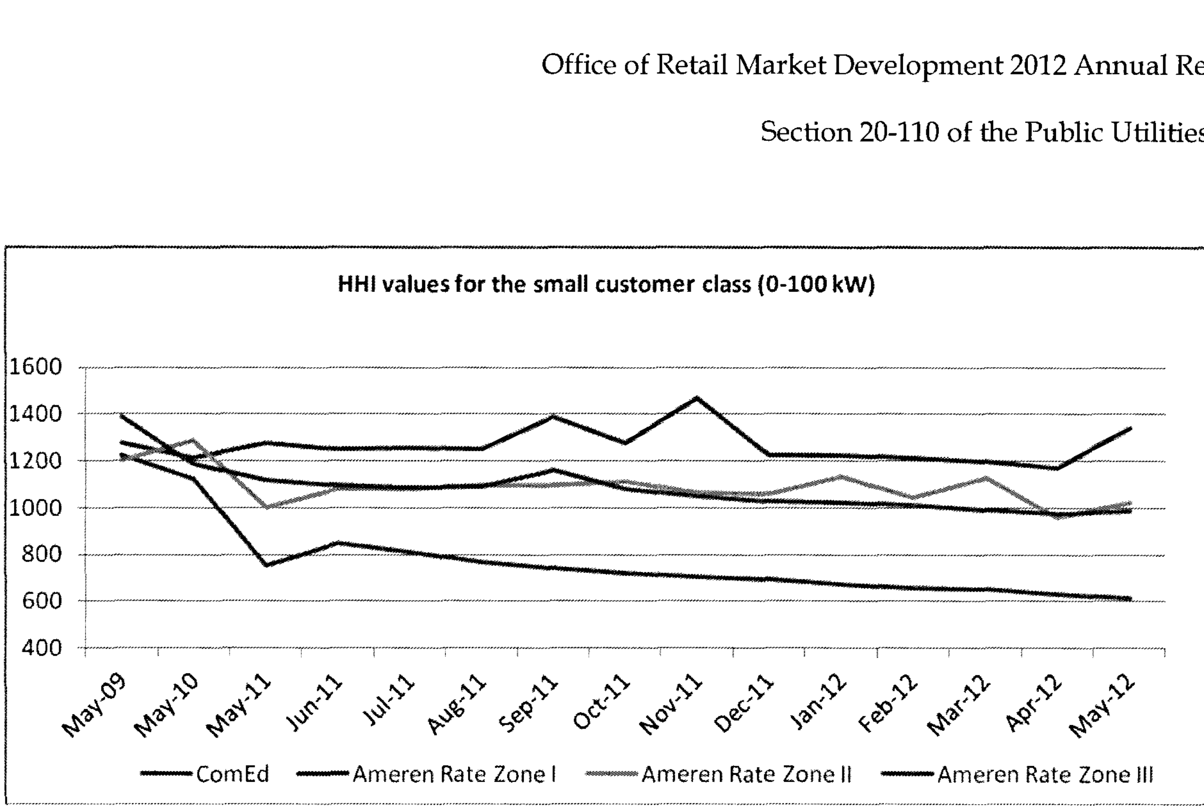
competition among firms in a defined market. In order to put the resulting numbers into perspective, we looked at the revised 2010 Horizontal Merger Guidelines by the Department of Justice ("DOJ") and the Federal Trade Commission ("FTC"), which divide the spectrum of market concentration into three regions. Generally speaking, the revised guidelines state that the DOJ and the FTC view a market with an HHI below 1,500 as unconcentrated (meaning many similarly sized firms compete for the same customers), a market with an HHI between 1,500 and 2,500 as moderately concentrated, and a market with an HHI above 2,500 as highly concentrated (very few firms dominating the market).

For this exercise, we again excluded retail electric suppliers that provide electric supply only to themselves or their subsidiaries or affiliates. We also need to emphasize that the numbers below reflect only the segment of the non-residential market that has already switched to a competitive supplier. In other words, the market concentration analysis shown here does not include the customers on utility fixed-price service (where available) or utility-provided hourly service.

The first graph shows the HHI values for the total non-residential market among the four utility service areas. While it is unreasonable to assume that all non-residential customer classes are considered to be part of the same market, the overall HHI values shown here display the trend in market concentration from May 2009 to May 2011. The values also allow a relative comparison among the utility service territories. As the graph shows, the ComEd non-residential market is generally less concentrated than the three Ameren Illinois markets. It also shows that ComEd's total non-residential market has been unconcentrated for all four years shown here. Ameren Illinois's Rate Zones are generally in the moderately concentrated range of 1,500 to 2,500, with the exception of the 2012 value for Rate Zone II. Overall, the HHI values have gone up from 2011 to 2012. Even though the biggest increase in HHI values occurred in ComEd's total non-residential market, the 2012 numbers still show it to be a relatively unconcentrated market.



Turning to the individual non-residential customer classes, our analysis shows that the small and medium non-residential customer segments are the least concentrated. This is true for all four utility service areas. The following graph shows the HHI values for the small commercial class, with customers of demand up to 100kW. While the three Ameren Illinois areas show overall higher HHI values than the ComEd area, all of the HHI values are below 1,500, with most values well below that threshold. The graph starts with May 2009, jumps to May 2010, then to May 2011, and then shows the monthly HHI values for the past 12 months.



The next two larger customer segments (customers with demand between 100 and 400kW and customers with demand between 400kW and 1MW) showed somewhat higher market concentration but most HHI values were still below 1,500. Additionally, the HHI values generally declined over the same period (May 2009 to May 2012) and the Ameren Illinois values were usually higher than the corresponding numbers for the ComEd area.

The situation changed more markedly, however, in the market for the largest commercial and industrial customers. While the HHI values for ComEd's 1-10MW demand class as well as the over 10MW demand class have been generally in the 1,400 to 1,800 range, some customer segments in the Ameren territory, however, showed significantly higher HHI values. Most HHI values for the over 1MW demand classes in Ameren Illinois's territory have been in the 2,000 to 2,500 range, with the over 6MW demand class in Ameren Rate Zone II showing HHI values above 4,000.

In sum, according to the revised guidelines by the DOJ and FTC, most non-residential customer segments exhibit HHI values that would classify them as unconcentrated or moderately concentrated markets. The data also reveals that market concentration increases with the size of the non-residential customer and that the Ameren Illinois markets are generally more concentrated than the ComEd market. There appears to be effective competition among the active retail electric suppliers in almost all non-residential customer segments at this time. The following section on residential activity will provide a residential market share analysis for the first time.

7. Residential activity

In last year's report, we stated that, starting in January 2011, several additional suppliers began offering residential service in the ComEd territory. The report also noted that the ORMD was aware of ten suppliers offering residential service in the ComEd area and a total of at least 22 different service offerings by those suppliers. By the end of May 2011, about 21,000 residential ComEd customers were taking service from a competitive supplier. For Ameren Illinois, the number of residential customers receiving ARES service was less than 200 at that time.

One year later, the residential landscape in Illinois looks quite different. In this year's report, we will attempt to capture the residential activity by looking at four different indicators. We will start by looking at the number of residential customers switching away from the utility supply service in each of the previous twelve months and for each of the utility areas. We will then look at the increase in the number of certified and active suppliers and the number and types of residential offers that those suppliers have posted on our website, PlugInIllinois.org. Third, we will provide a market-share analysis of the residential ComEd market over the last twelve months. Lastly, we provide an estimate of savings (in dollars) realized by the residential customers that have switched from ComEd to an ARES over the last year.

a) Customer switching

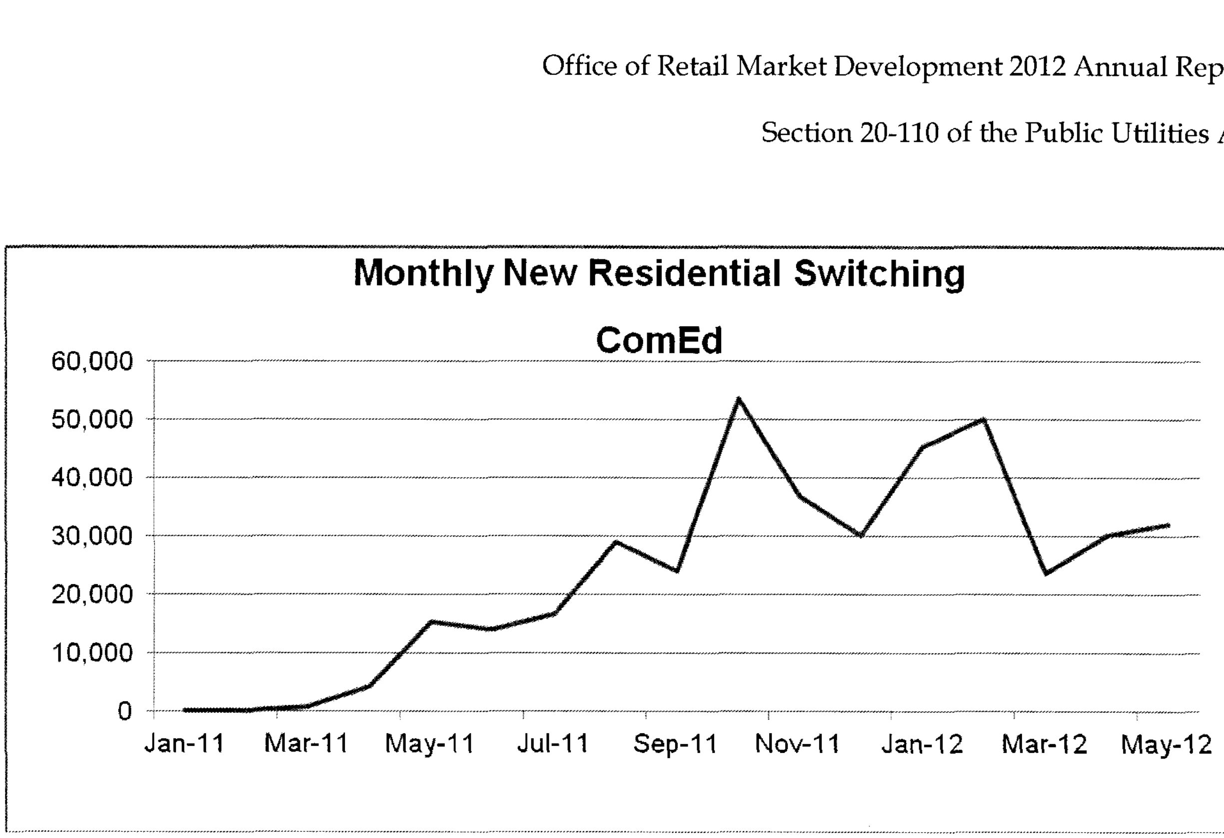
As of the end of May 2012, almost half a million residential customers had switched away from the utility. The following table shows the substantial increase in residential ARES customers over the last twelve months. It shows the number, as well as the percentage, of residential customers who are receiving supply from a competitive supplier.

Residential Customers on Competitive Supply

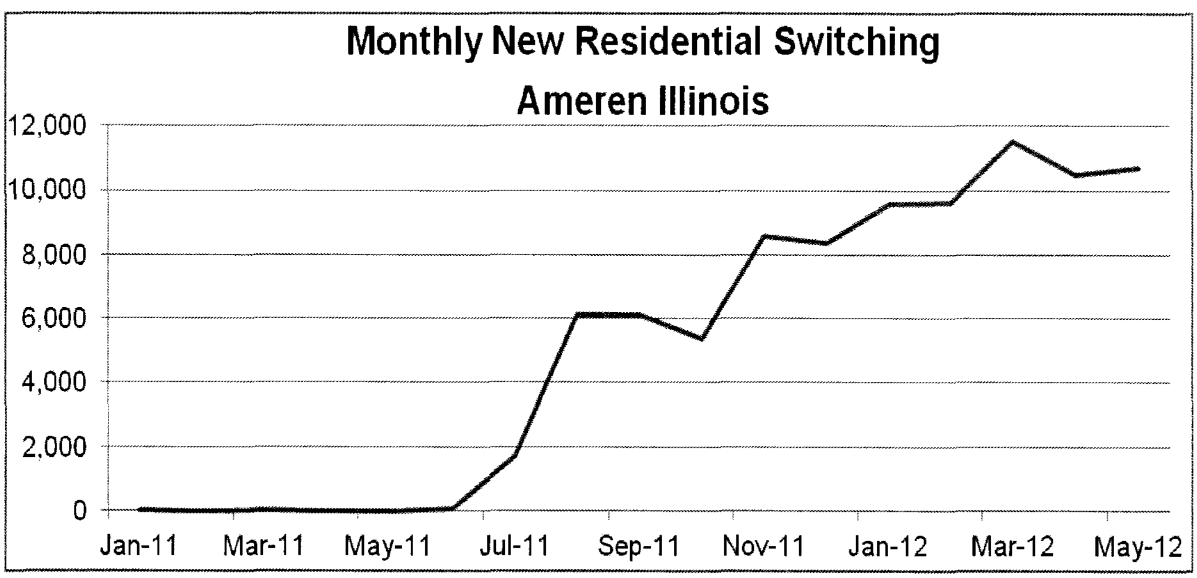
	May 2011	May 2012
Ameren Illinois Rate Zone I:	78	28,459
Ameren Illinois Rate Zone II:	23	12,752
Ameren Illinois Rate Zone III:	72	47,124
ComEd:	21,276	406,144
Total:	21,449	494,479
Ameren Illinois Rate Zone I:	0.02%	8.7%
Ameren Illinois Rate Zone II:	0.01%	6.8%
Ameren Illinois Rate Zone III:	0.01%	8.7%
ComEd:	0.63%	11.9%

Whereas just over half of a percent of ComEd's residential customers had been with a supplier as of May 2011, almost 12% are receiving service from a supplier one year later. Approximately 70,000, or about 17%, of the 406,144 residential ARES customers are part of a municipal aggregation. The number of Ameren Illinois's residential customers on competitive supply increased from negligible numbers to almost 90,000 over the same time period. To look at these numbers in a different way, the switching pace increased from about 58 residential customers per day between May 2010 and May 2011 to about 1,300 residential customers per day between May 2011 and May 2012.

The following two graphs show the monthly residential switching numbers for ComEd and the combined Ameren Illinois service areas.

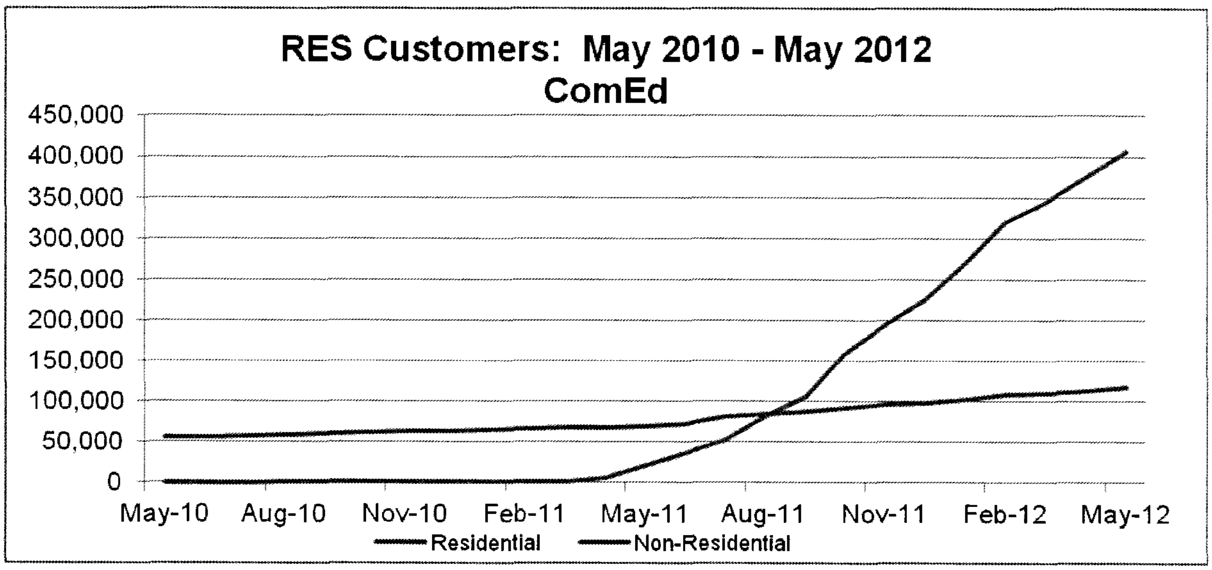


ComEd's numbers show that since August 2011, the monthly switching rates have consistently been above 20,000 and have reached more than 50,000 in October 2011 and February 2012. The average monthly switching rate for the past twelve months has been approximately 32,000 residential customers.

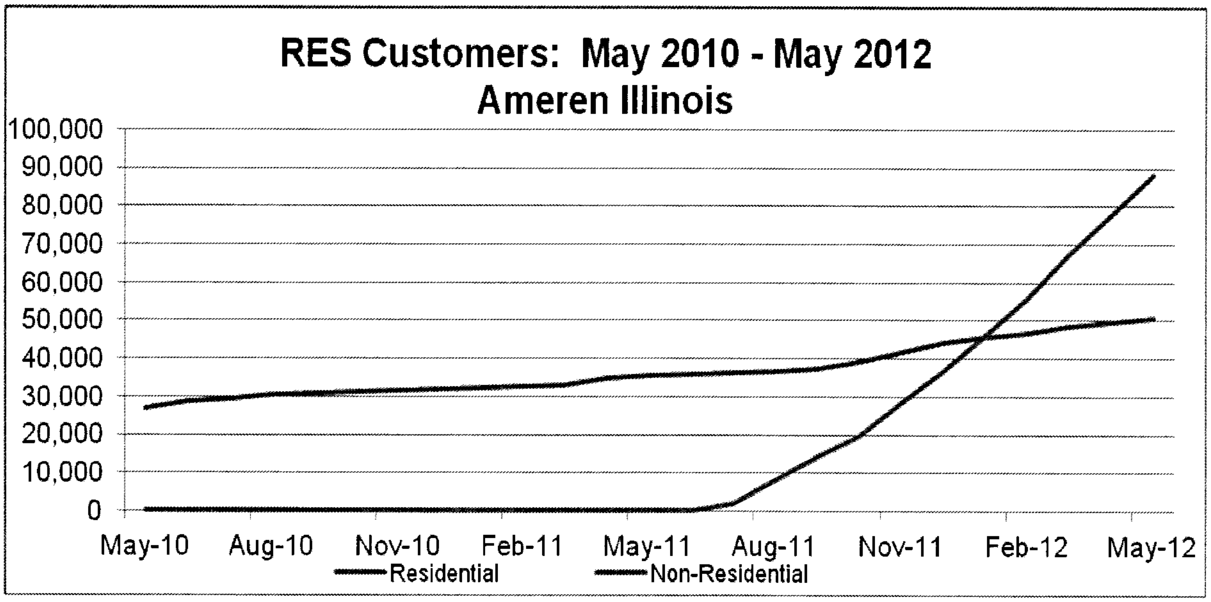


For Ameren Illinois, the residential switching activity started later than in ComEd's service territory and began in earnest in July 2011. The switching levels generally trend higher from month to month and have been near or above 10,000 customers for every month in 2012 so far. The average monthly switching rate for the past twelve months has been approximately 7,300 residential customers. Compared to ComEd's monthly switching levels, there has been less variation from one month to the next. This is likely the result of several communities in ComEd's service area implementing municipal aggregation during the twelve-month period. As is discussed below, there was municipal aggregation activity in Ameren Illinois's service areas following the March 2012 election, but it is unlikely that any aggregation customers had been switched as of the end of May 2012. As of May 2012, almost 9% of residential customers in Rate Zones I and III, and slightly less than 7% in Rate Zone II, have switched to a competitive supplier.

To demonstrate the substantial increase in residential activity from a different angle, the following graphs show the suppliers' total non-residential customers in relation to the suppliers' total residential customers. Depicting the customer levels for the past 24 months, the graphs show that suppliers, in the aggregate, now have more residential than non-residential customers.

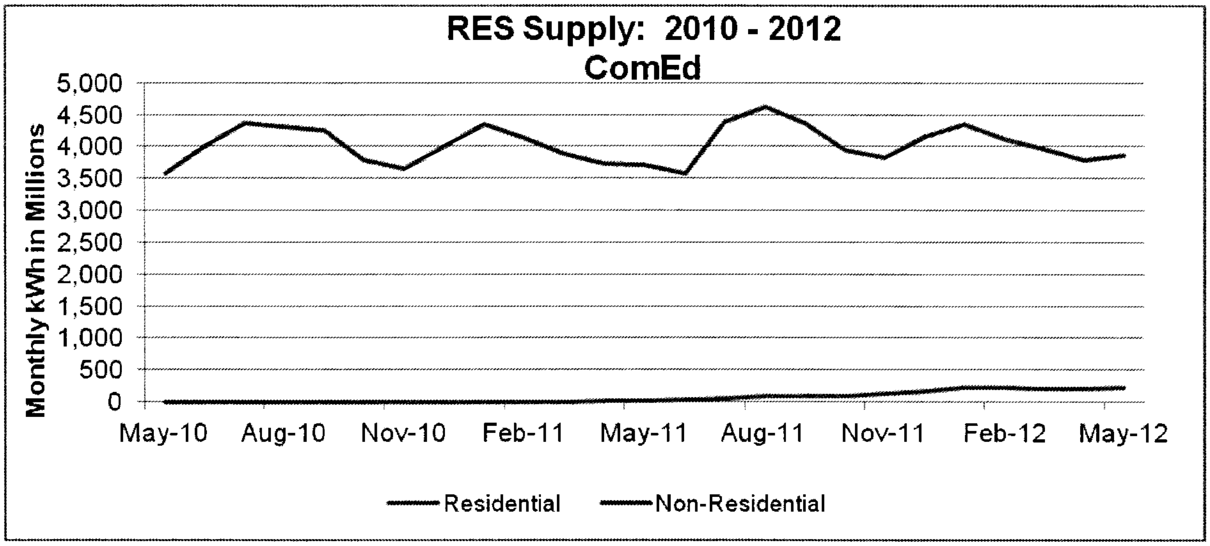


While the number of non-residential customers on competitive supply has been steadily increasing over the two-year period, the number of residential ARES customers has gone from almost zero to about four times the number of non-residential ARES customers. It was during the month of September 2011 when, for the first time, there were more residential than non-residential ComEd customers on competitive supply.

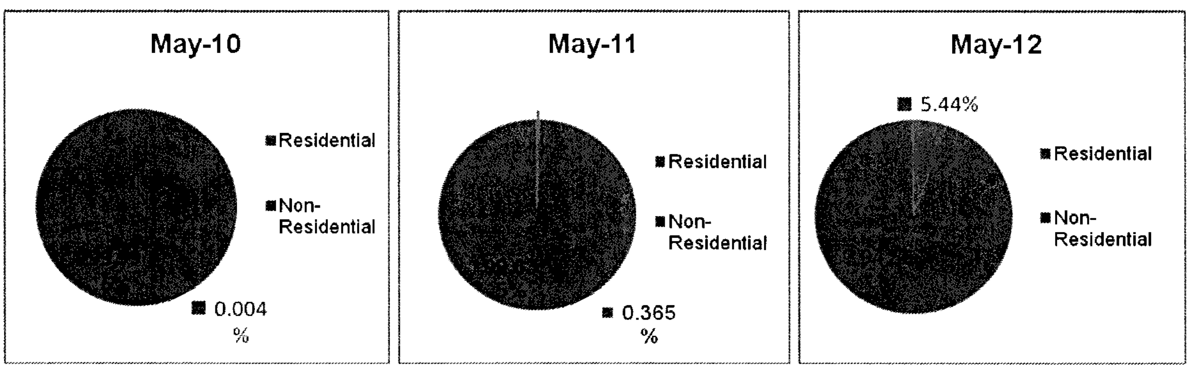


Looking at the same data for the three Ameren Illinois Rate Zones combined reveals the gradual increase in non-residential ARES customers over the last two years in Ameren Illinois's service territory as well. And while September 2011 saw more residential than non-residential ComEd customers on competitive supply for the first time, January 2012 was the month the number of residential ARES customers had passed the number of non-residential RES customers in the Ameren Illinois service areas.

Of course, looking at the number of customers gives us only a portion of the overall picture. The following charts show that even the recent substantial increase in residential customers has barely made a dent in the competitive residential/non-residential mix when it comes to the amount of electricity (in kilowatt hours ("kWh")) that is being provided by the suppliers.



Residential and Non-Residential Share of RES Supply



In terms of monthly kilowatt hours, the active suppliers in ComEd's service territory have been providing upwards of 3.5 billion kWh per month to their non-residential customers for several years. Even though the number of residential ARES customers is now four times the number of non-residential ARES customers, residential ARES customers made up only 222 million kWh, or less than 6% of the total electricity provided by the competitive suppliers in May 2012.

b) Active suppliers

Having looked at the customer switching numbers, the following table shows the increase in residential supplier activity over the last twelve months.

Residential Suppliers

	May 2011	May 2012
ComEd - ICC certified	22	40
ComEd -- active	8	27
Ameren IL - ICC certified	16	26
Ameren IL -- active	3	10

The table above shows that a large number of suppliers that had already received residential ICC certification by May of last year did not actively seek residential customers until recently. Also, eighteen additional suppliers applied for and received a residential certification in the past twelve months. Of note, all suppliers that have (a) a residential ICC certificate and (b) residential customers in the Ameren Illinois areas, also have residential customers in the ComEd area.

An additional indicator of the surge in supplier activity is the number of residential offers posted on PlugInIllinois.org. The "Compare Offers Now" portion of the website went live in July 2011 and has seen a steady stream of additional suppliers and residential offers since that date. The table below shows that the number of suppliers as well as the number of offers by these suppliers has multiplied from July 2011 to May 2012. Most of the activity has been in the ComEd area but customers of Ameren Illinois are starting to get the benefit of being able to choose from a host of residential offers as well.

Residential Offers Posted on PlugInIllinois.org

Utility Area	# of Suppliers posting in July 2011	# of Suppliers posting in May 2012	# of Offers in July 2011	# of Offers in May 2012
ComEd -- Total	9	20	31	61
Ameren IL - Total	3	6	3	11

Given the large number of residential offers for ComEd customers, we decided to take a closer look at the type of offers posted so far. The following table compares the type of offers posted in July 2011 to the type of offers posted in May 2012.

[illegible]	[illegible]	[illegible]
Total	31	61
Fixed	28 (90%)	51 (84%)
Variable	3 (10%)	10 (16%)
Fixed with Early Termination Fee	20 (71%)	34 (67%)
Fixed without Early Termination Fee	8 (29%)	17 (33%)

< than 12-month Term	1 (4%)	6 (12%)
12-month Term	16 (57%)	26 (51%)
13-23 month Term	2 (7%)	3 (6%)
24-month Term	8 (29%)	16 (31%)
> than 24-month Term	1 (4%)	1 (2%)
Green/Renewable	9 (29%)	21 (34%)

The table allows us to make several observations. First, a substantial majority of the offers are fixed price offers. Second, more than eight out of ten fixed offers have either a one-year or two-year term. Merely one offer out of the 61 offers posted in May 2012 has a term longer than two years. Third, about two thirds of the fixed offers have an early termination fee. Fourth, about a third of all offers have a "green"/renewable content higher than what is required by the state's renewable portfolio standard. Fifth, while the number of offers almost doubled between July 2011 and May 2012, the share of the individual types of offers has generally not changed significantly during that time. The exception is the share of offers with a term of less than one year, which has increased from 4% to 12%.

Besides analyzing the *type* of offers, we thought it would be informative to take a look at the prices for the various posted offers and how those prices might have changed during that same time period. The following table shows the average prices for the different types of offers posted on PlugInIllinois.org. The bottom of the table shows ComEd's fixed-price supply service rate for the two months in question. The ComEd rates shown include the Purchased Electricity Adjustment ("PEA").

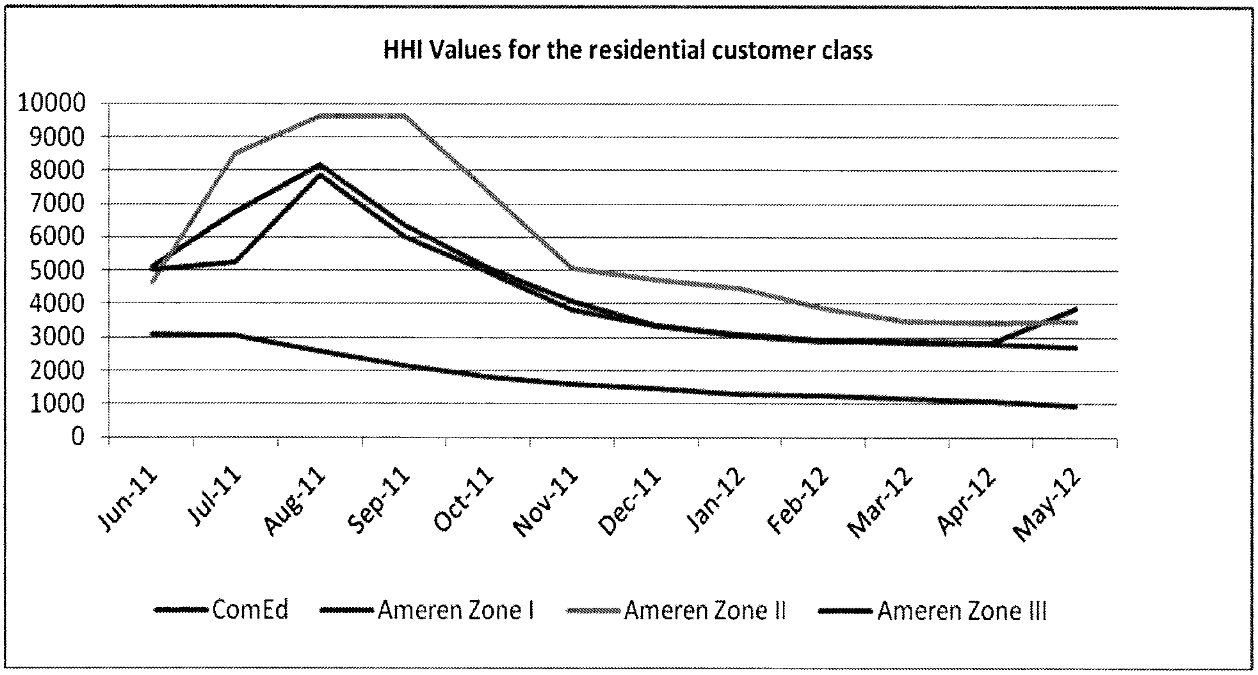
[illegible]	[illegible]	[illegible]
Fixed	6.81	6.37 (-6%)
Variable	7.67	7.00 (-9%)
Fixed with Early Termination Fee	6.64	6.35 (-4%)
Fixed without Early Termination Fee	6.64	6.32 (-5%)
< than 12-month Term	6.98	6.14 (-12%)
12-month Term	6.65	6.52 (-2%)
13-23 month Term	6.80	6.33 (-7%)
24-month Term	6.57	6.15 (-6%)
> than 24-month Term	6.30	6.30 (no change)
Green/Renewable	7.47	6.98 (-7%)
ComEd Price-to-Compare, incl. PEA	8.42	8.23

Such a comparison reveals that the average posted price of the various types of offers was well below ComEd's then-effective fixed price bundled service rates. Moreover, the average prices of the posted ARES offers decreased across the board between July 2011 and May 2012. The biggest drop in average prices occurred for offers with a term length of less than twelve months. In addition, the table shows that the average posted price for an offer *without* an early termination fee was not significantly different from the average posted price for an offer *with* an early termination fee. Finally, looking at the average prices for the different term lengths, it shows that the average price for a twelve-month fixed offer was higher than the average price for a 24-month fixed offer. This was true both in July 2011 and in May 2012, with a larger gap in average prices in May 2012.

c) Residential market concentration

As the previous section on supplier activity suggests, currently there is significantly less market concentration in the ComEd residential market than in the Ameren Illinois residential market. However, looking back at the last twelve months, the data also shows that the increased supplier interest in Ameren Illinois' residential market has led to a less concentrated market over time. The following graph shows the monthly HHI values for the residential class in both ComEd and Ameren Illinois' areas from June 2011 to May 2012.[12] Besides revealing that the ComEd residential market is substantially and consistently less concentrated than Ameren Illinois' market, it shows that, with few exceptions, the three Ameren Illinois Rate Zones exhibited lower concentration from one month to the next. While the HHI values were well above 5,000 for all three Rate Zones in 2011, the concentration levels have come down considerably in the first part of this year. In addition, the graph shows that Rate Zones I and III are generally less concentrated than Rate Zone II.

[12] The HHI values are based on residential usage, rather than number of customers. However, there is not a substantial difference between using number of customers and amount of usage for the market share calculation.



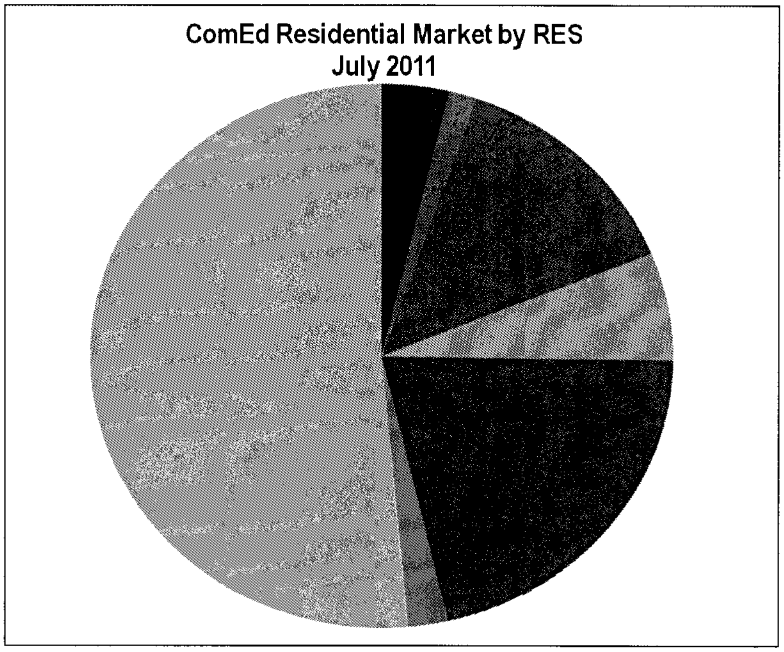
Having looked at the HHI values for the different utility service areas, we decided to take a closer look at the heavily competitive ComEd residential market. The HHI values shown above already tell us that the current market would be considered "unconcentrated" per the DOJ and FTC's Merger guidelines. The next table amplifies this assessment:

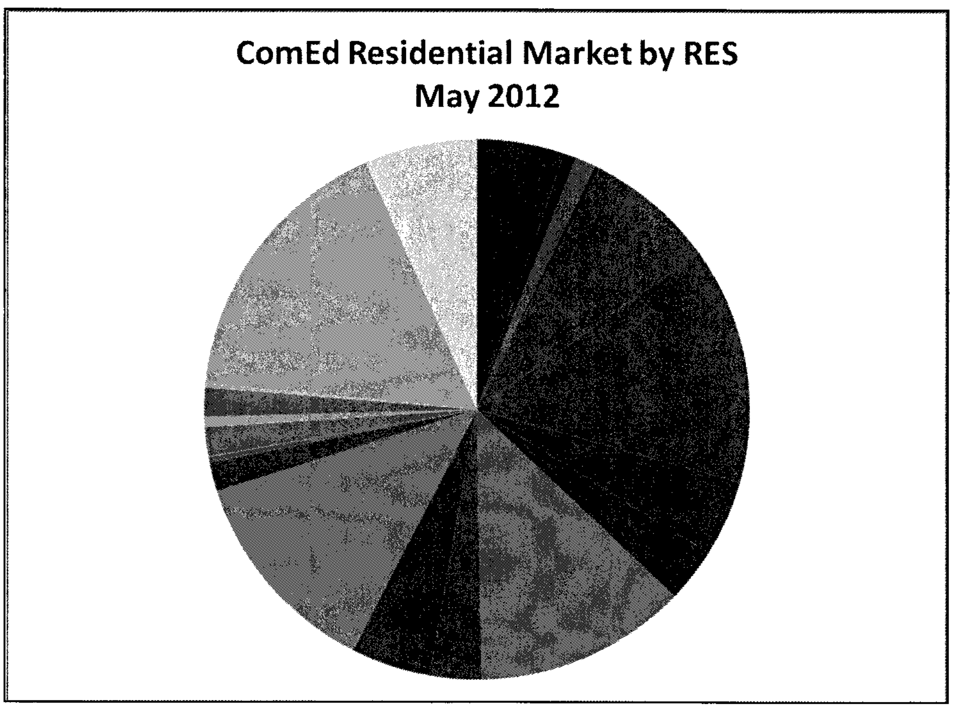
ComEd Residential Market Shares by Customers

	June 2011	August 2011	October 2011	December 2011	February 2012	May 2012
Share of largest 3 suppliers	86%	72%	66%	57%	53%	44%
# of suppliers with customers	8	12	16	18	20	27
# of suppliers with >15% share	2	1	2	2	3	1
# of suppliers with >5% share	2	3	3	5	4	5
# of suppliers with <5% share	4	8	11	11	13	21

It shows that the market share of the three suppliers with the highest market share (in terms of residential customers) basically halved between June 2011 and May 2012 (decreasing from 86% to 44%). What the table does not show, however, is that the three "largest" suppliers in a particular month were not always the same suppliers during this time period. What the table does show is that, as of May 2012, a large majority of the suppliers had individual market shares of less than 5% (21 out of 27 suppliers). Only one supplier had a market share above 15% and five suppliers had a market share between 5% and 15%. Finally, the table reveals how the market saw the number of suppliers with residential customers increase from eight to 27 over the course of twelve months.

The two pie charts below are the most striking visual representation of this increased supplier diversity. The first chart shows the make-up of ComEd's residential market in July 2011 and the second chart shows the composition as of May 2012.


ComEd Residential Market by RES
July 2011


ComEd Residential Market by RES
May 2012

d) Residential Savings Estimate

While there are probably a variety of reasons residential customers switch from a utility's default supply service to a supplier's offering, it is likely that the opportunity to save money is a primary reason for many residential customers. In order to calculate how much residential customers have saved by switching away from the utility, one needs at least three different sets of data: 1) the rate the customers would have paid under the utility's default rate, 2) the rate the customers actually paid under the supplier's rate, and 3) the amount of electrical usage each supplier provided to their customers. Monthly reports from ComEd and Ameren Illinois provide us with the necessary usage information, and the utilities' default rates, also called the Price-to-Compare ("PTC"), are tariffed rates. As for the suppliers' prices, simply looking at the various posted offers will not be sufficient because most suppliers have multiple offers for residential customers, even for the same utility service territory. Responding to a Staff Data Request, most suppliers provided us with monthly average residential rates for the past twelve months.

In order to keep this initial savings estimate fairly straight forward, we decided to limit it to residential customers in the ComEd area. Ameren Illinois's rate structure, while more streamlined as a result of recent tariff changes, contains non-summer rates that vary with a customer's usage. This would have necessitated further average usage assumptions and we decided against doing so for this year's report.

The following table shows the results of our residential savings estimate for ComEd customers:

	Monthly Savings compared to ComEd's PTC	Monthly Savings inclusive of the PEA Impact	Monthly PEA Impact	Monthly Average Savings compared to ComEd's PTC (in cents per kWh)	Monthly Average Savings inclusive of the PEA (in cents per kWh)
June 2011	$255,293	$349,039	$93,746	0.882	1.206
July 2011	$502,260	$778,145	$275,885	0.910	1.410
August 2011	$956,507	$1,429,718	$473,211	1.011	1.511
September 2011	$884,986	$1,331,358	$446,371	0.991	1.491
October 2011	$844,688	$1,309,784	$465,096	0.908	1.408
November 2011	$1,048,318	$1,293,767	$245,449	0.769	0.949
December 2011	$1,502,112	$1,285,104	-$217,008	1.045	0.894
January 2012	$2,247,509	$3,226,106	$978,597	1.079	1.549
February 2012	$2,240,491	$3,360,753	$1,120,261	1.000	1.500
March 2012	$2,193,423	$3,249,138	$1,055,715	1.039	1.539
April 2012	$2,178,678	$3,176,113	$997,435	1.092	1.592
May 2012	$2,365,072	$3,453,785	$1,088,713	1.086	1.586
Totals	**$17,219,337**	**$24,242,809**	**$7,023,472**		
Average	**$1,434,945**	**$2,020,234**	**$585,289**	**0.984**	**1.386**

For the twelve-month period from June 2011 to May 2012, it is estimated that the total savings amount to approximately $24 million. As the table shows, most of the savings occurred in the first five months of 2012, with all of these months showing aggregate savings of $3 million or higher.

To break down the total savings estimate further, the data shows that about $17 million of the $24 million in savings result from comparing the suppliers' average rate to ComEd's Price-to-Compare, as it is described on PlugInIllinois.org. The ComEd PTC is comprised of the Electric Supply Charge and the PJM Transmission Services Charge. The remaining $7 million in savings result from the application of the Purchased Electricity Adjustment for ComEd supply customers. During the twelve months from June 2011 to May 2012, the Purchased Electricity Adjustment was a credit for one month (in December

2011) and a charge for eleven months. In eight of those eleven months, the Purchased Electricity Adjustment was a charge of 0.5 cents per kWh.

Lastly, the calculations show that the average savings per kWh during this one-year period was close to 1 cent when compared to ComEd's Price-to-Compare and close to 1.4 cent when taking into account the Purchased Electricity Adjustment.

Given the recent substantial municipal activity and some announced residential rates of well-below 5 cents per kWh (see next Section below), it is likely that the total residential savings for the June 2012 to May 2013 period will dwarf the savings estimate shown here.

C. Municipal Aggregation

Effective January 1, 2010, Public Act 96-0176 amended the Illinois Power Agency Act ("IPA Act") by allowing municipalities and counties to adopt an ordinance under which it may aggregate electrical load. Specifically, it allows municipal corporate authorities or county boards to adopt an ordinance under which it may aggregate residential and small commercial retail electrical loads located within their jurisdiction and solicit bids to enter service agreements for the sale and purchase of electricity and related services and equipment.

The law requires the corporate authorities of a municipality or county board to submit a referendum to its residents to determine whether or not the aggregation program shall operate as an opt-out program for residential and small commercial customers prior to the adoption of an ordinance for the aggregation of these loads.

Effective August 12, 2011, Public Act 97-0338 amended Section 1-92 of the IPA Act, the section that implemented municipal and county authority to aggregate and discussed above, to add a requirement that the customer account number be provided by the electric utility to the corporate authority or county board.

Municipal aggregation activity increased dramatically this year, with 306 communities placing an opt-out aggregation referendum on the March 20, 2012 election ballot and 245 of those referendums passing. The pace with which the aggregation programs are being implemented has also picked up compared to last year. Whereas only one community had selected a supplier as of the time of last year's annual report, about eight out of ten communities with a March 20, 2012 referendum have announced the aggregation terms and the selected supplier. Many of these communities are hoping to see their residents' electric supply savings on the June or July 2012 monthly bills. The following table compares the municipal aggregation activity from this year to last year:

Municipal Aggregation Statistics

	April 2011	March 2012
Referendums Passed	20	245
Aggregation Programs Announced or Implemented	19	200*
# of "winning" suppliers -ComEd	4	7*
# of "winning" suppliers -Ameren Illinois	N/A	3*
Average Rate - ComEd	5.81	4.87*
Average Rate - Ameren Illinois	N/A	4.10*

* As of June 29, 2012

The table above shows that the number of communities passing an opt-out aggregation referendum in 2012 is more than twelve times the number of communities that did so in 2011. The number of different "winning" suppliers, meaning the aggregation suppliers being selected by the community leaders, has increased from four last year to eight this year. Two of the three selected aggregation suppliers in the Ameren Illinois areas have also been selected in ComEd's service area. The data gathered from publicly available information shows that the simple average electric supply rate of the communities with announced or implemented aggregation programs has decreased from 5.81 cents per kWh to 4.87 cents per kWh between 2011 and 2012.[13] While the aggregation rates associated with

[13] The information for the 2012 aggregation programs is reflective of data that was available as of June 29, 2012. Updated information can be found at http://www.icc.illinois.gov/ORMD/MunicipalAggregation.aspx.

the March 2012 referendums are generally lower than the individual retail offers by the suppliers, it is worth noting that there are currently some individual ARES offers with rates that are lower than some of the 2011 opt-out aggregation rates following the April 2011 referendums. This general downward trend in supply prices is also described in Section II.7.b above.

Immediately before and after the March 20, 2012 referendum date, the ORMD, the IPA, Ameren Illinois, and ComEd jointly hosted a series of webinars for leaders of communities that are pursuing opt-out aggregation. The webinars, which can be found on the ORMD's webpage at http://www.icc.illinois.gov/ORMD/ORMDWebinars.aspx, were aimed at informing community leaders, consultants and suppliers about the statutory requirements for municipal aggregation as well as the utilities' operational procedures for releasing customer information. Three webinars were held for communities in the ComEd territories and two webinars were held for communities in the Ameren Illinois territories.

On the regulatory side, ComEd had filed a tariff to establish its Government Aggregation Protocols ("Rate GAP") in March 2011. On April 12, 2011 the Commission voted to not suspend ComEd's filing and the tariff took effect on April 17, 2011. However, during the 45-day period between ComEd's filing of the tariff and its effective date, the Commission received a number of comments concerning the proposed filing.

As a result of these stated concerns, on May 18, 2011, the Commission ordered an investigation of ComEd's tariff. The tariff investigation, ICC Docket No. 11-0434, concluded with a final Order issued on April 4, 2012. Among other things, the final Order directed Staff to present its findings with respect to the Commission's rulemaking authority regarding additional municipal aggregation issues. Subsequently, Staff did present the Commission with a memo that (a) finds that the Commission has authority to promulgate further rules and (b) that commits Staff to present the Commission with a Staff Report and draft Initiating Order by August 1, 2012.

On March 1, 2012, Ameren Illinois filed a tariff, similar to ComEd's Rate GAP tariff, that describes the process by which Ameren Illinois provides the required information to the requesting community pursuant to Section 1-92 of the IPA Act. The Commission did not suspend the tariff and it became effective on April 15, 2012.

III. Public Act 95-0700

In 2007, the Illinois General Assembly passed a law designed to remove certain barriers to competition for residential and small commercial electric customers in Illinois. The provisions of this law, Public Act 95-0700, require ComEd and Ameren Illinois to offer utility consolidated billing ("UCB") and the purchase of receivables ("POR"). Under UCB, an ARES electronically submits its monthly customer charges for power and energy to the utility which then places those charges, along with its delivery charges, on one single bill to the customer. Under POR, an ARES is able to sell its receivables (the amount that customers owe to that ARES) to the utility at a discount. The POR requirement encourages alternative suppliers to offer their services to every utility customer rather than serve only those above certain credit thresholds, thereby furthering the statutory goal of an "effectively competitive retail electricity market that operates efficiently and benefits *all* Illinois consumers."

While Sections 16-118(c) (POR) and 16-118(d) (UCB) appear to be separate and distinct requirements, the utilities have so far focused on an offering that would combine the purchase of receivables with the provision of utility consolidated billing. That is, if a supplier enrolls a customer with utility consolidated billing, the supplier then also has to sell the corresponding receivables to the utility at a discount. Because the POR provision in Section 16-118(c) is limited to customers with a demand of less than 400 kilowatts, this combination of utility consolidated billing with the purchase of receivables is therefore also limited to customers with a demand of less than 400 kilowatts.

Ameren Illinois filed tariffs in September 2008 to effectuate the offering of a combined UCB/POR service per Sections 16-118(c) and (d) of the Act. The Commission approved Ameren Illinois's modified tariffs on August 19, 2009 and UCB/POR service was available to suppliers in Ameren Illinois' service territory in October 2009. As of May 31, 2012, seven suppliers were using Ameren's UCB/POR service for residential customers and eight suppliers were using UCB/POR for non-residential customers. ComEd filed its tariffs on January 20, 2010, offering a combined purchase of receivables with consolidated billing service and the Commission approved ComEd's modified tariffs on December 15, 2010. As of May 31, 2012, 26 suppliers were using ComEd's UCB/POR service for residential customers (up from five at the time of this report last year) and 25 suppliers were using

UCB/POR service for non-residential customers (up from 12 at the time of this report last year).

According to ComEd's first annual report on the usage of its UCB/POR offering, close to one million utility consolidated bills have been issued in calendar year 2011. Given the $0.50 per bill charge to suppliers for using this option, close to $500,000 in revenues have been collected from participating suppliers in 2011. Approximately $61 million in total discounted receivables have been purchased by ComEd during this time period, with an average amount of $67 per purchased monthly receivables.

While virtually all suppliers are currently using UCB/POR for their residential customers, it is worth noting the widespread use of UCB/POR in the non-residential classes as well. By reviewing ComEd's monthly data, we are able to compare the number of new UCB/POR customers in a particular customer class to the number of total new ARES customers for that customer class. Analyzing the June 2011 to May 2012 time period, it shows that suppliers are using UCB/POR for all non-residential customers for which it is available, meaning the Watt-Hour[14], the 0-100kW, and the 100-400kW customer class. For the Watt-Hour class, the ratio of new UCB/POR customers to total new ARES customers has generally been in the 60-80% range, with the ratio being over 100% in some months. A monthly ratio exceeding 100% means that existing ARES customers have been converted to utility-consolidated billing during that month. For the 0-100kW class, the ratio of new UCB/POR customers to total new ARES customers has generally been, with a couple of exceptions, 80% or higher, with the ratio exceeding 100% in a few months. Even for the 100-400kW class, usually considered medium-sized customers, the ratio of new UCB/POR customers to total new ARES customers has been, on average, around 40% during the past twelve months.

[14] The Watt-Hour class consists of small commercial customers for which no metering equipment or only watt-hour metering equipment is installed at the customer's premises. Generally, a customer in this supply group uses less than 2,000 kWh during a monthly billing period.

IV. Additional Consumer Protections and Education

A. Plug In Illinois

PluginIllinois.org is the Commission's electric choice education website aimed at providing residential and small commercial customers with a better understanding of their electric supply options. Public Act 97-0222, which became effective in July 2011, amended Section 16-117 of the Public Utilities Act, requiring the Commission to maintain a consumer education information program to help residential and small commercial customers understand their service options in a competitive electric services market. This legislation required the ORMD to review the existing consumer education information available and consider whether updates are necessary. As a result, the ORMD sought input from interested parties, including the suppliers, electric utilities, the Attorney General, and the Citizen's Utility Board, to further its review of the consumer education materials and possible proposed changes. Additionally, Public Act 97-0222 required Ameren Illinois and ComEd to include the PlugInIllinois.org internet address on its monthly bill. In May 2012, both ComEd and Ameren Illinois started sending out monthly bills with this new information. The law also requires all suppliers to provide the PlugInIllinois.org website address to residential and small commercial customers.

As a result of the feedback from the interested parties, the ORMD recently implemented several updates to PluginIllinois.org. These changes include updated information about the Low Income Energy Assistance (LIHEAP) and Percentage of Income Payment Plan (PIPP) programs, and how switching to a supplier might affect benefits under these programs. Further, updated and expanded information was added to better explain the residential real time pricing programs (RRTP) offered by both Ameren Illinois and ComEd.

With the substantial increase in the number of communities passing referendums to implement opt-out aggregation programs, the ORMD added a new list of frequently asked questions about municipal electric aggregation. This list of FAQs aims to answer basic questions for customers in communities pursuing aggregation, including what action a person must take in the case of either opt-in or opt- out programs in order to affirm their choice of energy supplier. The list of FAQs also contains links to two separate lists of communities. The first list includes communities that have chosen an aggregation supplier and have implemented the aggregation program. This list shows the chosen supplier, the aggregation rate in cents/kWh, and the term of the contract. The second list includes communities that have passed a referendum to authorize an opt-out aggregation but for which no aggregation program has been announced yet.

Also, the ORMD added a new section to PlugInIllinois.org, entitled "Customer Complaint Statistics". This section provides so-called complaint scorecards, which rank suppliers by their rate of complaints compared to the average rate of complaints for the entire residential market. ARES are grouped into three groupings of approximately equal size (lower than average complaint rate, average complaint rate, higher than average complaint rate), based on a six-month rolling average of complaint rates per 1,000 customers.

In addition to the recent updates to PluginIllinois.org, the ORMD maintains the Price to Compare information for customers of Ameren Illinois and ComEd. The Price to Compare for ComEd combines ComEd's Electric Supply Charge with the Transmission Services Charge to provide customers a price (in cents per kWh) to compare with ARES offers. Similar to ComEd, Ameren Illinois' Price to Compare combines Ameren Illinois's Electricity Supply Charges, including the Supply Cost Adjustment, with the Transmission Service Charge to come up with a price Ameren Illinois customers can compare to supplier offers. PluginIllinois.org also provides a Price to Compare for Ameren Illinois's and ComEd's designated space heat customers to clearly demonstrate the difference in the rates and the fact that space heat customers may not always save money by switching to a supplier offer.

B. Offer Comparison Matrix

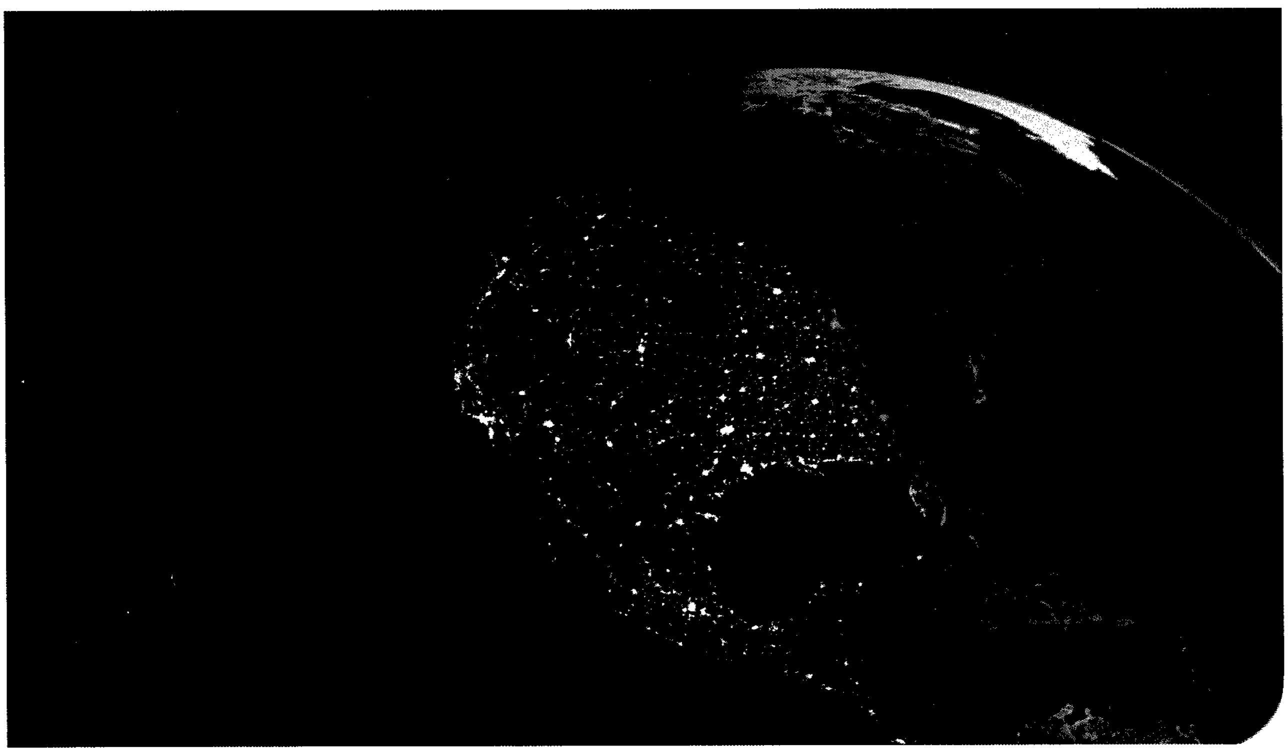
In July 2011, the ORMD added an offer comparison matrix to PluginIllinois.org. The offer comparison matrix, available through the "Compare Offers Now" link, prompts customers to select their utility service area to see the suppliers' offers available in their area, and it allows them to compare the offers to their utility rate as well as to each other. For each offer posted, the offer comparison matrix displays the supplier's logo, which is also a link to the supplier's website, as well as the particular offer name, which links to further offer-specific information on the supplier's website. The offer comparison matrix lists the price in cents per kWh, any potential additional monthly fees, the term in months, any possible early termination fees, and a brief description of the offer. It also lists the offer's cost for monthly usage levels of 500, 1,000 and 1,500 kWh. Customers are also able to sort the offers by supplier, by price, or by the length of the term. As of June 29, 2012, there are six to nine supplier offers for Ameren Illinois residential customers (depending on the Rate Zone) and 63 supplier offers for ComEd residential customers.

V. Suggested Administrative and Legislative Action

As mentioned in the Municipal Aggregation section above, Staff anticipates a new Commission rulemaking that addresses additional municipal aggregation issues. Such a rulemaking is a great venue to provide all interested parties with an opportunity to discuss policy and legal issues surrounding municipal aggregation and to propose solutions to those issues. If however, for whatever reason, the rulemaking is not able to fully address all items that, in the ORMD's judgment, deserve resolution, the ORMD will work with interested parties and the General Assembly to resolve any remaining issues legislatively.

A13

KEMA White Paper: Innovation in Competitive Electricity Markets



COMPETE Coalition

Prepared by KEMA, Inc.

February 24, 2011

Burlington, MA

Electricity Competition at Work

The Link Between Competitive Electricity Markets, Job Creation, and Economic Growth

Report prepared for: COMPETE Coalition

Prepared by: Continental Economics, Inc.
September 2011

Continental Economics

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EXECUTIVE SUMMARY

Today, electricity is almost as basic a necessity as food and shelter. Electricity has fundamentally altered business and industry. The electric industry began over a century ago through competition between Thomas Edison and George Westinghouse. By the 1920s, the rapid consolidation of electric companies spurred by scale economies and decreasing costs led to an industry structure that replaced pure competition with government regulation designed to simulate the forces of competitive markets on participants.

Economic regulation of the electric utility industry changed little from the 1930s through the 1970s. Electric utilities continued to use scale economies, building ever-larger generating plants that produced power at ever-lower cost. But the energy market turmoil of the 1970s, beginning with the 1973 OPEC oil embargo, as well as the need to reduce air and water pollution, including from large coal-fired power plants, set in motion market forces that continue to influence the electric industry today.

The Energy Policy Act of 1992 laid the foundation for the competitive wholesale and retail electric markets that benefit consumers and businesses today. A number of states restructured their electric industries, establishing retail competition for generation, while distribution remained a monopoly service.

But electric industry restructuring slowed after the California energy crisis of 2000-01, which led to the bankruptcy of one of the largest electric utilities in the nation, and the near-bankruptcy of a second utility. Although multiple factors contributed to the California crisis, many politicians and state regulators used California as an excuse to halt electric restructuring in their own states. Yet, other states, such as Texas, Pennsylvania, Illinois, and Ohio, continued to embrace electric competition. That perseverance has paid off.

The Natural Gas Industry Shows the Way

The natural gas industry is perhaps the best example of the benefits of vibrant energy market competition. In the late 1960s, the conventional wisdom was that natural gas supplies would soon be exhausted. Wellhead natural gas prices were regulated and capped. Supplies began to diminish as production from existing wells declined. Growth in the natural gas industry came to a standstill because there was little economic incentive to undertake new, more costly exploration. Then, in 1978, Congress began to remove these price controls so as to establish a truly competitive market for natural gas. The impacts were amazing. Coupled with severing the connection between production, pipeline transportation, and local distribution, by the early 1990s the natural gas market was vibrant; the predicted shortages had turned into a gas "bubble."

More recently, the rapid development of shale gas over the last decade, made possible through technological innovations, has fundamentally altered the U.S. natural gas market. Shale gas production has boomed, creating thousands of new jobs and significantly lowering natural gas prices. The positive impacts of this abundant, domestic energy supply will be evident for many years to come. With ample supplies of low-cost shale gas, new, high-efficiency natural gas generating plants will be able to displace older, less-efficient coal-fired power plants, lowering electric prices, increasing reliability and reducing pollution.

The success of competition in the natural gas industry provides a blueprint for the electric industry. Wholesale and retail electric competition will provide industry and consumers with the lowest possible cost electricity, and help grow the economy because, when it comes to one of the most important and ubiquitous commodities in our economy, price matters.

Yet, despite the success of market competition in the natural gas industry, and in states that have embraced electric competition, other states (e.g., Michigan)—and some electric utilities—have continued to squelch competitive markets through policy mandates and improper subsidies, as well the adoption of onerous and disruptive tariff and business practices. However, whether it is claims of "energy security" that require in-state electric generation, bureaucratic pronouncements of technological "winners" and "losers," or attempts to manipulate competitive wholesale markets, these attempted "end-runs" around private sector investment decisions effectively short-circuit competitive electric markets and thereby inflict long-term economic harm. By artificially driving down market prices, states drive out legitimate competitive generators. As a result, any price reductions are temporary. Worse still is the long-term damage to markets as such policies increase financial risk—after all, investors don't know if the plant they finance will be forced out of business in the future by some other state policy action.

When policymakers tout the job-creating benefits of subsidized electric generation or policies that foreclose market competition, they either ignore or dismiss the job-killing impacts of higher electricity costs. But regardless of the incremental impacts on a single customer, the cumulative impacts are real and significant, costing thousands of jobs.

Promoting Lower Prices and Market Innovation

Because competitive electric markets are the best way to keep prices as low as possible, such markets will also provide the greatest opportunity for economic growth and job creation. Five general policies can help.

1. <u>Actively promote wholesale and retail electric competition</u>. States that belong to transmission organizations like PJM can access competitively priced wholesale electricity, and benefit from improved system reliability. Competitive wholesale markets for energy and capacity provide clear market signals, and promote innovation and greater efficiency. Moreover, competitive markets also provide the best platform for other state policies, such as promoting clean energy sources and retail customer choice. Interconnecting clean energy sources can be more easily accommodated on larger, integrated power systems than at the local level. Allowing all customers unfettered access to competitive retail electric suppliers, and ensuring that local distribution utilities' "provider of last resort" roles are met using competitive procurement mechanisms, will provide all retail customers with the lowest possible rates and greatest variety of choices.

2. Create an environment that lets the market work and reduces investment uncertainty. All investors abhor uncertainty, because it increases their costs. For capital-intensive, long-lived investments like electric generating plants, providing a stable market environment in which the rules are clear is crucial. State policies that create artificial subsidies for a few generators or mandate uneconomic investments to upend competitive markets send flashing "Do Not Invest" signals to developers, by driving out real competitors and increasing uncertainty. Ultimately, such policies lead to higher long-term electric prices, thus harming the very customers the subsidies are supposed to benefit.

3. Do not allow monopoly electric utilities to thwart competitive markets. Monopolies are notoriously inefficient, because they have no incentive to improve productivity and reduce costs. Allowing monopoly utilities to thwart competition, whether by imposing unreasonable costs on customers who wish to shop from competitive electric suppliers or negotiate bilateral agreements with favored suppliers, needlessly increases costs for customers.

4. Avoid using artificial subsidies as an economic stimulus. Just as we don't build schools as a way of providing jobs for school bus drivers, electric generating plants should be built in response to market conditions, not political ones. Policies that mandate in-state development of subsidized generation on the promise of job creation will cause more jobs to be lost, as customers not only bear the cost of the subsidies themselves, but also pay more for their electricity in the long-run. Moreover, state subsidies are no guarantee of "permanent" new jobs, as Massachusetts discovered after providing Evergreen Solar with $43 million worth of subsidies, only to see that company move its operations to China one year later.

5. Combine policies that promote electric competition with broader economic policies that promote economic growth. By itself, electric competition cannot rescue a moribund economy. But combined with other policies, electric competition can be a catalyst for economic growth. The State of Texas not only offers the most advanced competitive electric market in the U.S., it offers an environment that encourages investment and job creation. That may explain why, according to the Federal Reserve Bank of Dallas, Texas created 37% of net new jobs in the U.S. between June 2009 and May 2011. Pennsylvania, another state with a vibrant competitive electric market, also ranked high in terms of job creation, was third, with 93,000 new jobs, in part to development of the Marcellus Shale natural gas reserves.

Like electrons, investment and economic growth follow the path of least resistance. And, although there may not be any economic "silver bullets" to create jobs overnight, competitive electric markets, and their ability to provide the lowest available cost over time for businesses and households, will be increasingly important to our economic future.

I. Introduction: Electricity's Importance to the U.S. Economy

In 1879, the City of San Francisco built and operated the first electric generating station, which was used to power the city's arc lamps.[1] In that same year, Thomas Edison developed the incandescent light bulb and invented a commercially viable lighting system. In 1882, Edison opened the first complete incandescent lighting system on Pearl Street in New York City, complete with a 560 kilowatt (kW) central generating station and distribution circuits that powered 400 lamps.

Although Edison was the first to develop the forerunner of today's electric system, it was George Westinghouse's development of an alternating current (AC) system in 1886 that allowed electricity to become such an important element in our lives, and a fundamental driver of today's economy. Because AC power could be transmitted economically much greater distances than Edison's direct current system, the cost of electricity decreased and its use by industry and households expanded. The "electrification" of the U.S. economy had begun, providing an early example of how competition, with investors, not customers, bearing the risks, led to innovation and benefited consumers.

Today, electricity has become almost as basic a necessity as food and shelter, something unimaginable a century ago. Electricity has also fundamentally transformed business and industry. Blast furnaces for making steel have been replaced by far more efficient electric arc furnaces. Refrigeration is the single most important contributor to the safety of the food we eat, and has made it possible to enjoy everything from apples in Alaska to cod in California. Automobiles are manufactured with robotic technology. Computers and the internet have revolutionized commerce, from banking and finance, to the goods and services we can buy with the click of a button. None of these innovations would have been possible without electricity.

A. Legacy of the Past and Promise for the Future

In the 1920s, the rapid consolidation of electric companies spurred by scale economies and decreasing costs replaced pure competition with government regulation designed to simulate the forces of competitive markets on participants.

The system of economic regulation of the electric utility industry changed little from the 1930s through the 1970s. Electric utilities continued to use scale economies, building ever-larger generating plants that produced power at ever-lower cost. But the energy market turmoil of the 1970s, beginning with the 1973 OPEC oil embargo, as well as the need to reduce air and water pollution, including from large coal-fired power plants, set in motion market forces that continue to influence the electric industry today.

Although Congress passed a series of energy legislation in 1978, including the Public Utilities Regulatory Policy Act (PURPA), which introduced independently-owned generating companies called Qualifying Facilities, it was the Energy Policy Act of 1992 that laid the foundation for the

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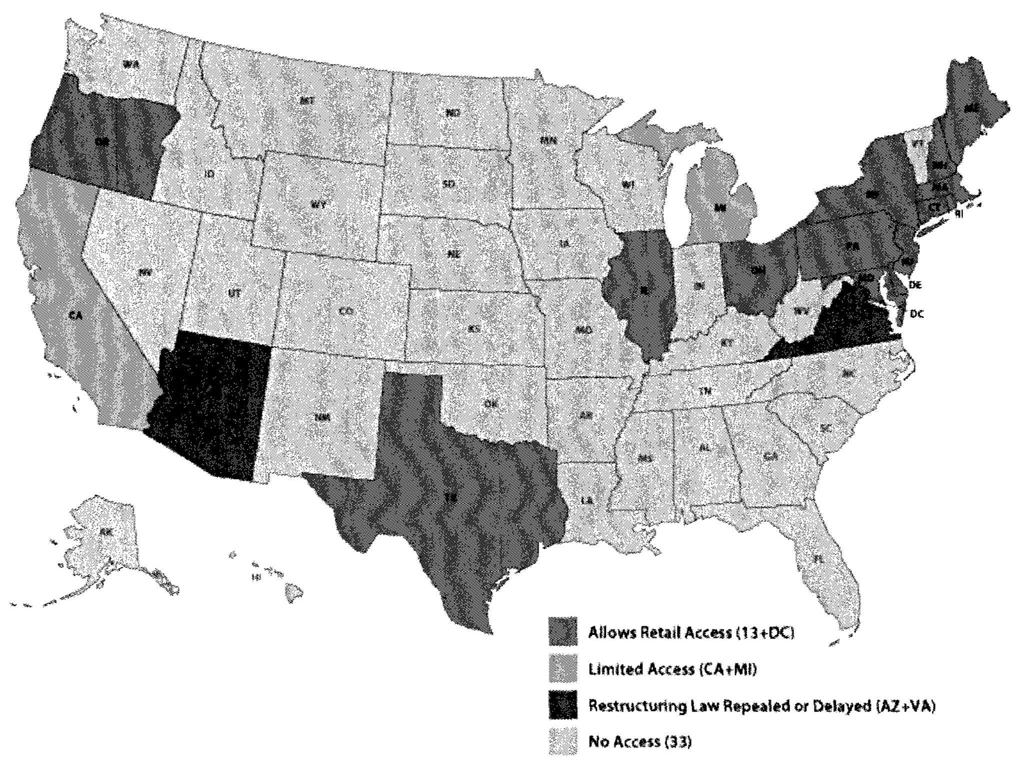
[1] For a detailed history of the electric utility industry, see Charles F. Phillips, *The Regulation of Public Utilities*, 3d ed., Public Utilities Reports, Inc., (1993), pp. 623-689.

competitive wholesale and retail electric markets that benefit consumers and businesses today.[2] A number of states restructured their electric industries establishing competition for generation, while maintaining monopoly service for distribution.

Electric industry restructuring, however, slowed after the California energy "crisis" of 2000-01, which led to the bankruptcy of one of the largest electric utilities in the nation, and the near-bankruptcy of a second utility.[3] Although multiple factors contributed to the California "crisis," many politicians and state regulators used California as an excuse to halt electric restructuring in their own states. Nonetheless, numerous states in New England and the Mid-Atlantic, as well as several states in the Midwest and Texas chose to restructure (**Figure1**).

Figure 1: Status of Electric Restructuring



[2] For a brief history of events that shaped the electric industry from the 1990s, *see* Jonathan A. Lesser and Leonardo R. Giacchino, *Fundamentals of Energy Regulation*, Public Utilities Reports, Inc., (2007), pp. 10-12.

[3] For a detailed discussion of the economic and regulatory factors that led to the crisis, *see* Paul L. Joskow, "California's Electricity Crisis," *Oxford Review of Economic Policy* 17 (2001), pp. 365-88. Available at: http://www.puc.state.pa.us/electric/pdf/PPT-NEM_Presentation101910-Cawley.pdf.

Opposition to electric competition continues. As a consequence, a patchwork of state laws and policies implemented to "protect" consumers has distorted market competition, which will ultimately harm the very consumers these laws and policies are supposed to protect. In Ohio, for example, AEP Ohio has proposed a host of nonbypassable charges to subsidize its own generating facilities and reduce the economic incentives of consumers to purchase electricity from competitive electric suppliers. In Connecticut and New Jersey, both of which have active competitive markets, distribution utilities are required to subsidize construction of generating plants in order to artificially reduce wholesale market prices. In a few states, there are government-run "power authorities" that can act as brokers, buyers, and in some cases, generation developers. And, some states have rules or proposals mandating that local utilities and competitive suppliers buy power from in-state generators, or build generation in state.

Yet, while some states have adopted policies to thwart competitive electric markets, others have fully embraced competition. Texas, which has a vibrant economy that has created far more jobs than any other state over the last two years, has a fully competitive retail electric market, in which competitive electric suppliers now offer more than 250 different products to residential consumers.[4] Pennsylvania has also embraced retail electric competition and almost 1,200,000 customers have switched to competitive electric suppliers.[5] Illinois is another success story, with competitive electric suppliers providing 75% of the electricity purchased by commercial and industrial customers. According to data published by the Public Utilities Commission of Ohio (PUCO), as of March 31, 2011, over 1.4 million customers of Cleveland Illuminating, Ohio Edison, and Toledo Edison, which are subsidiaries of FirstEnergy, had switched to competitive electric suppliers, including over 70% of residential customers.[6] Similarly, over 200,000 Duke Energy Ohio customers had switched to competitive suppliers by March 31, 2011.[7] The combination of highly competitive wholesale electric markets and retail competition, promises to provide consumers with the most efficient, cleanest, and lowest available cost electricity. For an economy that relies on electricity, therefore, electric market competition is key.

Perhaps the best known physical law of electricity is that it flows along the path of least resistance. Well, so does the capital needed for new investment and economic growth. States that embrace electric competition are likely to benefit in the long run because competition encourages the most efficient generation and new investment, leading to the lowest possible electric prices. Those lower prices, in turn, can ripple through individual states' and the U.S economy, creating hundreds of thousands of new jobs each year.

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[4] *See* http://www.powertochoose.org/_content/_compare/compare.aspx.

[5] *See* Pennsylvania Office of Consumer Advocate, Pennsylvania Electric Shopping Statistics, July 2011. Available at: http://www.oca.state.pa.us/Industry/Electric/elecstats/Stats0711.pdf.

[6] Source: PUCO, "Summary of Switch Rates from EDUs to CRES Providers in Terms of Customers," March 31, 2011. Avaialble at: http://www.puco.ohio.gov/emplibrary/files/util/MktMonitoringElecCustSwitchRates%5CSWITCH%20RATES%20CUSTOMER%5C2011%5C1Q2011.pdf.

[7] *Id.*

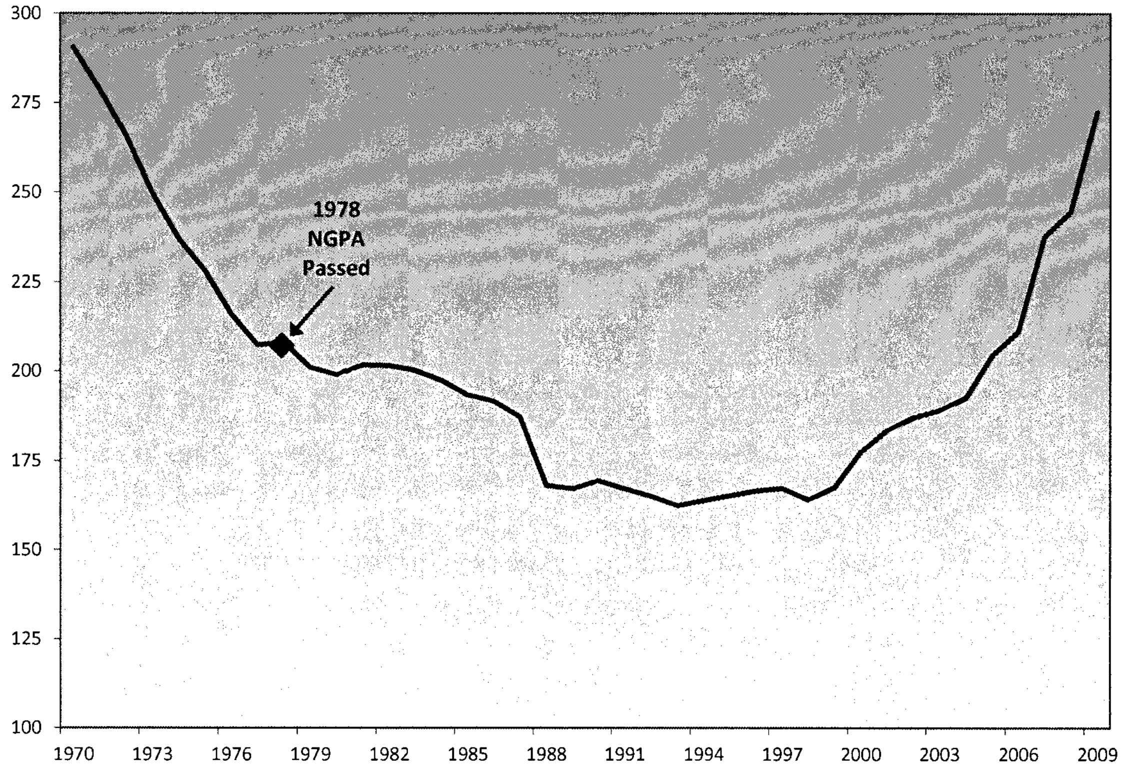
In contrast, state policies that mandate energy investments that are subsidized by consumers, or that shield local electric utilities from market competition, do not encourage investment, either in the electric industry or elsewhere. Rather, they promise short-term benefits, whether artificially low prices, "protection" from volatile energy prices, or local jobs. In fact, such subsidies are hidden taxes that attempt to use energy policy as an economic stimulus mechanism paid for by all electricity customers. Ultimately, however, the long-term costs are far higher than any short-run benefits because, by distorting electric markets, these policies themselves increase economic "resistance" to new investment, greater uncertainty, and higher prices that ultimately destroy jobs. As when Westinghouse prevailed over Edison, and as has been proven repeatedly to be the best policy for sustained growth, investors, not customers, should bear the risks for investment.

II. The Natural Gas Industry: A Competitive Success Story

In the late 1960s, the conventional wisdom was that natural gas supplies would soon be exhausted. Wellhead natural gas prices were regulated and capped. Supplies began to diminish as production from existing wells declined. Growth in the natural gas industry came to a standstill because there was little economic incentive to undertake new, more costly exploration. By 1967, estimated reserves had peaked and production began to fall steadily. Shortages began to develop, natural gas service was curtailed for industrial customers, and predictions that "the spigot would run dry" within a decade became prevalent.

Then, in 1978, Congress passed the Natural Gas Policy Act (NGPA), which addressed the real problem: price controls that had eliminated incentives to explore for new supplies. The NGPA set a timeline for deregulating wellhead natural gas prices. Not surprisingly, removing price controls and establishing a truly competitive market for natural gas worked wonders. Coupled with severing the connection between production, pipeline transportation, and local distribution, by the early 1990s the natural gas market was vibrant; the predicted shortages had turned into a gas "bubble." The decline in proven reserves slowed and then, amazingly, reserves began to increase rapidly, and by 2009, proven reserves were almost the same as they had been in 1970, four decades earlier (**Figure 2**).

Figure 2: U.S. Natural Gas Reserves (Trillion Cubic Feet)

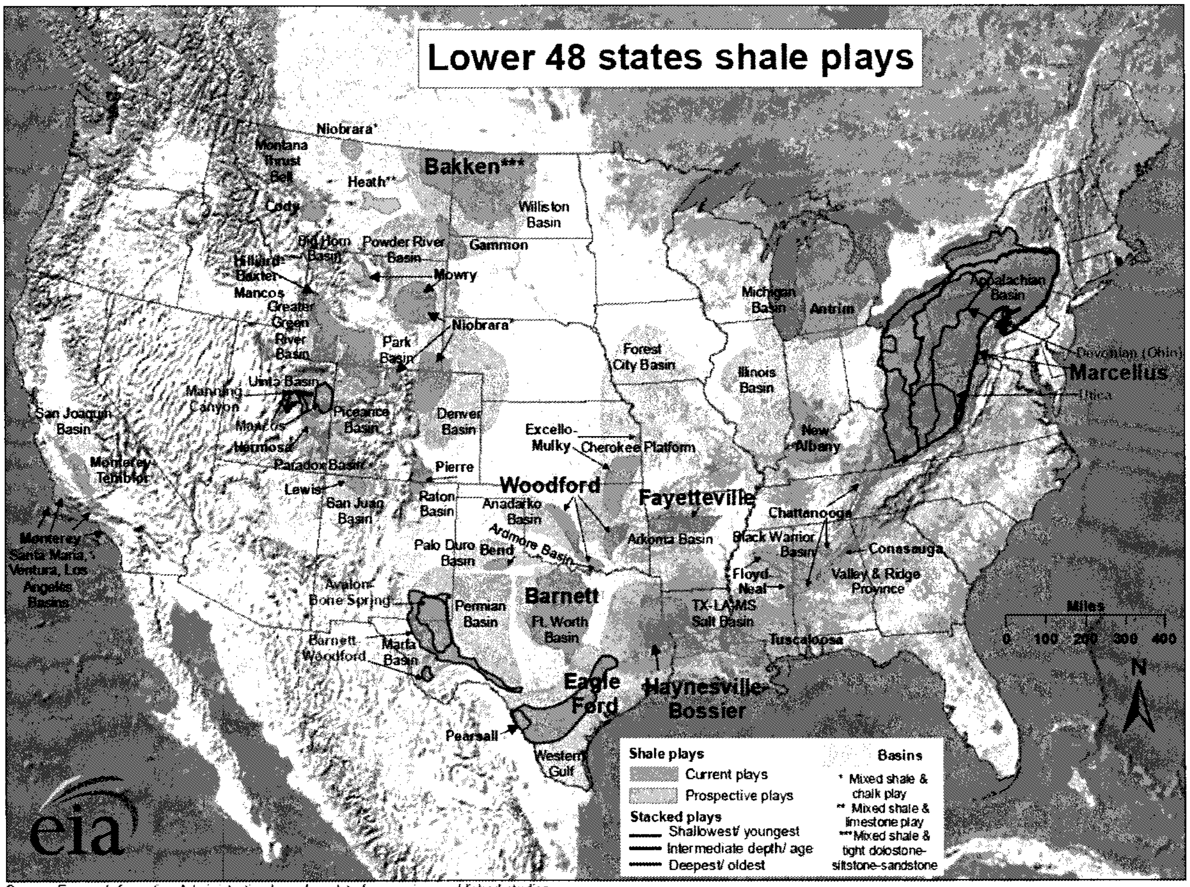


Source: U.S. Energy Information Administration

A. The Shale Gas Revolution

Although market competition led to additional discoveries and increased production of conventional natural gas, the rapid development of shale gas over the last decade has fundamentally altered the U.S. natural gas market. Shale gas production has been made possible by several factors. The first was increasing natural gas demand, especially for generating electricity, which took advantage of significant advances in the design and efficiency of natural-gas fired generators. New gas-fired generators were modular and offered the lowest emissions profile of any fossil-fuel generating resource. As more gas-fired generation was developed, especially by competitive generating companies, the gas "bubble" of the 1990s evaporated and market prices increased. Higher market prices, in turn, helped accelerate technological advances in horizontal drilling and hydraulic fracturing. Those advances in drilling technology have allowed shale gas production to skyrocket. Numerous shale gas fields have been discovered throughout the U.S. (**Figure 3**), so that we have become the "Saudi Arabia" of natural gas.

Figure 3: U.S. Shale Gas Plays



Source: Energy Information Administration based on data from various published studies.
Updated: May 9, 2011

The U.S. Energy Information Administration notes that shale gas production has increased 1,400 percent over the last 10 years and that proven reserves of shale gas increased by 76% between 2008 and 2009 alone.[8] As a result, wellhead natural gas prices decreased by about half between 2008 and 2010, falling from an average of about $8 per 1000 cubic feet (Mcf) to just over $4/Mcf. The positive impacts of this abundant, domestic energy supply will be evident for many years to come. With ample supplies of domestic low-cost shale gas, new, high-efficiency natural gas generating plants will be able to displace older, less-efficient coal-fired power plants. This will benefit consumers in electricity markets that allow all energy sources to compete and, as discussed in a recent study prepared by the Massachusetts Institute of Technology (MIT), will reduce carbon emissions and criteria air pollutants.[9]

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[8] Source: U.S. EIA, Natural Gas Annual 2009. Available at: http://www.eia.gov/oil_gas/natural_gas/data_publications/natural_gas_annual/nga.html.

[9] *The Future of Natural Gas: An Interdisciplinary Study*, MIT, June 2011, Chapter 4. Available at: http://web.mit.edu/mitei/research/studies/natural-gas-2011.shtml

B. The Natural Gas Industry Offers a Blueprint for Electric Competition

Were it not for vibrant market competition in the domestic natural gas market, the shale gas revolution, with the huge Marcellus Shale would never have occurred, and the resulting economic growth and new jobs that shale gas development has spurred in numerous states would not exist. The Pennsylvania Department of Labor and Industry estimates that, Pennsylvania employed 200,000 people in jobs related to Marcellus Shale production at the end of 2010.[10] Similarly, a study prepared for the Fort Worth Chamber of Commerce estimated that over 100,000 people were employed in jobs related to the Barnett Shale in central Texas in 2008.[11]

The rapid increase in shale gas production, not only promotes economic growth in states like Pennsylvania and Texas, but also has provided economic benefits throughout the country. Lower natural gas prices benefit industry and consumers. As the electric industry increasingly relies on natural gas-fired generation to meet growing demand, lower natural gas prices have, in turn, reduced wholesale and retail electric prices, again benefitting industry and consumers. For example, a recent study by the author of this report found that, for every $100 million dollar reduction in electric costs, the state of Ohio would create over 1,200 new jobs. Moreover, competition places investment risks where they belong—whether it is natural gas developers or electric generators, rather than customers.

The success of competition in the natural gas industry provides a blueprint for the electric industry. Robust wholesale and retail electric competition will provide industry and consumers with the lowest possible cost electricity, and help grow the economy because price matters.

III. Needlessly Increasing Electricity Costs Destroys Jobs

In 2010, retail customers spent $370 billion on electricity.[12] Of that total, commercial and industrial customers spent more than $200 billion. Because prices matter, states that impose policies undercutting competition and needlessly increase the cost of electricity, risk losing jobs to lower-cost states, and other countries.

For example, in rejecting a proposed power purchase contract between Deepwater Wind (a small offshore wind development) and National Grid in April 2010, one of the reasons cited by the Rhode Island Public Utilities Commission was the job-killing effects of higher electric prices.

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[10] Pennsylvania Dept. of Labor and Industry, *Marcellus Shale Fast Facts*, June 2011. Available at: http://www.paworkstats.state.pa.us/admin/gsipub/htmlarea/uploads/Marcellus_Shale_Fast_Facts_Viewing.pdf.

[11] The Perryman Group, "An Enduring Resource: A Perspective on the Past, Present, and Future Contribution of the Barnett Shale to the Economy of Fort Worth and the Surrounding Area," March 2009. Available at: www.barnettshaleexpo.com/docs/2009_eco_report.pdf.

[12] Source: U.S. Energy Information Administration, *Electric Power Monthly*, May 2011.

> *It is basic economics to know that the more money a business spends on energy, whether it is renewable or fossil based, the less Rhode Island businesses can spend or invest, and the more likely existing jobs will be lost to pay for these higher costs.*[13]

The Rhode Island PUC was not rejecting wind generation per se; it was rejecting a specific project that was far more expensive than other wind generation alternatives. Subsidized fossil-fuel generating projects can raise the same job-destroying concerns. In Illinois, the proposed 716 MW Taylorville coal-gasification project was rejected by the Illinois Senate in January 2011, only to be resurrected by the Illinois House in May. A September 2010 report issued by the Illinois Commerce Commission found that the cost of electricity produced by the project would be "substantially higher than that which is associated with other types of generation facilities" and "features high costs to ratepayers with uncertain future benefits, and uncertainties that potentially add to already-significant costs,"[14] The report estimated the project would increase electric bills by almost $300 million per year.[15]

A. Market Competition Can Best Identify "Winners" and "Losers"

Not all resource decisions made by regulators recognize the adverse economic consequences of higher electric prices. In approving a negotiated contract between National Grid and Cape Wind with a levelized cost of over $250/MWh, the Massachusetts Dept. of Public Utilities (DPU) rejected wind generation alternatives that had been bid in a competitive solicitation and were available at half the cost of Cape Wind.[16] In contrast, NStar, another Massachusetts electric distribution utility, used a competitive solicitation to select wind generation from bidders throughout New England. One of the winning bids, which was submitted by Blue Sky East, LLC, cost below NStar's forecast of wholesale market prices of energy and capacity.[17]

The Rhode Island PUC clearly understood that higher electric rates have adverse economic impacts that will ripple through an entire economy. Moreover, there is a long history of government attempting to choose "winners" and "losers," and invariably making the wrong choices. Following on the second OPEC oil embargo in 1979, for example, the Carter Administration launched U.S. Synfuels Corporation in early 1980. The goal was to produce cheap synthetic crude oil and reduce

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13 *In Re: Review of New Shoreham Project Pursuant to R.I. Gen Laws § 39-26.1-7*, Docket No. 4111, Report and Order, April 2, 2010, p. 82. Subsequent to rejecting the proposed contract, the Rhode Island legislature passed a law that, in essence, mandated the Rhode Island PUC to approve the contract.

14 Illinois Commerce Commission, Report to the Illinois General Assembly, Analysis of The Taylorville Energy Center Facility Cost Report, September 1, 2010, at 2.

15 *Id.* at 29.

16 *Petition of Massachusetts Electric Company and Nantucket Electric Company each d/b/a National Grid For Approval of Proposed Long-Term Contracts for Renewable Energy With Cape Wind Associates, LLC Pursuant to G.L. c. 169, §83*, D.P.U. 10-54, Direct testimony of Jonathan Lesser, July 30, 2010.

17 *NSTAR Electric Company, Blue Sky East, LLC - Power Purchase Agreement*, D.P.U. 11-07, Direct Testimony of James Daly, February 18, 2011.

the country's dependence on OPEC. The company was shut down in 1984, having spent $25 billion in taxpayer money and producing far less synthetic crude oil than was promised.

The problem with such bureaucratic fiats is not bad intent. Rather, it is simply that competitive markets are far more efficient in winnowing out the most efficient alternatives. For example, in a letter to the Federal Energy Regulatory Commission (FERC) regarding artificial subsidies to build generating plants to suppress wholesale market prices, Safeway Vice President of Operations George Waidelich succinctly identified the benefits of fully competitive markets:

> *In our experience, restructured competitive markets provide transparent power prices, increased risk management options, new product opportunities and better service at both the wholesale and retail level. This also flows down into secondary offerings such as demand response, renewable power and energy efficiency which add additional value to customer energy portfolios. ... Safeway strongly believes in competitive markets for all commodities because they are the proven, most effective way to produce the most reasonable long-term prices and to encourage efficiency and innovation.*[18]

Regional transmission organizations (RTOs) like the PJM Interconnection, which spans all or parts of the 13 Mid-Atlantic and Midwest states, plus the District of Columbia, also enhance market competition by providing robust competitive wholesale markets, access to more generation alternatives, and greater reliability. A recent study of clean energy jobs, prepared by the Brookings Institute recognized the benefits of such markets for developing renewable generation, stating:

> *[E]lectricity market reform represents a significant [clean energy] market-making opportunity for states. ... states should consider moving to the more transparent, competitive, and flexible model in which independent system operators (ISOs) or FERC-approved regional transmission organizations (RTOs) administer the planning of new infrastructure and the pricing of wholesale electricity. In addition to its role in lowering prices, the ISO/RTO model is more conducive to clean energy because the market shares generation and transmission over a larger geographic area and harbors fewer conflicts of interest in expanding capacity to accommodate new renewable generators or in allocating costs to market participants.*[19]

Similarly, in testimony before the U.S. House of Representatives, Committee on Energy and Commerce, FERC Chairman Jon Wellinghoff strongly supported letting markets determine "winners" and "losers," stating:

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[18] Comments on Revisions to the PJM Interconnection, L.L.C.'s Minimum Price Offer Rule Docket Number EL11-20-000, February 14, 2011. Available at: www.ferc.gov.

[19] M. Muro, *et al.*, "Sizing the Green Economy," The Brookings Institution, July 2011, at 26. Available at: http://www.brookings.edu/reports/2011/0713_clean_economy.aspx.

> The policies that we implement aren't directed to specific technologies but rather directed to the integration of all technologies into competitive marketplace. We believe and I think my colleague, Commissioner Moeller, I think would agree. We believe the competition means good for consumers and so, to the extent that we can maximize competition we can increase the types of resources that are available in the market whether they'd be coal, nuclear, natural gas, solar, geothermal, hydroelectric or any of these resources and also to the extent that we can do things like incorporating in demand response and energy efficiency which usually the lowest cost resources. The whole mix of those resources in a competitive environment allowed to compete fairly in that competitive environment will in fact produce the lowest cost for consumers.[20]

FERC Commissioner Philip Moeller, added that competitive wholesale markets "are what benefit consumers the most."[21]

Market competition is also the best solution for meeting policy goals at the lowest possible cost, such as state renewable generation requirements, and thus benefits consumers. For example, California uses an innovative auction approach to obtain solar photovoltaic generation to meet that state's renewable energy portfolio requirements. That approach[22] replaces government-determined "feed-in tariffs," such as those used in European countries like Spain and Germany, with a market-based approach that rewards the most efficient and least costly solar developers. The result is that the best solar facilities—producing the most electricity at the lowest cost—are built. In contrast, solar photovoltaic feed-in tariffs that have been set administratively, such as in Germany and Spain, caused electric rates to skyrocket, and imposed tremendous economic costs.[23]

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[20] House Energy and Commerce Committee, hearing on "The Views of the Independent Agencies on Regulatory Reform," July 7, 2011. Available at: http://energycommerce.house.gov/hearings/hearingdetail.aspx?NewsID=8763.

[21] *Id.*

[22] *See* J. Lesser and X. Su, "Design of an Economically Efficient Feed-in Tariff Structure for Renewable Energy Development." *Energy Policy* 36 (March 2008), pp. 981–990.

[23] *See, e.g.*, G. Calzada et al., "Study of the Effects on Unemployment of Public Aid to Renewable Energy Sources," Universidad Rey Juan Carlos, March 2009, published at: PROCESOS DE MERCADO. Volumen VII, Número 1, Primavera 2010. Available at: http://www.juandemariana.org/pdf/090327-employment-public-aid-renewable.pdf; M. Frondel, N. Ritter and C. Vance, "Economic Impacts from the Promotion of Renewable Energies: The German Experience, Final Report," Rheinisch-Westfälisches Institut für Wirtschaft sforschung, October 2009. Available at: http://www.instituteforenergyresearch.org/germany/Germany_Study_-_FINAL.pdf; P. Voosen, "Spain's Solar Market Crash Offers a Cautionary Tale About Feed-In Tariffs," New York Times, August 18, 2009, Available at: http://www.nytimes.com/gwire/2009/08/18/18greenwire-spains-solar-market-crash-offers-a-cautionary-88308.html?pagewanted=all.

B. Electric Competition: A long-term Focus

One of the arguments often made against competitive electric markets, and competition in general, is that competitors focus solely on the short-run, rather than considering what's best for consumers in the long run. This view was expressed by AEP Ohio President and Chief Operating Officer Joseph Hamrock in a January letter to the Ohio Public Utilities Commission, as part of that company's filing of its "Electric Security Plan," a non-market alternative for AEP Ohio's distribution customers. Mr. Hamrock stated, "A framework biased toward current short-term market mechanisms will likely lead to retirement of critical assets, an irreversible course that will leave the State exposed to tighter supplies and the associated increases in market prices."[24]

However, Mr. Hamrock's statement belies a misunderstanding of competition and competitive markets. Competitive markets will lead to the retirement of uneconomic resources and the continued use and development of the most economic resources when the long run leads to lower market prices for all consumers. As Safeway's Mr. Waidelich stated, the benefits from competition are <u>not</u> focused on the short-term. Rather, competition produces the lowest possible long-term prices and encourages long-run economic efficiency and innovation.

Critics also point to bankruptcies of competitive generation developers as evidence that competition has somehow "failed." It is true that a number of competitive generation developers misjudged markets and were forced out of business. In some cases, new plants were built based on faulty expectations of future electric demand and market prices. In other cases, developers did not anticipate that state regulators and politicians would attempt to restrict market competition, such as through mandated price caps. But generator bankruptcies, rather than demonstrating the failure of competition, illustrate another <u>benefit</u> of competition: the risk of failed investments is borne by developers, not customers. Indeed, one of the driving forces of market competition in the electric industry was a legacy of construction cost-overruns at generating plants built by regulated electric utilities, cost overruns that were imposed on captive ratepayers. In competitive generation markets, however, developers, not customers bear the financial risks because it is the developers who can best manage those risks. As Steve Elsea, Director of Energy Services at Leggett & Platt, a diversified company with 100 manufacturing facilities nationwide, stated:

> *We believe that competitive markets eliminate subsidization and thereby create the price transparency that produces market efficiency. By transferring the risk of building new generation facilities from investors to consumers, the Act skews the balance of supply and demand that sets the true market price. When New Jersey manipulates the market by legislative fiat, it may end up devaluing the assets of existing, unsubsidized*

[24] *In the Matter of the Application of AEP Ohio, Case No. 11-346-EL-SSO and Case No. 11-348-EL-SSO,* Letter of Joseph Hamrock, January 27, 2011 ("Hamrock Letter"), p. 1.

generators and creating a disincentive for future investment. At the end of the day, this will result in higher prices for New Jersey consumers.[25]

Because electric competition will result in the lowest long-term prices, it will also provide the greatest long-term economic benefits, leading to higher economic growth and more jobs. Yet, ironically, it is that quest for jobs that is causing some states to promote artificial subsidies for their "favorite" types of generation or adopt various measures under the rubric of "electricity security." However, the economic damage such policies cause in the long-run will far exceed any benefits in the short-run.

IV. Artificial Subsidies: Short-term "Gain"; Much Greater Long-term Pain

Despite the documented benefits of electric competition, a number of states—and some electric utilities—continue to attempt various "end-runs" around competitive markets. These include (1) "energy security" requirements, in which states mandate that generation be built within state boundaries, including specific technologies to meet renewable portfolio standards and thereby create entire new industries; (2) mandates for local utilities and their customers to subsidize new generation investment to undercut competitive wholesale markets; and (3) state-sanctioned "power authorities," some of whom would be vested with the ability to finance construction of new generating plants whose output would be sold to select customers and also undercut competitive wholesale markets.[26]

Some argue that only governments can finance new generating plants, because energy markets are too "volatile," and point to the relative lack of new generation investment by private sector develops in the last few years. Others argue that competitive markets are "unfair," and reward existing generation plant owners with "windfall" profits, thus requiring government intervention to protect ratepayers. Still others argue that government can build lower-cost power than private competitors because of its ability to issue lower-cost debt. Finally, there are those that argue subsidies are necessary to overcome "market barriers" that prevent private investment in innovative energy technologies. None of these arguments is valid.[27]

Regardless of the justification, "end-runs" around private sector investment decisions effectively short-circuit competitive electric markets and thereby inflict long-term economic harm. It's true, of course, that building and operating generating plants within a state's borders will create new jobs

[25] *In the Matter of the Long-Term Capacity Agreement Pilot Program*, BPU Docket No. EO11010026, Comments of S. Elsea on behalf of Leggett and Platt, Inc., February 23, 2011.

[26] For a discussion of different types of power authorities envisioned, see. A. Kleit, "The Debate over Power Authorities: A View from Pennsylvania," November 2010. Available at: http://www.electricitymarkets.psu.edu/reports/power_authority_outline1.pdf.

[27] For a more detailed discussion of why these arguments are invalid, see J. Lesser, "Gresham's Law of Green Energy," *Regulation*, Winter 2010-2011, pp. 12-18 ("Lesser 2011"). (Gresham's Law is named after named after Sir Thomas Gresham (1519–1579), and is commonly stated as: "Bad money drives out good.")

for construction workers, as well as jobs for the people needed to operate and maintain the plant. But such a view considers only part of the economic ledger.

A. How Artificial Subsidies Destroy Jobs and Harm Consumers

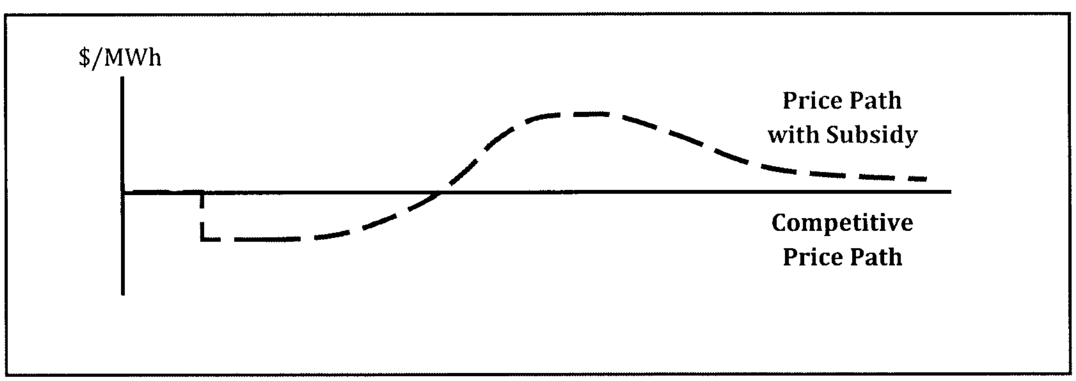
Economists continue to note that there is no such thing as a "free lunch". Some politicians nonetheless ignore economists and continue to promote the myth that subsidizing electric generation lowers prices and creates jobs, the ultimate free lunch.

Consider, for example, a state that mandates construction of generating plants for the express purpose of reducing wholesale market costs. The generating plant is not economic, so local distribution customers are required to subsidize the plant. Proponents of this strategy will argue that, once the plant is built and its energy and capacity are bid into the respective wholesale markets, the increase in supply will decrease market-clearing prices by more than the cost of the plant. Supposedly, everybody wins, except for competitive generators who invested their capital.

These "free-lunch" arguments are wrong, for many reasons.[28] First, such state policies wrongly and illegally manipulate the market to drive down prices artificially. Just as regulators do not allow generators to artificially withhold supplies to force market prices upwards, neither can subsidized generation artificially flood the market to drive down prices. Yet, that is precisely what such subsidized generating plants do.

Second, by artificially driving down market prices, states drive out legitimate competitive generators. Thus, any price reductions are temporary. Worse still is the long-term damage to markets. By driving out legitimate competitors, these policies increase financial risk, as investors don't know if the plant they finance will be forced out of business in the future by some other state policy action. Finally, subsidies reduce the incentive to innovate and lower costs. Thus, in the long-run, because competitive generators will be more hesitant to invest and because investors will demand higher returns to compensate for the additional financial risk, market prices will actually increase even more (**Figure 4**).

Figure 4: Price Path with Subsidized Generation



[28] *Id.*

In Figure 4, the artificial subsidy initially reduces market prices below the competitive price path, providing a temporary illusory "benefit" to consumers. However, because the artificial subsidy drives out competitive generators, prices ultimately increase. The increased market uncertainty causes prices to rise above the competitive price path, and then gradually fall to that path in the long-run. Thus, the same customers who are supposed to benefit from the subsidized generation will, in fact, pay more for their electricity in the long run. Moreover, those higher electric prices will damage the entire state economy and, as the Rhode Island PUC understood, reduce jobs. In fact, far more jobs will be lost than the subsidized generating plant will create. And, because most electric markets are regional, the impacts of individual state subsidies may cross state lines, causing long-term harm and lost jobs to other states' economies.

For example, in a July 13, 2011 letter to members of the Pennsylvania Congressional delegation, the Pennsylvania Public Utility Commission (PPUC) stated, "[t]he ability to bid in new capacity at potentially artificially low prices can skew the capacity market leading to less investment in new and existing capacity, including in Pennsylvania. Without such investment, the end result from the consumer's perspective, ultimately, could be higher rates in Pennsylvania than without this state-mandated subsidy."

These impacts were also noted by the PJM Independent Market Monitor, in a report of the impacts of NJ Assembly Bill 3442, which would require New Jersey to procure 1,000 MW of new capacity that was not needed for reliability, require that capacity to clear in the PJM capacity market auction through an offer price below its costs, and subsidize that capacity. As the report concluded:

> The result of such a subsidy by New Jersey ratepayers would be to artificially depress the Reliability Pricing Model (RPM) auction prices below the competitive level, with the result that the revenues to generators both inside and outside of New Jersey would be reduced as would the incentives to customers to manage load and to invest in cost effective demand side management technologies.[29]

The "electric security" canard is another argument raised as justification for artificial subsidies (See **Box**). Again, however, this argument is flawed. Market signals, not mandates, are the most efficient way of eliciting new supply when it is needed. Building new generating plants when the market cannot support those investments wastes scarce resources. It is the electric equivalent of the infamous Alaska "Bridge to Nowhere." Moreover, because almost all electric markets are regional,

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[29] *See* Monitoring Analytics, "Impact of New Jersey Assembly Bill 3442 on the PJM Capacity Market," January 6, 2011. Available at: http://www.monitoringanalytics.com/reports/Reports/2011/NJ_Assembly_3442_Impact_on_PJM_Capacity_Market.pdf.

and deliberately so because such multi-state markets lower costs and improve reliability, in-state generation development mandates needlessly raise costs.

By mandating that new generation be built within a state and artificially manipulating competitive electric markets, policy makers increase the financial risks to competitive generators and deter competitive build. States that create such uncertain economic environments in which the rules frequently change raise economic "red flags" among investors.

The Electric "Security" Canard or Why They Don't Grow Oranges in Ohio

In its January 2011 filing of its non-market Electric Security Plan to provide power to its distribution customers, AEP Ohio CEO Joseph Hamrock also raised the risk that the current regulatory environment could not "sustain needed investment in any generating assets," which could create "a distinct risk Ohio could become an importer of electricity." A similar "electric security" issue was raised in Maryland in 2007. Known as the Maryland Energy Independence Act, the legislation would have required that the state's local distribution utilities to provide 100% of all standard offer service to customers (the power provided to customers who cannot or will not purchase from a competitive retail electric provider) from in-state generating plants, declaring that "a self-sufficient means of electricity generation within the state will benefit consumers as well as electric companies and electricity suppliers."

Mr. Hamrock's warning against Ohio becoming a net importer of electricity from other surrounding states, and his conclusion that this would adversely affect Ohio's "electric security," is inconsistent with basic economics and the entire purpose of PJM. Mr. Hamrock's argument is that only electricity supplies produced within the boundaries of the state can provide "electricity security," as if surrounding states could somehow "embargo" electricity deliveries similar to the OPEC oil embargoes of the 1970s. The entire purpose of a multi-state power pool like PJM, which is the largest integrated power pool in the country, is to enhance reliability and security of electric supplies. And, because PJM operates highly competitive wholesale energy and capacity markets, generators are efficient and customers receive the lowest possible prices for their electricity.

Because of the fundamental economic benefits provided by unfettered trade, A state's lawmakers would not, for example, mandate creating a state orange-growing authority with the authority to build huge greenhouses to grow oranges to meet citizens' demand for orange juice, and create jobs for construction workers and orange growers. The reason is that, thanks to market competition, it is far cheaper to purchase orange juice from oranges grown in Florida. Other states benefit from lower-cost orange juice and Floridians benefit by selling orange juice nationwide. The same is true of electricity. Allowing generation investment where and when it is needed benefits everyone by providing the lowest available prices, thus enhancing economic growth and creating jobs.

B. The Job-Killing Impacts of Needlessly Raising Electricity Prices

When policymakers tout the job-creating benefits of subsidized electric generation or policies that foreclose market competition, they either ignore or dismiss the job-killing impacts of higher electricity costs. For example, advocates of Cape Wind argued that residential customers' electric bills would increase less than two dollars per month,[30] while AEP Ohio's Mr. Hamrock touted the benefits of allowing his company to impose various nonbypassable rate riders.

Regardless of the incremental impacts on a single customer, however, the cumulative impacts on a state's economy are real and significant. Cape Wind's proponents admitted that, in the aggregate, the project would increase electric costs for National Grid customers by between $564 million and $715 million (in present value terms) over the 15-year contract life. That represents a loss of hundreds of jobs each year as those higher electric costs rippled through the Massachusetts economy.[31] As for AEP Ohio, it would force customers who wished to purchase electricity from competitive retail electric suppliers to pay twice for environmental controls, renewable generation, and AEP Ohio's economic development efforts, thus undermining their ability to shop for lower-cost electricity.

A recent study evaluated the economic impacts of the AEP Ohio plan. It showed that each million dollar increase in electricity costs in Ohio directly causes the loss of almost 13 jobs cumulatively when compared to competitive alternatives AEP Ohio's proposal could increase the cost of power paid by all AEP Ohio customers by as much as $2 billion dollars each year, resulting in the loss of thousands of jobs.[32]

Because competitive electric markets are the best way to keep prices as low as possible, such markets will also provide the greatest opportunity for economic growth and job creation. A group of major commercial customers expressed that sentiment clearly in a June 13, 2011, letter to the Governor of Maryland urging the Governor to maintain Maryland's competitive electric market.

> *Competitive electricity markets are providing documented benefits to consumers. They keep prices as low as possible, drive innovation, and produce other benefits for consumers, while ensuring a reliable supply of electricity. Vibrant electricity markets are important to Maryland's economic and job growth. A stable framework within*

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30 D.P.U. 10-54, Supplemental Testimony of Jeanne Lloyd on behalf of National Grid U.S.A., August 9, 2010, p. 1.

31 For a more detailed discussion, *see* Lesser 2011.

32 *See In the Matter of the Application of AEP Ohio, Case No. 11-346-EL-SSO and Case No. 11-348-EL-SSO,* Direct testimony of Jonathan Lesser on behalf of FirstEnergy Solutions Corporation, July 25, 2011. Available at: http://dis.puc.state.oh.us/DocumentRecord.aspx?DocID=710a2c81-cf95-4664-8f4e-5d7a61fef2a4, and Direct testimony of Michael Schnitzer on behalf of FirstEnergy Solutions Corporation, July 25, 2011. Available at: http://dis.puc.state.oh.us/ViewImage.aspx?CMID=A1001001A11G26A80700B55314.

which competitive suppliers can operate will increase competition and benefit consumers.[33]

V. Policy Recommendations

Because electricity is such a critical part of today's economy, promoting the lowest available prices and increasing innovative choices are critical to future economic growth. Five general policies can help.

1. Actively promote wholesale and retail electric competition. States that belong to transmission organizations like PJM can access competitively priced wholesale electricity, and benefit from improved system reliability. Competitive wholesale markets for energy and capacity provide clear market signals, and promote innovation and greater efficiency. Moreover, competitive markets also provide the best platform for other state policies, such as promoting clean energy sources and retail customer choice. Interconnecting clean energy sources can be more easily accommodated on larger, integrated power systems than at the local level. Allowing all customers unfettered access to competitive retail electric suppliers, and ensuring that local distribution utilities' "provider of last resort" roles are met using competitive procurement mechanisms, will provide all retail customers with the lowest possible rates and greatest variety of choices. .[34]

2. Create an environment that lets the market work and reduces investment uncertainty. All investors abhor uncertainty, because it increases their costs. For capital-intensive, long-lived investments like electric generating plants, providing a stable market environment in which the rules are clear is crucial. State policies that create artificial subsidies for a few generators or mandate uneconomic investments to upend competitive markets, send flashing "Do Not Invest" signals to developers, by driving out real competitors and increasing uncertainty. Ultimately, such policies lead to higher long-term electric prices, thus harming the very customers the subsidies are supposed to benefit.

3. Do not allow monopoly electric utilities to thwart competitive markets. Monopolies are notoriously inefficient, because they have no incentive to improve productivity and reduce costs. Allowing monopoly utilities to thwart competition, whether by imposing unreasonable costs on customers who wish to purchase electricity from competitive electric suppliers or negotiating bilateral agreements with favored suppliers, needlessly increases costs for customers.

4. Avoid policies that use artificial subsidies as an economic stimulus. Just as we don't build schools as a way of providing jobs for school bus drivers, electric generating plants should be

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[33] Letter to Governor Martin O'Malley, June 13, 2011, p. 1. Available at: http://www.competecoalition.com/files/Maryland%20letter.pdf.

[34] *See* COMPETE-AWEA, "Joint Statement Supporting Competitive Wholesale Electricity Markets," October 27, 2010. Available at: http://www.competecoalition.com/files/AWEA_COMPETE_Wind_Joint_Statement.pdf.

built in response to market conditions, not political ones. Policies that mandate in-state development of subsidized generation on the promise of job creation will cause more jobs to be lost, as customers not only bear the cost of the subsidies themselves, but also pay more for their electricity in the long-run.[35]

5. Combine policies that promote electric competition with broader economic policies that promote economic growth. By itself, electric competition cannot rescue a moribund economy. But combined with other policies, electric competition can be a catalyst for economic growth. The State of Texas not only offers the most advanced competitive electric market in the U.S., it offers an environment that encourages investment and job creation. That may explain why, according to the Federal Reserve Bank of Dallas, Texas created 37% of net new jobs in the U.S. between June 2009 and May 2011.[36] Pennsylvania, another state with a vibrant competitive electric market, also ranked high in terms of job creation, was third, with 93,000 new jobs, in part to development of the Marcellus Shale natural gas reserves.

Like electrons, investment and economic growth follow the path of least resistance. And, although there may not be any economic "silver bullets" to create jobs overnight, competitive electric markets, and their ability to provide the lowest possible electric prices for businesses and households, will be increasingly important to our economic future.

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[35] Moreover, state (and federal) subsidies are no guarantee of "permanent" new jobs, as Massachusetts discovered after providing Evergreen Solar with $43 million worth of subsidies, and the U.S. DOE discovered after providing California solar panel manufacturer Solyndra with $535 million in loan guarantees.

[36] Federal Reserve Bank of Dallas, "Texas Job Growth—Special Data Report," July 12, 2011. Available at: http://www.dallasfed.org/research/update-reg/2011/1105.cfm. *See also*, "The Lone Star Jobs Surge," *The Wall Street Journal*, June 10, 2011.

Appendix: Estimating the Economic Impacts of Increased Electric Costs

1. Mathematics of the Input-Output Framework[1]

An input-output framework begins with observed transaction data for a particular region. For example, the IMPLAN model is constructed from data at the national, state, and county levels. The transactions are typically converted into dollar amounts, as that makes tracing economic flows much easier, since dollars are a uniform measure.

We assume that the economy is made of up of numerous sectors, e.g., manufacturing, mining, agriculture, services, government, and foreign trade. To construct an input-output table, we record how the output produced (supplied) by a given sector, such as steel, is purchased by (demanded) the other industry sectors (who then use those purchased inputs to manufacture other goods), plus external sales to government and consumers. Thus, if there the economy consists of N industries, the total output produced by an individual industry, X_k, will be purchased by the other N–1 industries, used by itself, and sold to final consumers. Thus,

$$X_k = z_{k,1} + z_{k,2} + z_{k,3} + \ldots + z_{k,N} + Y_k \tag{1}$$

where the $z_{i,n}$ are sales to each industry n, and Y_k equals sales for final demand (i.e., to consumers, the government, and for export). Since we have N industries, we can write the entire set of flows as

$$\begin{bmatrix} X_1 = z_{1,1} + z_{1,2} + \ldots + z_{1,k} + \ldots + z_{1,N} + Y_1 \\ X_2 = z_{2,1} + z_{2,2} + \ldots + z_{2,k} + \ldots + z_{2,N} + Y_2 \\ \vdots \\ X_k = z_{k,1} + z_{k,2} + \ldots + z_{k,k} + \ldots + z_{k,N} + Y_k \\ \vdots \\ X_N = z_{N,1} + z_{N,2} + \ldots + z_{N,k} + \ldots + z_{N,N} + Y_N \\ \\ \end{bmatrix} \tag{2}$$

Each column of coefficients on the right-hand side of equation (2), *i.e.*,

[1] For a far more detailed discussion, see Leontief, *op. cit.* See also, R. Miller and P. Blair, *Input-Output Analysis: Foundations and Extensions*, (Englewood Cliffs, NJ: Prentice-Hall 1985), Chp. 2.

$$\begin{bmatrix} z_{1,k} \\ z_{2,k} \\ \vdots \\ z_{k,k} \\ \vdots \\ z_{N,k} \end{bmatrix}$$

represents the purchases from industry sector k to the N–1 other industry sectors, and to itself ($z_{k,k}$). In other words, industry k purchases inputs from all of the other industries to produce output X_k. When all of the N different columns are combined, they create an *input-output table*, with each selling sector a different row, and each purchasing sector a different column, as shown in Table 1.

Table 1: An Input-Output Table

Purchasing industry sector

		1	**2**	**...**	**K**	**...**	**N**
	1	$Z_{1,1}$	$Z_{1,2}$	...	$Z_{1,k}$		$Z_{1,N}$
Selling	**2**	$Z_{2,1}$	$Z_{2,2}$	...	$Z_{2,k}$		$Z_{2,N}$
Industry	⋮	⋮	⋮		⋮		⋮
Sector	**k**	$Z_{k,1}$	$Z_{2,k}$	...	$Z_{k,k}$		$Z_{N,k}$
	⋮	⋮	⋮		⋮		⋮
	N	$Z_{N,1}$	$Z_{N,2}$	...	$Z_{N,k}$		$Z_{N,N}$

Although the input-output table above incorporates all of the inter-industry sales and purchases, it does not account for the remainder of the economy. For example, final demand includes sales to consumers, state, local, and the federal government, investment, and exports. Moreover, in addition to buying outputs from other industries, each industry pays wages to its employees (W), pays for government services (in the form of taxes), pays for capital (in the form of interest payments, I), and profits. Together, these components are called *value-added.* On top of that, each sector imports goods and services from outside the economy. For example, if building a new high-voltage transmission line requires buying substation equipment from Germany, then the input-output model for the U.S. would consider that an import.

The input-output framework assumes that production coefficients are fixed. This means that there are specific quantities of inputs required to produce a given output. Thus, building a car—any car—is assumed to take (say) 2000 pounds of steel, 100 pounds of rubber, 200 pounds of glass, and so forth. Obviously, this assumption of fixed production coefficients does not hold true entirely—the amount of materials needed to build a large pick-up truck is greater than that needed to built a subcompact car—but for estimating short-run impacts, the overall assumption is reasonable: building more cars and trucks will clearly require more steel, producing more steel will require more iron ore, and so forth.

Because the input-output framework assumes fixed production coefficients (called a "Leontief production function"), the necessary inputs needed to produce a unit of output are all constant. If we divide the purchases made by industry k from every industry, *i.e.*, the $z_{i,k}$, to produce output X_k, we derive the *technical coefficients*, $a_{i,k}$, for industry k. In other words,

$$a_{i,k} = \frac{Z_{i,k}}{X_k} \tag{3}$$

If we substitute equation (3) into equation (2), we obain:

$$\begin{bmatrix} X_1 = a_{1,1}X_1 + a_{1,2}X_2 + \ldots + a_{1,k}X_k + \ldots + a_{1,N}X_N + Y_1 \\ X_2 = a_{2,1}X_1 + a_{2,2}X_2 + \ldots + a_{2,k}X_k + \ldots + a_{2,N}X_N + Y_2 \\ \vdots \\ X_k = a_{k,1}X_1 + a_{k,2}X_2 + \ldots + a_{k,k}X_k + \ldots + a_{k,N}X_N + Y_n \\ \vdots \\ X_N = a_{N,1}X_1 + a_{N,2} + \ldots + a_{N,k}X_k + \ldots + a_{N,N}X_N + Y_N \end{bmatrix} \tag{4}$$

What equation (4) tells us is that some of the output produced by an industry is sold to all other industries and used in fixed quantities to produce those industries' outputs, and the remainder is sold as final demand to consumers, government, and as exports. As a final step, we isolate the final demands for the output from each industry, Y_k. Thus,

$$\begin{bmatrix} X_1 - a_{1,1}X_1 + a_{1,2}X_2 + \ldots + a_{1,k}X_k + \ldots + a_{1,N}X_N = Y_1 \\ X_2 - a_{2,1}X_1 + a_{2,2}X_2 + \ldots + a_{2,k}X_k + \ldots + a_{2,N}X_N = Y_2 \\ \vdots \\ X_k - a_{k,1}X_1 + a_{k,2}X_2 + \ldots + a_{k,k}X_k + \ldots + a_{k,N}X_N = Y_n \\ \vdots \\ X_N - a_{N,1}X_1 + a_{N,2} + \ldots + a_{N,k}X_k + \ldots + a_{N,N}X_N = Y_N \end{bmatrix} \tag{5}$$

Equation (5) lies at the heart of the economic impact analysis, because it allows us to answer the question, "If the demand for the output of industry k changes, by how much would the output of all of the other industries change?" For example, building a new high-voltage transmission line would increase the demand for concrete, steel, and so forth. How will these changes in demand ripple through a state's economy and what will be the final changes in output levels in all other industries, as well as the change in total labor (i.e., jobs) and income?

To answer this sort of question, we solve equation (5) for each of the X_i. This requires a bit of matrix algebra. It turns out that the solution can be written as

$$\mathbf{X} = (\mathbf{I} - \mathbf{A})^{-1}\mathbf{Y} \tag{6}$$

where

$$\mathbf{A} = \begin{bmatrix} a_{1,1} \cdots a_{1,N} \\ a_{2,1} \cdots a_{2,N} \\ \vdots \\ a_{k,1} \cdots a_{k,N} \\ \vdots \\ a_{N,1} \cdots a_{N,N} \end{bmatrix}, \qquad \mathbf{X} = \begin{bmatrix} X_1 \\ X_2 \\ \vdots \\ X_k \\ \vdots \\ X_N \end{bmatrix}, \qquad \mathbf{Y} = \begin{bmatrix} Y_1 \\ Y_2 \\ \vdots \\ Y_k \\ \vdots \\ Y_N \end{bmatrix}$$

The matrix $(\mathbf{I} - \mathbf{A})^{-1}$ is called the *Leontief inverse*. By changing the level of final demand in the output vector **Y** and knowing the technical coefficients $a_{i,k}$, we can determine the flows through the economy.

There are three types of economic impacts typically evaluated in an input-output study: *direct*, *indirect*, and *induced*. Direct effects are those that are a direct result of an increase in demand for good k. For example, building a new high-voltage transmission line will require concrete for the tower foundations. Thus, the demand for concrete will increase. That is a *direct* impact. Increasing the demand for concrete, however, will require concrete manufacturers to increased their purchases of all of the inputs used to manufacture concrete, including sand, gravel, electricity, and so forth, thus increasing the demand for all of those inputs. Thus, the *direct* increase in the demand for concrete *indirectly* increases the demand for all of these other products. Finally, all of these manufacturers pay wages to employees. Those employees, in turn spend a portion of their wages on food, electricity, new cars, and so forth. As a result, we say the resulting consumer spending from households *induces* further increases in demand, and thus additional economic impacts.

Because of the interconnections among industries and between industries and households, an increased demand for just one good or service is said to cause *ripple effects* throughout the economy. These ripple effects lead to additional jobs and increases disposable income as workers are hired, equipment and supplies are purchased from other local businesses, wages are paid to employees, and taxes are paid to government entities. These impacts are called *multiplier effects* or *multipliers*. For example, if the demand for concrete increases by $1 million and the overall impact on a state's economy is $2 million, then the output multiplier equals $2million/$1 million = 2.0. We can also calculate jobs and income multipliers. For example, if 100 workers are hired to construct a transmission line, and the overall ripple effects lead to 50 new jobs created as a result, the employment multiplier will equal 150/100 = 1.5.

2. Estimating economic impacts

Ripple effects act like waves bouncing off walls. Eventually, each subsequent round of impacts decreases in magnitude, just like a wave bouncing off walls eventually subsides. The speed at which these ripple effects diminish, and the overall magnitude of multipliers, depends on what are called *leakages* out of an economy. For example, not all of the materials needed to build the transmission line will be purchased from in-state companies. Moreover, some of the workers hired to construct the project may be from outside the state. Furthermore, in-state workers who are hired will not spend all of their wages within the state, but will instead buy goods and services from neighboring states, too. As we discuss in the sections that follow, assumptions about *leakage rates*, i.e., what fraction of spending occurs outside the state, are crucial in estimating the overall economic impacts to the state.

a. Calculating multipliers[2]

Multipliers are calculated from the Leontief inverse matrix defined previously. For example, suppose we have an economy with just two industries, industry **X** and industry **Y**, with the following technical coefficients matrix.

$$\mathbf{A} = \begin{bmatrix} 0.15 & 0.25 \\ 0.20 & 0.05 \end{bmatrix} \tag{7}$$

What this means is that to produce $1 of additional output, industry **X** purchases $0.15 from itself and $0.20 from industry **Y**. The remaining $0.65 is accounted for through valued added – wages and salaries paid to employees, taxes paid to federal, state, and local governments, and profits. Similarly, to produce $1 of additional output, industry **Y** purchases $0.25 from industry **X**, $0.05 from itself, and the remaining $0.70 is value added. It turns out the Leontief inverse matrix (ignoring the value added impacts) is

$$(\mathbf{I} - \mathbf{A})^{-1} = \begin{bmatrix} 1.254 & 0.33 \\ 0.264 & 1.122 \end{bmatrix} \tag{8}$$

The values in the Leontief inverse provide the output multipliers, by adding up each column. Specifically, if there is a $1 increase in final demand for the output of industry **X**, then the total

[2] For a much more detailed discussion, see Miller and Blair, fn. 1, from which these examples are drawn.

increase in demand for output of industry **X** is \$1.254 - \$1 for the increase in final demand, and \$0.254 for inter-industry and intra-industry use. There is also an *indirect* increase in demand of \$0.264 of industry **Y** for inter-industry and intra-industry use. Thus, if we sum down the first column, a \$1 increase in demand for industry **X** leads to a total increase in output of \$1.254 + \$0.264 = \$1.518. The output multiplier for industry **X** is thus \$1.518/\$1 = 1.518. Because we are not considering households in this example, this output multiplier is called a *Type I* multiplier.

Next, we consider household impacts, such as from wages paid to households. Suppose that industry 1 **X** pays \$0.30 in wages per dollar of output and that industry 2 pays \$0.25 in wages per dollar of output. By incorporating these payments into the technical coefficients matrix, we can determine the direct, indirect, and *induced* impacts from increased output. So, we rewrite the technical coefficients matrix as follows:

$$\mathbf{A} = \begin{bmatrix} 0.15 & 0.25 & 0.05 \\ 0.20 & 0.05 & 0.40 \\ 0.30 & 0.25 & 0.05 \end{bmatrix} \qquad (\mathbf{I}-\mathbf{A})^{-1} = \begin{bmatrix} 1.365 & 0.425 & 0.251 \\ 0.527 & 1.348 & 0.595 \\ 0.570 & 0.489 & 1.289 \end{bmatrix} \tag{9}$$

The new technical coefficients matrix **A** now contains 3 rows and 3 columns. The 2x2 matrix of values in the top left hand corner is the original matrix shown in equation (7). The third column represents households. So, in the example, households spend \$0.05 per dollar buying items from industry **X**, \$0.40 per dollar buying items from industry **Y**, and \$0.05 buying items from within the household sector. (The remainder is spent paying taxes and for investment.). The third row shows that industry **X** spends \$0.30 per dollar on wages, while industry **Y** spends \$0.25 per dollar on wages.

When we calculate the new Leontief inverse $(\mathbf{I}-\mathbf{A})^{-1}$, the first thing to notice is that the previous coefficients (the top-left 2x2 matrix) are all larger than they were in equation (8). This is because we are now including household demand impacts. Now, the output multiplier for industry **X** is the sum of the first column [1.365, 0.527, 0.570], or 2.462. Thus, for every \$1 increase in demand in industry **X**, total output in the local economy increases by \$2.462. The output multiplier for industry **X** is therefore 2.4262. In matrix notation, the output multiplier for industry *i* in our N-industry economy is:

$$M_{output,i} = \mathbf{i}_i \bullet (\mathbf{I}-\mathbf{A})^{-1} \bullet \mathbf{i}_i', \tag{10}$$

where $\mathbf{i}_i = \begin{bmatrix} 0 & \cdots & 1_j & \cdots & 0 \end{bmatrix}$.[3]

In our 2-industry example, we can calculate the household income multiplier for industry **X** in several ways. The first is to treat household spending as outside our model and estimate impacts

[3] In other words, $\mathbf{i}_j$ is a 1xN unit vector having value 1 for industry j. The term $\mathbf{i}_j'$ is called the *transpose* of $\mathbf{i}_i$, and is a Nx1 column vector.

using the Type 1 multipliers. To do that, we go back to the initial Leontief inverse in equation (8) and multiply the household income coefficients in **A** for our two industries (the third row) by the first column in the Leontief inverse, and add the results, i.e.,

$$H_X = (0.30)(1.254) + (0.25)(0.264) = 0.442$$

What this means is that, for every $1 increase in demand for the output of industry **X**, total household income increase by $0.442 because of the direct and indirect economic impacts on output. Thus, the *Type 1 multiplier* is $0.442/$0.30 = 1.47.

If we include the economic impact caused by households also spending money in the economy, the result is called a *Type II multiplier.* To do this, we use the new **A** and $(\mathbf{I}-\mathbf{A})^{-1}$ matrices shown above. For industry **X**, we calculate the total household income change, including the within-household sector impacts and divide by $0.30 that industry 1 pays directly to households in the form of wages. Thus, we have

$$H'_X = (0.30)(1.365) + (0.25)(0.527) + (0.05)(0.57) = 0.570$$

and the multiplier is $H'_X/0.30$ = $0.57/$0.30 = 1.9. Note also that the overall household impact, $0.57 is just the value in the last row of the Leontief inverse matrix for industry **X.**

Finally, we estimate *employment multipliers,* following the same approaches previously outlined. Only this time, the multipliers do not reflect dollar changes, but changes in employment. To do this, one determines the number of employees (in full-time equivalents) per dollar of output in each industry. For example, suppose for each million dollars of output produced in industry **X**, 300 employees are required, and that in industry 2, 400 employees are used per million dollars of output. This translates to values of 0.003 and 0.004 employees per dollar in industries **X** and **Y**, respectively. Similarly, assume the household sector requires 100 employees per million dollars of output, or 0.001 employees per dollar. Then, using the Leontief inverse matrix in equation (9), we calculate the total employment impact for industry **X** as

$$E'_X = (0.003)(1.365) + (0.004)(0.527) + (0.001)(0.570) = 0.000572$$

Then, using the same approach as for calculating the Type II income multipliers, we can calculate the Type II employment multiplier for industry 1 as $E'_X/0.0003$ = 1.907. Thus, for every job added in industry **X**, a total of 1.907 jobs are added in the entire economy.

3. The IMPLAN Model

IMPLAN was first developed in the 1970s by the U.S. Forest service to analyze the economic impacts of different forestry policies. The current version of IMPLAN is maintained by the University of Minnesota IMPLAN group. IMPLAN provides a detailed breakdown of the U.S. economy, with over 500 separate economic sectors. IMPLAN is widely used by numerous government agencies, including at the federal and state levels.

The IMPLAN model begins with the most current national transactions matrix developed by the current National Bureau of Economic Analysis Benchmark Input-Output Model. Next, the model creates state and county-level values by adjusting the national level data, such as removing industries that are not present in a particular state or economy. The model also estimates imports using what are called *regional purchase coefficients* (RPCs). RPCs measure the proportion of the total supply of a good or service required to meet a particular industry's intermediate demands and final demands that are produced locally. The larger the RPC value, the greater the percentage of total regional demand that is met through local supplies.

In addition to calculating standard Type I and Type II multipliers, IMPLAN can also calculate what are called "SAM multipliers." SAM stands for "Social Accounts Matrix," and is a more detailed breakdown of transactions within an economy. Specifically, whereas the typical input-output framework captures production and consumption, it leaves out some income transactions, such as taxes, savings, and transfer payments. IMPLAN allows users to capture these components as well, and thus derive what are called SAM multipliers.[4] SAM multipliers are a form of Type II multiplier. Thus, SAM multipliers incorporate direct, indirect, and induced impacts, while accounting for the effects of savings, taxes, and transfer payments.

4. Estimating the economic impacts of higher electric prices

To estimate the overall economic impacts of the higher wholesale electric prices and higher capacity market costs, we assumed a short-run elasticity of zero. That is, we assumed consumers would not, initially, reduce their electric consumption in response to the slightly higher electric prices they faced. Since consumer income is assumed to be fixed in the short run, this implies consumers must reduce their expenditures on all other goods and services (including savings and investment) by an equivalent amount.

Similarly, we assumed that in-state businesses would react to the increased price of electricity by reducing their total output such that their aggregate production expenses remained unchanged. This assumption is consistent with the assumption of fixed production coefficients in the Leontief model. It also assumes that businesses would not be able to pass on the increased production costs to consumers.

b. Estimating the total impacts on individual state output

With these assumptions, we estimate the overall change in output as follows. First, we calculate a weighted-average *regional purchase coefficient* for output in a state's economy, excluding electric power. A regional purchase coefficient (RPC) equals the fraction of local demand for a good or service that is satisfied from local production. For example, in Ohio, about 47% of all ready-mix

[4] For complete discussion of how SAM multipliers are derived, see G. Alward, "Deriving SAM multipliers using IMPLAN," paper presented at the 1996 National IMPLAN Users Conference, Minneapolis, MN, August 15–17, 1996, 1996. Available at: http://implan.com/v3/index.php?option=com_docman&task=doc_download&Itemid=138&gid=127.

concrete was purchased from in-state manufacturers, based on 2008 data. Thus, the weighted RPC, RPC_W, equals the sales-weighted average of the individual sector RPCs, excluding the electric generation sector (assumed to be sector k). Thus,

$$RPC_W = \frac{\sum_{i=1, i \neq k}^{N} Q_i \cdot RPC_i}{\sum_{i=1, i \neq k}^{N} Q_i} \tag{11}$$

Similarly, we calculate the weighted-average state SAM output multiplier, $\overline{M}_{State}^{output}$, using the output from each industry as the individual industry weights. Thus, using equation (10) for the output multiplier for industry i, we have

$$\overline{M}_{State}^{output} = \sum_{i=1, j \neq k}^{N} Q_i \cdot \{\mathbf{i_i} \bullet (\mathbf{I} - \mathbf{A})^{-1} \bullet \mathbf{i_i}'\} / \Delta Q_{State}^{TOT} = \sum_{i=1, j \neq k}^{N} Q_i \cdot M_{output,i} / \Delta Q_{State}^{TOT}, \tag{12}$$

The total impact on output in the state, ΔQ_{State}^{TOT}, will equal the weighted RPC times the weighted output multiplier, times the estimated increase in total electric expenditures. Thus, if the total change in electric expenditures is ΔQ_{ELEC}, we have:

$$\Delta Q_{State}^{TOT} = \Delta Q_{ELEC} \cdot RPC_{State} \cdot \overline{M}_{State}^{output} \tag{13}$$

c. *Estimating the total impact on state employment*

We can follow a similar procedure to estimate the total impacts on state employment arising from the higher electric expenditures, with the additional step of estimating the weighted average employment per million dollars of output, using the employment multipliers calculated by IMPLAN. Thus, the weighted jobs per million dollars of output can be written as:

$$\overline{J}_{State} = \sum_{i=1, i \neq k}^{N} Q_i \cdot J_i / \Delta Q_{State}^{TOT}, \tag{14}$$

where J_i is jobs per million dollars of output in industry i. Therefore, the overall weighted jobs multiplier is:[5]

$$\overline{M}_{State}^{jobs} = \sum_{i=1, i \neq k}^{N} Q_i \cdot J_i \{\mathbf{i_i} \bullet (\mathbf{I} - \mathbf{A})^{-1} \bullet \mathbf{i_i}'\}, \tag{15}$$

[5] The jobs multiplier is just the output multiplier weighted by jobs per million dollars of output.

And so, the total impact on jobs in the state from the increased expenditures on electricity will equal:

$$\Delta J_{State}^{TOT} = (\Delta Q_{ELEC} \cdot RPC_{State}) \cdot (\bar{J}_{State} \cdot \bar{M}_{State}^{jobs}) \tag{16}$$

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Executive Summary

Commissioned by the COMPETE Coalition, this paper assesses whether competition fosters innovation in electricity markets and the corollary of whether competitive electricity markets promote innovation. Through literature review, interviews, and comparative analysis, this paper generates findings based on experiences in the North American wholesale and retail electricity markets over the last decade. The growth of new technology and services across the electricity supply chain and the diversity of market structure make the electricity industry a rich source of case studies from which to decipher the impact of competitive markets on innovation in U.S. electricity markets.

The electricity industry has witnessed competition-driven innovation at the wholesale and retail levels over the last decade. This paper explores the relationship between competition and innovation in the electricity industry using three case studies. Based on the synthesis of these case studies, this research confirms that competitive markets have contributed to innovation in the electricity industry. It finds that competitive markets support innovation by rewarding new ways of delivering power that improve upon existing approaches and by encouraging participants to develop services that quickly adapt to meet market needs. It highlights the role of competitive markets in providing a level playing field for developers of innovative offerings. Two case studies illustrate how a technology-neutral approach by competitive wholesale markets to selecting resources, based on price and performance, can help facilitate the growth of non-traditional assets like demand response (DR) and storage. Another case study of competitive retail electricity offerings in Texas exemplifies innovation as a result of economic rivalry. The case studies illustrate that competition in electricity markets plays an active role in the creation and acceleration of innovative electricity service offerings and practices.

Objective

The primary objectives of this research are to:

- Use the recent history of electricity market innovations in the U.S. to consider whether competitive electricity markets promote innovation in the electricity industry
- Analyze trends and make comparisons to identify how competitive markets can support innovation
- Render an assessment of what role competition plays in innovation in electricity markets.

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Key Findings

Competitive markets have fostered and will likely continue to foster innovation in the U.S. electricity industry by using mechanisms to:

- Reward new ways of delivering products and services that improve upon existing approaches
- Encourage participants to develop services that meet market needs
- Create a level playing field for developers of innovative offerings.

These market mechanisms provide innovative products the opportunity to compete with existing ones and replace them where they obtain a quality or cost advantage. This process of creative destruction, whereby the new overtakes the old, was described by Joseph Schumpeter as a driving force in capitalist markets.[1] In turn, access to potential market share and profits motivates developers to create new products and services. Market structure is critical in determining the effectiveness of this innovation process. According to industry stakeholders interviewed for this study, for developers to justify the risk of investing in innovative products and services, markets must be accessible, rewards transparent, and the playing field fair. As such, this study identifies the following three elements of competitive electricity markets that serve to accelerate innovation:

1. Fair Market Rules: Market rules structured to allow suppliers to compete in meeting target customer needs, regardless of participating technology, empower suppliers to offer innovative services. Continual adaptation is therefore crucial for encouraging novel technologies and service offerings.
2. Accessibility: Low barriers to market entry encourage new participants to offer innovative products and services, and a level competitive playing field incentivizes both new and existing participants to continually respond to customer needs.
3. Risk / Reward: In return for the potential to earn a profit, suppliers are willing to take risks in developing and offering new products.

Case Studies

This paper develops initial conclusions about the role of competition in electricity industry innovations by assessing three case studies. The first two case studies examine innovation in wholesale markets by analyzing two emerging wholesale resources: fast-response

1 Schumpeter, J. 1950

storage and demand response resources. The third case study focuses on the retail electricity market and assesses market innovation in the competitive Texas retail electricity market.

Fast-Response Storage for Ancillary Services

Competitive wholesale power markets facilitate investment in innovative technologies like fast-response storage by providing developers with an accessible, transparent market for their services. In particular, competitive electricity markets require resources to compete on price and performance for each service that makes up the electricity value chain. This approach maximizes the use of assets, to the benefit of the market, by allocating each resource to the service to which it is best suited. It also creates a technology-neutral demand for innovative electricity assets that can meet individual market needs. For example, though fast-response storage devices do not offer significant energy services, they do provide valuable ancillary services needed in the electricity market. Because there is a market for the power services it can effectively provide, fast-response storage has an opportunity to outperform traditional assets in providing these services. Where fast-response storage must compete with bundled energy and ancillary power services that do not differentiate a value for fast-response service it is less likely to succeed.

The explicit valuation of services and the transparency in rules for that valuation have made competitive electricity markets an easier point of access for developers of fast-response storage than others, according to stakeholders. A review of historical and upcoming fast-response storage projects indicates that the wholesale markets that have adapted their rules to integrate fast-response storage devices are seeing increased investment compared to other regions.

Demand Response as an Electricity Resource

Demand response (DR) is a process whereby consumers reduce electricity load in response to requests or financial incentives made by grid operators, utilities or third-party entities known as curtailment service providers (CSPs). Through voluntary participation in DR programs, electricity consumers provide an additional resource for balancing electricity demand and supply by making load manageable. For decades, vertically integrated utilities have used DR resources to help meet grid reliability needs. In recent years, many wholesale electricity markets have evolved to allow DR resources to provide grid services typically provided by generation assets.

With the advent of these changes, both utility and non-utility entities have begun offering DR resources to the wholesale markets. Furthermore, new non-utility entities, the CSPs, have gained a notable foothold in the industry. Recent data on participation in the wholesale markets exemplify this. For example, in New York, CSPs increased their share of DR resources from 44% to 77% between 2003 and 2008. [2] In New England, CSPs attracted over 70% of new DR resources for 2008.[3]

Retail Electricity Markets

In the retail markets, competition has driven parties to differentiate themselves and vie for customers' business with innovative offerings. In particular, by reducing regulatory risk and barriers to market entry, markets designed to foster competition enable new entities to offer innovative approaches to meeting customer needs. Furthermore, because new entrants are allowed to challenge the market share of existing participants, existing participants must innovate to retain customers.

With the transition to a fully competitive market, Texas customers now have far more choices in electricity offers than consumers in any other U.S. market, including more renewable energy choices. As a result of rules designed to foster new entrants, Texas is the leading competitive market in terms of the number of retail customers who switched from their incumbent providers to an alternative, competitive provider.

SUMMARY OF RESULTS

Overall Conclusions

Competitive markets have and continue to foster innovation in the U.S. electricity industry by providing a means for rewarding new products and services, encouraging participants to develop services that meet market needs, and creating a level playing field for developers of innovative offerings. Market rules of engagement are critical to determining the effectiveness of a market to spur innovation.

Case Study Findings

Growth in the fast-response energy storage and demand response markets are linked to changes in wholesale market rules that enable them to compete for the provision of electricity services. Investment for fast-response energy storage in ancillary services applications has accelerated in wholesale markets. With changes in wholesale market rules, the demand response industry has seen a surge in new providers who now play a strong role in the industry. In the retail electricity market, the transition to a fully competitive market in Texas now allows consumers far more choice in electricity offerings than any other U.S. market.

2 Cappers, P., Goldman, C., and Kathan, D. 2009
3 ibid

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1. Introduction

In early 2010, the COMPETE Coalition commissioned a study for KEMA to explore the theory that competition fosters innovation in the electricity industry. The COMPETE Coalition is an organization of over 500 members, including customers, suppliers, generators, transmission owners, trade associations, environmental organizations, and economic development corporations. What unites COMPETE's widely diverse membership is a common commitment to its support of: "well-structured competitive electricity markets for the benefit of consumers." [4]This white paper presents that study's findings, which draw upon three case studies that examine whether open, competitive electricity markets have accelerated innovation relative to traditional monopoly regulation.

This section summarizes the study's objectives and approach. Section 3 explores two case studies in wholesale markets, and Section 4 outlines a case study in retail markets. Finally, Section 5 presents the conclusions drawn from the case studies analyzed.

1.1 Objectives and Approach

This study began by identifying several areas of apparent innovation occurring in U.S. wholesale and retail electricity markets. To substantiate observed trends and explore their causation, researchers conducted in-depth interviews with a variety of industry participants. By interviewing a broad spectrum of market participants and market observers, we built a more comprehensive understanding of the observed trend and its triggers, precursors, and possible supporting factors. These investigations gave rise to the three case studies highlighted in this report. Once a relationship had been verified between the confirmed innovative trend and the underlying structure of the electricity market in question, further research and literature review was completed to explicate the nature of the mechanisms supporting or triggering the rate of innovation in the response.

The core objective of each case study was to understand the role of the competition in triggering, affecting, or supporting the observed innovative trend. The case studies provide a snapshot of observed instances of market innovation. By exploring these examples in detail, the story of competition and innovation becomes clearer. Subsequently, the research considered commonalities across the cases. These common themes, supplemented by the findings from literature research and data on market activity, enabled the research team to

4 COMPETE Coalition; Available online at: http://www.competecoalition.com/about

offer its findings on the hypothesized relationship between competitive markets and innovative product behavior.

This report is structured around these three case studies. The first examines the observation of increased access and investment in fast-response energy storage triggered by changes in the definition of allowable participants in the ancillary services markets at the wholesale level. The second case study draws a parallel with the first and examines the wholesale market's role in fostering the DR industry. The third case study examines the behavior of electricity retailers in Texas, examining the volume and nature of the electricity products being introduced.

Since drivers of innovation—and even sometimes innovation itself—can be hard to quantify, KEMA relied on a combination of quantitative observations and qualitative descriptions. KEMA drew information from internal and publically available datasets and interviewed manufacturers, retailers, product developers and distributers, utilities, and staff with independent system operators and regional transmission organizations.

To develop the three case studies, KEMA relied on the following framework:

1. Identify a trend of innovation. This entailed interviewing stakeholders and subject-matter experts within the electricity industry.
2. Investigate the role of market structure in affecting this trend. This entailed comparing and contrasting outcomes under alternative structures and interviewing stakeholders to gather their perspectives.
3. Highlight commonalities among cases to draw conclusions. This entailed reviewing commonalities among case studies and other examples from third-party literature.

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2. Wholesale Markets

Over the past decade, U.S. wholesale electricity markets have engendered a number of ways to create and deliver power innovatively. This section explores the role of competitive markets in two of these innovations. The first case study examines the deployment of fast-response storage for the provision of ancillary services in wholesale markets. The second examines growth in DR resources in tandem with market rule changes that allow their participation. In assessing these case studies, KEMA finds that wholesale markets are helping to foster innovation and grow markets in alternative technologies by providing:

- Opportunities to take risk in return for a chance at financial reward
- Transparency in valuation of services
- A level playing field for participants to sell services across a wide customer base
- A framework that determines winners based on price and performance.

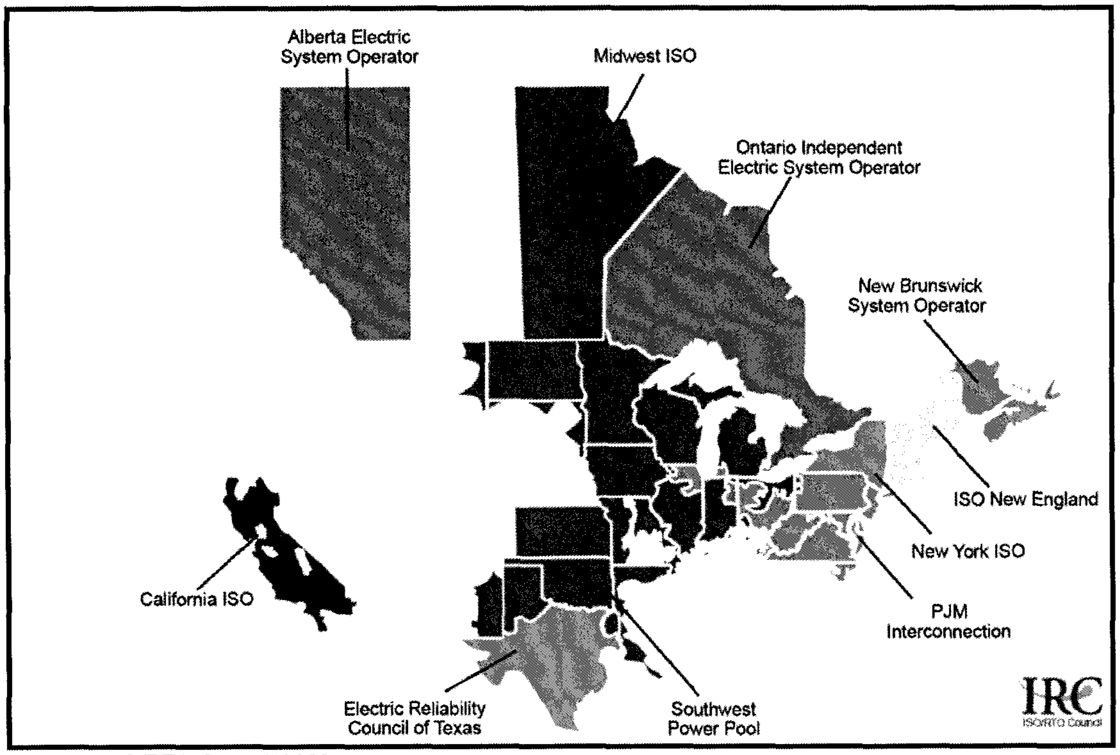
2.1 Background

2.1.1 Wholesale Markets

The U.S. has seven organized wholesale electricity markets that operate in about one-half of the states, as depicted in Figure 1.[5] These markets serve roughly two-thirds of U.S. electricity consumers and operate under independent power-grid operators known as independent system operators (ISOs) or regional transmission organizations (RTOs).[6]

5 While there are ten markets in all of North America, only seven of them cover U.S. territory.
6 ISO/RTO Council 2010

Figure 1. Map of North American ISOs/RTOs



Source: ISO/RTO Council 2009.

ISOs/RTOs are independent, federally regulated organizations established to coordinate regional transmission and wholesale sales and to ensure the reliability of the electricity system. In the words of the ISO/RTO Council (IRC), a collaborative organization of the ten ISOs and RTOs in North America, ISOs/RTOs:

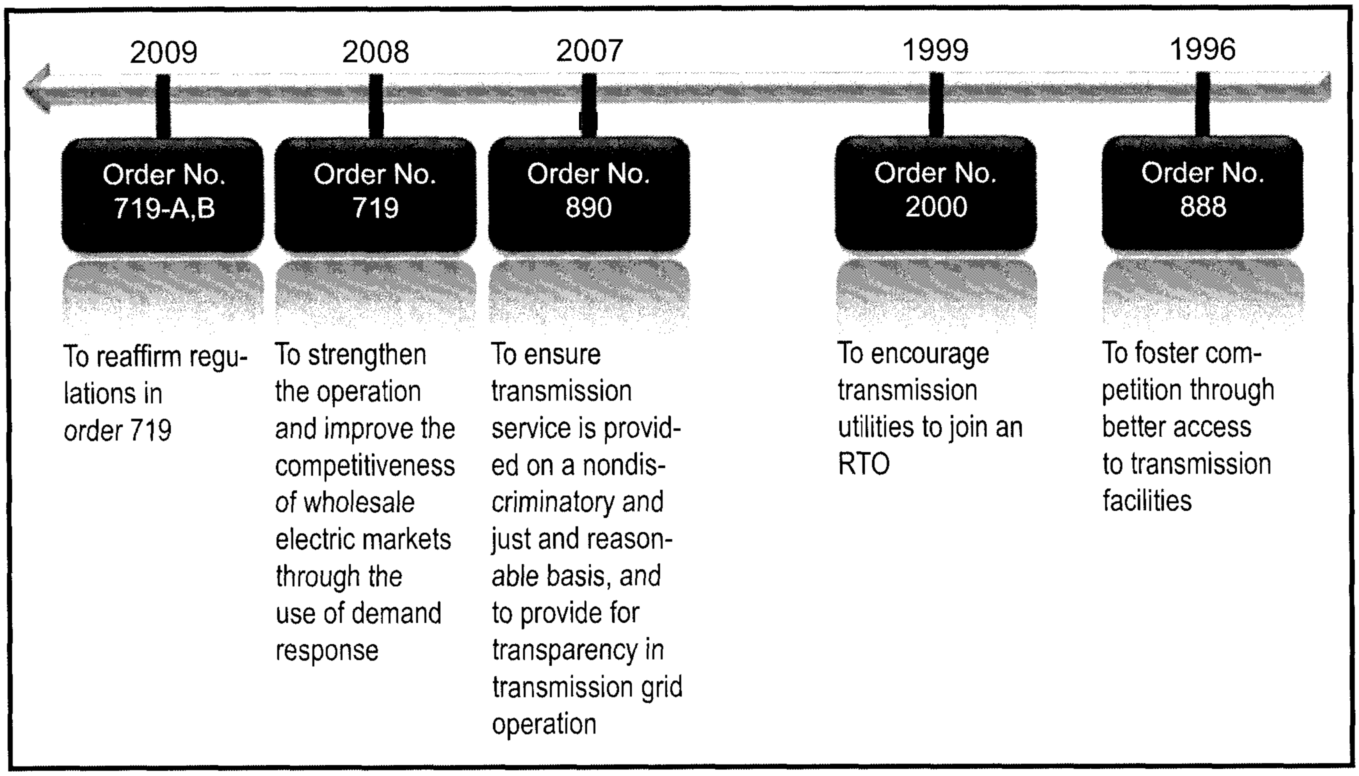
> *... ensure that the wholesale power markets in their regions operate efficiently, access to use of the regional electric transmission system, and support the reliability of the bulk power system.*

The Federal Energy Regulatory Commission (FERC) has jurisdiction over six of the seven ISOs/RTOs in the U.S. In this role, the FERC regulates the transmission and wholesale sales of electricity to ensure that the rates, terms, and conditions for wholesale electricity sales and transmission in interstate commerce are just and reasonable and not unduly discriminatory or preferential. The Electric Reliability Council of Texas (ERCOT), the wholesale market encompassing most of Texas, is the exception. The FERC has limited jurisdiction over the ERCOT system, as the ERCOT system is mostly isolated from the rest of the nation's power grid. The Public Utilities Commission of Texas (PUCT) has regulatory jurisdiction over most aspects of the ERCOT market.

Over the past 15 years, FERC has issued a series of rulings intended to increase the competitiveness of the wholesale electricity industry. In 1996, FERC issued Order No. 888 requiring all eligible wholesale customers receive transmission service on a non-discriminatory basis pursuant to a tariff on file at the FERC.[7] In 1999, FERC issued Order No. 2000 encouraging utilities to transfer operational control of transmission facilities to an independent RTO, which would provide transmission service on a regional basis.[8] In 2007, the FERC issued Order No. 890, entitled Preventing Undue Discrimination and Preference in Transmission Service. Order No. 890 required all transmission providers to allow non-generation resources, when capable of performing, to participate in the planning process and to provide certain ancillary services. These reforms allowed non-generation resources to compete more effectively in the ISO/RTO markets.[9] In 2008 and 2009, FERC issued a series of rulings, Orders No. 719, No. 719-A, and No. 719-B, which required ISOs/RTOs to implement reforms that allow qualified DR resources to provide services and allow aggregators to bid DR into the market on behalf of retail customers, unless prohibited by state or local law.[10] As a result, wholesale markets have been required to make changes to allow new technologies to compete with traditional generation assets. Additional FERC proceedings are currently underway to consider further modifications to market rules regarding how to value services by non-traditional assets.

7 FERC Order No. 888, 1996
8 FERC Order No. 2000, 1999; This order also applies to ISOs
9 FERC Order No. 890, 2007
10 FERC Order No. 719, 2008; FERC Order No. 719-A, 2009; FERC Order 719-B, 2009

Figure 2. Timeline of FERC Orders



Source: Adapted from http://www.ferc.gov/industries/electric/indus-act/competition.asp

2.1.2 Wholesale Market Services

In the process of generating and delivering electric energy to customers, grid operators require resources that ensure a constant and precise balance between production and demand. Ancillary services are tools used by system operators specifically to help maintain balance. Though the ancillary services offered through markets vary by ISO/RTO, FERC defined six categories of ancillary services in Order No. 888:[11]

1. Scheduling, system control and dispatch
2. Reactive supply and voltage control from generation service
3. Regulation and frequency response service
4. Energy imbalance service
5. Operating reserve – synchronized reserve service
6. Operating reserve – supplemental reserve service

11 FERC Order No. 888, 1 75 FERC ¶ 61,080 (1996)

Traditionally, ancillary services have been provided by generation assets. For example, providers of services such as for frequency regulation would match generation with short-term changes in demand by moving the output of selected generators up and down via automatic control signals. However, with market rules prompted by Order No. 890, non-generation resources such as electricity storage and DR have been allowed to compete to provide such services. Market rule adjustments to accommodate these new ancillary services providers have been critical, as the characteristics of new technologies differ from generation assets. For example, frequency regulation has traditionally been a one-way interaction with energy injected into the grid (e.g., with supply ramping up or down). New technologies can offer similar services by a new means. For example, electricity storage can either inject power into or extract power from the grid in a two-way interaction (e.g., with electricity storage providing and absorbing power). In addition, DR can provide electricity resources through a one-way interaction that reduces the need for increasing power production.

2.2 Electricity Storage and Ancillary Services Markets

The New York Independent System Operator (NYISO), PJM, Midwest Independent System Operator (MISO) and California Independent System Operator (CAISO) markets have adapted their rules to allow electricity storage to offer ancillary services (most notably, frequency regulation and spinning reserves). In these markets, storage investments are valued by direct market payments for their services and by the opportunity cost of using generation assets for these services. This case study explores the role of competitive electricity markets in motivating fast-response storage investments for ancillary services throughout the U.S. It finds that ISO/RTO rule changes that allow electricity storage to compete on an equal basis with traditional generation assets appear to be a significant factor in driving investment of fast-response storage.

By unbundling electricity services (e.g., ancillary versus energy services) and by selecting the lowest-price method for each service (i.e., a bid-based approach), ISOs/RTOs enable fast-response storage to earn revenue in the market. In particular, because the markets select individual services rather than fully bundled services, resources like fast-response storage can effectively compete where they are strongest (e.g., short-duration power services) rather than where they are not (e.g., longer-duration energy services). Furthermore, because competitive markets use price to select resources, they explicitly value the resources selected and are indifferent to technology type.[12] Transparency and accessibility in

12 The approach each market has taken to valuing regulation services varies. For example, some ISOs/RTOs differentiate between "fast" and "slow" regulation resources. How markets ultimately value regulation service could impact revenues for electricity storage given the difference in its response time compared to other assets.

the market, according to stakeholders, are important for new technologies like fast-response storage.

2.2.1 Observed Storage Trends

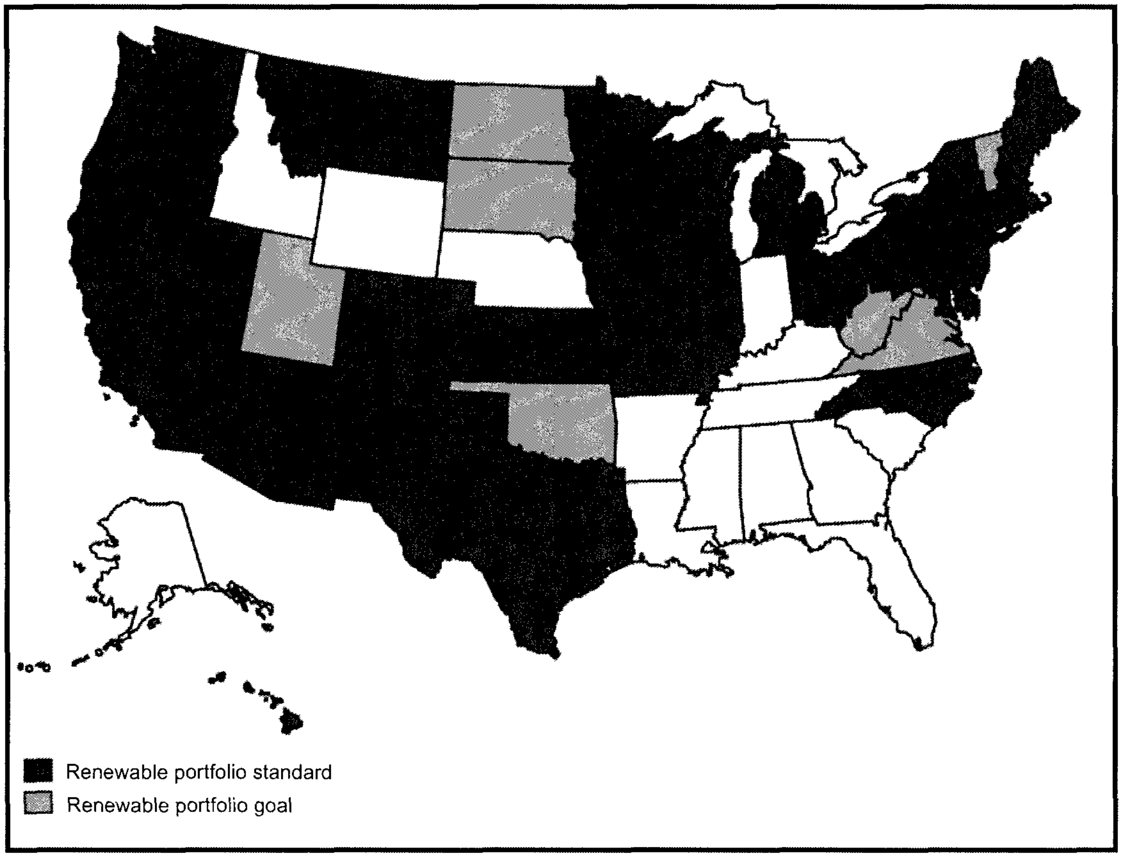
Interest in electricity storage is strong. According to a recent report by Pike Research, in 2009, thirty-six venture capital deals provided $455 million toward electricity storage and advanced batteries projects.[13] Deployment of storage technologies for energy applications (e.g., compressed air energy storage and sodium-sulfur batteries) and for power applications (e.g., flywheels and lithium-ion batteries) are growing quickly. Several factors are driving interest and investment in the electricity storage market in the U.S., including state and federal funding to support smart grid projects and state and regional policies to promote renewable resources. However, it appears that access to competitive electricity markets through ISOs/ RTOs, which enable participation, is an important factor in the rate of deployment in fast-response electricity storage across the U.S. The reason is that unlike other applications, ancillary services markets provide explicit compensation for its unique power services.

Several state and regional policies are aggressively promoting the development of renewable energy resources across the country. Currently, twenty-nine states and the District of Columbia have renewable portfolio standards and seven have goals, as illustrated by Figure 2.[14] Multiple local, state, and federal financial incentives also promote renewable resources.

13 Link D., C. Wheelock 2010

14 Renewable portfolio standards generally require that electricity providers meet customer load by purchasing or acquiring renewable energy certificates (RECs), certificates representing generation from renewable energy, for a given percentage of energy supplied or of generation capacity.

Figure 3. States with Renewable Energy Portfolio Standards and Goals



Source: Adapted from the Database of State Incentives for Renewables & Efficiency 2010; Available online at www.DSIREUSA.org

The variability of many renewable resources, however, will increase the need to balance demand and supply. As such, renewable growth is motivating investments in balancing resources. Balancing requirements can vary from short-duration power services (such as frequency regulation) to long-duration energy services (such as storing renewable energy overnight). Though certain fossil-fuel resources can offer balancing services, electricity storage is being considered as an additional tool; this consideration is apparent from recent storage investments.

The majority of recent and planned investment in storage is occurring in regions with high renewable development, including states with renewable energy requirements. For example, over 700 MW of long-duration, compressed air energy storage is expected to come online by 2015 in Iowa, California, and New York and be used for renewable integration applications. In addition, nearly 100 MW of short-duration, fast-response investments for ancillary

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services' applications are expected to come online next year in New York, Pennsylvania, and West Virginia, with more investments likely in coming years. Many expect electricity storage investment to continue as an indirect result of renewable energy requirements.

INNOVATION HIGHLIGHT: STORAGE EMISSIONS BENEFITS

Energy storage could reduce the carbon dioxide (CO2) intensity of frequency regulation and help integrate low-carbon, renewable resources into the grid.

Ancillary Services. Fossil-fueled power plants that emit CO2 through combustion have traditionally supplied ancillary services. New energy-storage technologies can provide the same services by drawing small amounts of power from the grid, on which a portfolio of resources determines emissions. Recent studies have shown that storage devices can significantly reduce CO2 emissions over incumbent technologies. For example, the use of flywheels for frequency regulation can cut CO2 emissions by 38% to 89% compared to resources such as natural gas turbines, coal-fired plants, or even pumped hydro facilities. (KEMA 2007).

Renewable Energy. As renewable resources grow in market share, energy storage is expected to play an even greater role in reducing emissions. Renewable mandates will likely cause the displacement of fossil-fuel generation, the same resources that provide ancillary services today. If no other resources are able to provide ancillary services, then fossil generation will be kept online, continuing to run in a less efficient mode and thereby continuing to generate emissions. Storage could help provide the ancillary services needed by renewables generation and allow less-efficient, higher emission units to retire.

In addition to the expected growth of renewable resources, financial support from state and federal sources also helped accelerate storage demonstration and deployment across the U.S. For example, the U.S. Department of Energy (DOE) has allocated funds from the American Recovery and Reinvestment Act (ARRA) toward storage-related projects.[15,16] These projects include long-duration and fast-response, short-duration storage for a variety of applications. State funds, such as from Iowa and California, have also gone toward supporting electricity storage R&D or deployment.[17]

15 *Pub. L. no. 111-5, 123 Stat. 115 (2009)*

16 *In 2009, DOE issues $3.4 billion in awards for smart grid development. Of the 100 projects, 16 were storage-related. (Office of Electricity Delivery and Energy Reliability, U.S. Department of Energy; Available online at http://www.oe.energy.gov/recovery/1249.htm)*

17 *The Iowa Power Fund is helping to fund a 268 MW compressed air energy storage (CAES) project for integrating renewable energy in the Iowa grid and surrounding regions. (Iowa Stored Energy Park; Available online at http://www.isepa.com/FAQs.asp) In California, the California*

Though these drivers are promoting electricity storage investments in general, the investment in fast-response storage, in particular, has been primarily limited to wholesale markets. Nearly all fast-response, short-duration energy-storage facilities are planned for ancillary services or reserves applications.[18] In addition, regardless of whether financial assistance is available to these projects, the bulk of these projects are merchant investments being made in wholesale markets instead of by traditional utilities in monopoly markets. Furthermore, the wholesale markets that have adapted their rules to integrate storage devices are seeing increased investment over those that have not. For example, NYISO and PJM are seeing the largest source of ancillary services-specific storage investment within the coming year. This implies that wholesale markets that allow storage to compete with traditional assets are facilitating the deployment of fast-response storage devices. Alternatively, those regions that do not facilitate the competition of fast-response storage against traditional assets are not seeing similar levels of investment.

Additional ISOs/RTOs (ERCOT, and ISO-New England) are in the process of developing market rules that will allow direct ancillary services' competition from storage resources. The California ISO Board of Governors has recently approved storage participation in the market. The status in each market is summarized in the table below.

Table 1. Status of Ancillary Services Market Adjustments for Storage

Market*	Status
NYISO	Revisions in place (2009)
ISO-NE	Operating pilots & revising rules through consensus
PJM	Revisions in place (2009)
MISO	Revisions in place (2009)
CAISO	Revisions approved by Board of Governors (2011)
ERCOT	Under consideration
SPP	Limited opportunity

** NYISO = New York ISO, ISO-NE = ISO of New England, PJM = PJM Interconnection, MISO = Midwest ISO, CAISO = California ISO, ERCOT = Electric Reliability Council of Texas, SPP = Southwest Power Pool.*

Energy Commission has allocated funds to conduct demonstrations in the state for short-duration ancillary services projects. (Beacon Power Corporation 2009)

18 These include flywheel and Li-ion technologies.

2.2.2 Role of the Market

The ISO/RTO wholesale markets appear to assist the development of fast-response storage for electricity services through four primary mechanisms:

1. Requiring entities to compete for the provision of services based on performance and price
2. Creating a level playing field for participants to offer services
3. Providing a reward to incent participation and justify taking greater risk
4. Having the potential reward be transparent so interested parties can gauge whether to attempt to provide services.

With regard to fast-response storage investments, merchant engagement in product development is indicative of firms perceiving value from potential investment. As the majority of fast-response storage investments for ancillary services appear to be made by merchant entities, the increased risk-reward calculation for merchant providers appears to offer price incentives to create resources that risk-averse entities may not otherwise provide. Transparency in market value appears to be another key motivator for investment in storage in the wholesale markets. Finally, a level playing field has been a key factor in motivating storage investment. In markets where energy supply still is considered a bundled service, composed of electricity generation and ancillary services, fast-duration storage devices have not typically been able to compete. Storage has been successful participating in markets where separate pricing is offered for energy versus ancillary services. As one stakeholder noted:

> *It is areas that have a market where there is investment. And primarily it is the ancillary services market. In the future, it can be driven by the energy and capacity markets given that wind is an energy resource not a capacity resource.... Even before stimulus funding, competitive markets were stimulating investment in storage. Then, there was very little investment. With the market that identifies and allows them to compete, we're seeing investment in storage. The stimulus money increased the rate at which that was happening.*

2.2.2.1 Meeting Market Needs

By creating separate markets for different components of the energy generation and delivery process, wholesale markets have clearly identified the services required for electricity provision and have valued them independently. This, in turn, has allowed new technologies the opportunity to compete for specific needs. For example, although fast-response storage used in ancillary services applications may not have durations comparable to traditional generation assets, they can respond as or more effectively than traditional generation assets. According to a 2009 study completed by KEMA, a 30 MW to 50 MW storage device is as effective or more effective as a 100 MW combustion turbine used for regulation purposes.[19]

The impact of unbundling electricity services was outlined by one market participant as follows:

> *The key thing in my mind is, if you don't have an ancillary services market, you're not going to have these tools. If you don't value load frequency control, if you don't value the optimization you get with storage in a market, you're not going to have the benefits to make it worth it for anyone to invest. Without the regulation market, we won't see batteries going in.*

Another market participant noted that by disaggregating services, markets provide developers an opportunity and an incentive to offer individual services:

> *In open markets you can get value for frequency regulation.... Because of the way the market is structured, with having a clearing price approach, offering these services could be lucrative for us.*

2.2.2.2 Advantages of a Level Playing Field

Some wholesale electricity markets allow energy-storage devices to compete directly with traditional assets on price and performance. According to a market observer, providing equal access is an attractive feature of the markets:

> *The greatest thing about markets is that they are nondiscriminatory and transparent. You can have wind, solar, flywheels, pumped storage; it is the markets' treatment of resources that matters. A very transparent interconnection process and fair market rules are principal reasons why markets are attractive to any kind of new technology, be it demand response or storage, they can have non-discriminatory access to a market.*

A market participant similarly highlighted this point:

> *As a merchant provider of frequency regulation, the open-bid segment is more accessible to new technologies, so our market strategy is to enter the open bid market segment first, followed by the vertical market segment.*

19 *Masiello, R. et al 2010*

2.2.2.3 Competing for Service

Under a competitive market structure, in comparison with a traditional monopoly regulation structure, participants face less regulatory risk but take on substantially more market risk. Increased market risk, however, also comes with the opportunity to put a product out there with commensurate opportunity for profit. In particular, under a competitive model, the opportunity lies with the market— it decides whether the product is successful or not and rewards providers who meet market needs.

In the wholesale markets, the risk of developing an innovative solution is borne by the same entity who decides to invest in and market the solution along with the investors who willingly finance the new solution. In traditional utility settings, the requirement that regulators agree if an investment is prudent can pose a barrier to the adoption of new technologies. In particular, where a utility believes it may not be able to recover an investment because it is deemed unreasonable, it will be reluctant to make such an investment.

The issue of risk aversion came to the fore in our research. For example, Xcel Energy cited one reason it had chosen a sodium-sulfur battery rather than a more innovative technology for a storage investment it was undertaking was because the battery "has demonstrated commercial performance and availability."[20] In addition, a merchant provider noted the difference in risk aversion between market and non-market settings in its business approach:

> *Traditional risk-averse, vertically-integrated utilities will not adopt new technology until its commercial performance and availability are proven. New market entrants are more willing to try new ideas and new technologies to gain a competitive advantage.*

Another market observer notes this difference in risk aversion another way:

> *For a lot of technologies outside of the market, test projects and pilots run for a long time. Whereas when you change the market rules to allow a technology to participate, they either fly or sink.*

In turn, the opportunity associated with taking on risks is determined by the market rather than regulators. According to a stakeholder, this can mean greater access to customers:

> *In a non-market setting, the cost to achieve sales goes up drastically as you need to spend time in the regulatory process. In addition to spending time in the regulatory process, you have to also make a sale to utilities to get your product to the customers.*

20 Himelic, J. and Novachek F. 2009

Furthermore, the burden of risk can be rewarded with an economic value from which to recover costs. As one provider and developer noted:

With a market, you can put your product out there and customers decide whether they want it or not. With individual customers, you need to get demonstration grants to show the viability and benefit, and then get regulatory approval. Regulators then decide whether you can sell to customers and whether your business goes forward or not.

2.2.2.4 Transparency in Value

Clear price signals indicate what potential revenues may be gained from participation in wholesale markets. ISO/RTO market prices and other market information are made available to all participants. Furthermore, by creating separate markets for different components of the energy generation and delivery process, wholesale markets provide clear information on how to value each component. According to stakeholders interviewed for this study, the value of ancillary services within integrated utilities is much harder to assess. As one product developer noted:

> *If you go to a vertical utility and ask how much the value of regulation is, the answer you get depends on who you talk to. They don't have the right information compiled to readily know how valuable regulation is. You won't know until you can reach a high-level person in the utility.*

The stakeholder found it was easier to obtain financing from investors by participating in the wholesale markets rather than selling to integrated utilities.

In another comment, a market participant pointed to barriers in selling directly to utilities:

> *Utilities are looking at wind integration and so are considering bulk storage, not necessarily ancillary services. ... A barrier to market non-wholesale applications is a lack of knowledge or interest – they don't have the right tools to know how valuable frequency regulation is.*

Private investment in product development is indicative of firms seeing value in potential offerings. Developers appear to have dedicated R&D resources, necessitated by the fact that the tools available for reaping potential value (in this case the innovative integration of storage technologies for ancillary services) are unproven so far. The increased risk-reward calculation for competitive providers appears to incent them to invest resources that risk-averse entities might not fund or might put only limited amounts toward.

INNOVATION HIGHLIGHT: BEACON POWER CORPORATION & FLYWHEEL STORAGE

Flywheels have been around for centuries. Their application for storing electricity on the grid, however, is recent. Unlike other chemical- or fuel-run storage technologies, flywheels use mechanical, rotational energy to store and deliver power. Having used flywheel devices as back-up power systems in the telecommunications industry, Beacon Power Corporation, a designer and manufacturer of flywheel storage systems, decided to develop advanced flywheel-based energy storage systems for the electric grid. Today, Beacon Power designs, manufacturers, and operates flywheel storage systems that provide ancillary services to wholesale markets. In coming years, they plan to sell, or co-own, flywheel-based systems to utilities or grid operators. With several demonstrations completed, Beacon Power is now building two 20 MW plants to offer frequency regulation services to the NYISO and PJM markets. They are also collaborating with other researchers to continue improving flywheel technology for grid applications.

2.3 Demand Response

For decades, vertically integrated utilities have used demand response (DR) for emergency response and peak shaving to help meet grid reliability.[21] Prices for this service typically were set administratively and did not reflect the market value of DR. In recent years, wholesale electricity markets have evolved in various ways to allow DR resources to compete for services. The introduction of market price signals enables consumers to alter their usage behaviors in ways that meet their goals. Consumers are choosing to ramp up or ramp down their usage in response to the price signals. With the additional integration of DR into wholesale markets, the primary focus of this section, new curtailment service providers (CSPs) have begun aggregating and offering DR as a resource. Furthermore, these alternative providers have taken on a significant role in the markets. This section describes a case study developed by Lawrence Berkeley National Laboratory (LBNL) that highlights the influence of wholesale market reforms in enabling new entrants to obtain a significant foothold in the DR market and expand the DR industry.[22]

21 Utilities have implemented direct load control programs and used interruptible tariffs since the early 1970s, under which customers have the right but not the obligation for their utility to shed some of the customer's load for payment.
22 Cappers, P., Goldman, C., and Kathan, D. 2009, p. 11

2.3.1 Observed Trends

Investment in DR resources is on the rise. As of 2008, 31,695 megawatts (MW) of DR resources were available in North American ISO/RTO markets as compared to 17,146 MW at the end of 2006.[23] Furthermore, the number of entities offering DR services appears to be growing. According to FERC surveys of organizations in the electric delivery industry, the number of entities increased by 117% from 2006 to 2008. Similar to electricity storage, several factors are driving growth in DR resources. These include technology advancements, state and local policies promoting DR, and state and federal funding to support DR deployment and demonstrations.[24, 25] However, changes to wholesale market rules that allow DR to compete with traditional supply resources appear to be a significant factor. For example, most of the growth in incentive-based DR resources has occurred in ISO/RTO markets, according to a 2009 report by LBNL.[26]

To exemplify the growth of DR in ISO/RTO markets, the LBNL analysis highlights case studies from the NYISO's and the ISO-NE's markets. According to LBNL research, between 2003 to 2008, CSPs increased their share of subscribed DR resources from 44% to 77% in the NYISO emergency and capacity markets, while utility share declined. In the capacity market (the main area of growth for CSPs), CSPs accounted for over 80% of the enrolled DR capacity by 2008. In the ISO-NE territory, LBNL found that CSPs accounted for a large portion of the first set of planned demand-side capacity resources. In particular, CSPs attracted over 60% of the total accepted demand-side capacity and 70% of the new demand-side resources across New England. According to LBNL, the results suggest that CSPs were more aggressive in marketing and/or willing to take the business risk that they could deliver demand resources in the future.[27] Figure 4 illustrates the contribution of CSPs in making advanced demand-side capacity commitments through a 2008 ISO-NE capacity auction. It shows the extent to which CSPs are committing existing and new resources to the market.

23 ISO/RTO Council 2009

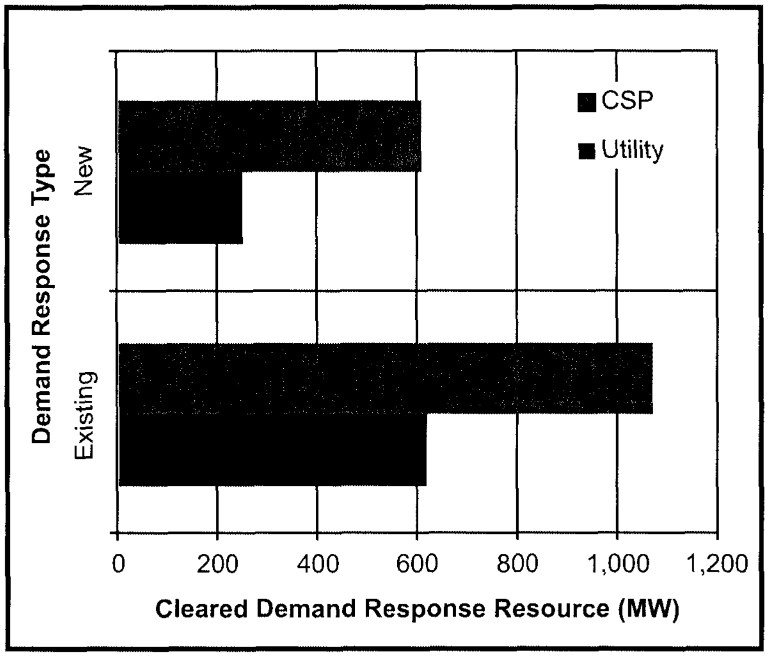
24 Regarding state and local policies, several states require utilities to invest a percentage of revenues from retail sales in demand-side management programs. Also, several utilities allow load management to be counted towards meeting reserve requirements. (Cappers, P., Goldman, C., and Kathan, D. 2009)

25 Regarding funding for DR deployment and demonstrations, in 2009, the DOE allocated funds from ARRA to support demand response programs, pilots, and demonstrations and to assess customer behavior response. (FERC 2009)

26 Cappers, P., Goldman, C., and Kathan, D. 2009

27 ibid; pp. 23-25

Figure 4. Utility vs. Curtailment Service Providers Commitments or Resources



Source: Cappers, P., Goldman, C., and Kathan, D. 2009.

2.3.2 Role of the Market

Today, DR resources are eligible to compete with generation in a number of ISO/RTO markets, including ancillary services, capacity, and energy markets. Table 2 illustrates the services eligible for demand resources in each market as of 2010.

Table 2. DR Eligible Services in ISO/RTO Markets

Market	Eligible Services
NYISO	Energy, Reserve, Capacity, Regulation
ISO-NE	Energy, Reserve, Capacity
PJM	Energy, Reserve, Capacity, Regulation
MISO	Energy, Reserve, Capacity, Regulation
CAISO	Energy, Reserve
ERCOT	Reserve, Capacity, Regulation
SPP	Energy

Source: Adapted from the ISO/RTO Council's North American Wholesale Electricity Demand Response Program Comparison: 2010 Edition Available online at: http://www.isorto.org

According to the 2009 LBNL study, in almost all ISOs/RTOs, initial participants in the wholesale markets were legacy DR programs offered by utilities. As noted by the IRC, ISO/RTO dispatch, settlement, and DR rules accommodate such utility programs.[28] However, this rapidly changed as competitive non-utility entities also began offering customers the ability to reduce load for payment. According to LBNL, the ISO/RTO markets provided a significant opportunity for CSPs to aggregate customer "willingness to curtail load" into a grid resource. Taking this theme further, one CSP interviewed for this study commented: "I wouldn't exist without a competitive market. I couldn't form a company without a competitive environment that supported giving customers a real choice."

Furthermore, ISO/RTO markets provide CSPs with access to customers over a broader region than individual utility programs. Standard rules and procedures across a wholesale market also help CSPs operate at a lower cost than if subscribing through a number of smaller, individual utility programs. A transparent value for DR services also makes it easier for providers to gauge the value of developing additional DR resources over a broad region. Overall, the evolution of wholesale markets has enabled new entrants to provide DR resources for services beyond the traditional functions of emergency response and peak shaving.

28 ISO/RTO Council 2009

KEMA

INNOVATION HIGHLIGHT: VIRIDITY, STORAGE & DEMAND RESPONSE

Since 2008, Viridity Energy has developed ways for customers to participate in the whole-sale electricity markets while meeting individual energy needs. Their innovative approach uses optimization software to manage energy assets to benefit both the customer and the grid. Working with load, generation, and storage resources, Viridity's software automates customer decisions about when to buy and sell power to wholesale markets.

This year, Viridity partnered with the Southeastern Pennsylvania Transport Authority (SEPTA) on an innovative project to develop a system for capturing excess electricity generated when subway trains brake. The system will release stored energy for use at optimal times, such as during load spikes when trains accelerate or when the wholesale market offers high enough incentives for its donation. Currently, the electricity created from regenerative braking is simply dissipated. With the new system, SEPTA expects to reduce energy costs and earn revenue. Each 1 MW battery is expected to earn over $500,000 a year from PJM incentives. SEPTA also expects each battery to reduce electricity costs by $45,450.

3. Retail Markets

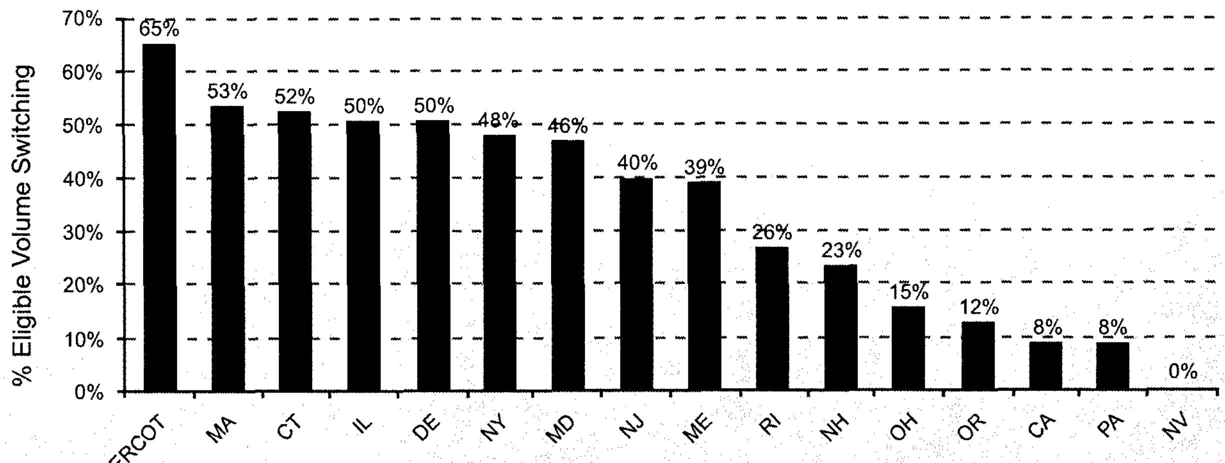
In many industries, consumer markets are a well of product and service innovation. As such, KEMA examined electricity offers in retail markets for signs of innovative activity. Some retail markets, most notably in Texas, have significantly more volume and variety in retail offers and a much higher velocity of new retail offer development than other markets in the U.S. By comparison, other markets have far fewer offerings and a much slower development of new offers. To illustrate this difference, and to understand the role of competitive markets in influencing retail offer innovation, this case study contrasts the Texas competitive retail landscape with the more limited competitive retail landscape that exists in California. From this case study, three regulatory and market themes emerge to explain the exceptional growth of new retail offerings in Texas:

- Retail electricity providers in Texas have substantially changed their business approach by re-orienting to a customer-focused model.
- The economic rivalry that has flourished in Texas has driven retailers to develop new offers in order to differentiate themselves from their competitors.
- The Texas retail-market design facilitates the access of new entrants into the market and ensures a level playing field.

This section explores these trends in detail.

INNOVATION HIGHLIGHT: CUSTOMER LOAD MIGRATION IN COMPETITIVE MARKETS

Retail activity in Texas appears to be stronger than many other retail markets in the U.S. The figure below contrasts competitive market activity across the U.S. by illustrating the electricity market volume which eligible customers in a given state have switched as a percentage of total volume from eligible customers in that state. The volume from eligible customers ranges from a fraction in some states to nearly two-thirds of the entire market in others. (The non-eligible sales volume is not illustrated in this figure).



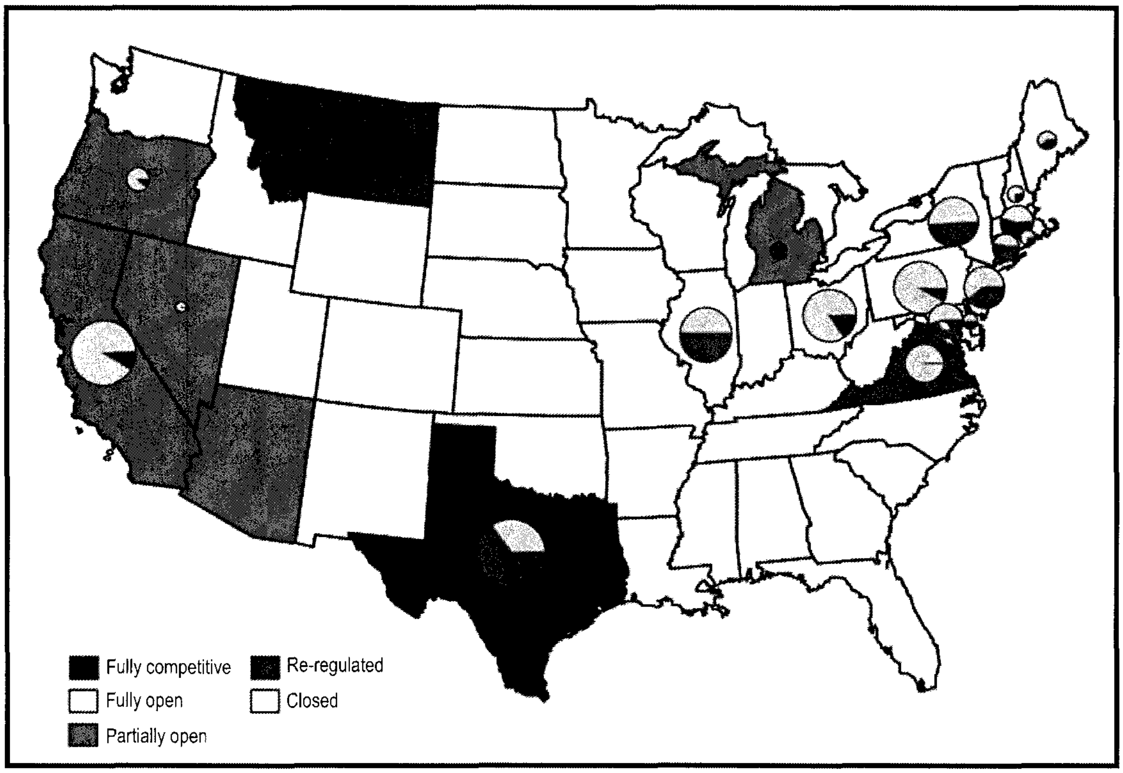
Source: KEMA Data current to February 2010

3.1 Background

Unlike many consumer retail markets, the U.S. electricity retail market is highly fragmented. States have developed a full spectrum of regulatory and market models. Recently, there has been an emergence of competitive retail markets that exist well outside of the traditional model. In these markets, customers interface with retail electricity providers, who provide consumers with the commodity of electricity, but who may not own generation assets themselves. Because this type of market breaks from the traditional integrated regulated utility model, it requires regulatory modification. Figure 5 outlines the markets with retail electricity providers in the U.S.

KEMA

Figure 5. U.S. Retail Markets



Explanation: The size of the pie for each state is based on overall sales volume and the blue wedge in each pie is the fraction of volume from consumers eligible to switch now served by a non-incumbent electricity providers (as a fraction of sales).[29] Open refers to eligibility for consumers to switch. Fully open markets refer to those markets that allow customers to switch but are not competitive.[30]

Source: KEMA

29 For example, in Michigan about 10% of the market is eligible to switch to a non-incumbent provider. Of that 10%, nearly all the electricity sales volume is through non-incumbent electricity providers. In the plot above, the size of pie is related to the comparative eligible sales volume, and it is mostly blue because most of customers with that volume have switched. The non-eligible sales volume is not graphically illustrated in this figure.

30 In "fully open" markets, all customers are eligible to switch retail electricity providers. In "fully competitive" markets, the entire market has switched and there are technically no incumbents.

The Texas retail market is unique, having undergone a retail market transition during the last decade that removed all vestiges of the traditional utility model in favor of retail competition.[31] On the other hand, California has a retail market that lies on the spectrum much closer to the traditional regulated utility model, although it is similar in size to Texas. The two states provide an illustrative natural comparison from different ends of the retail market spectrum.[32]

3.2 Observed Trends

In contrast to other states that have also moved toward greater retail competition, Texas has witnessed a proliferation of electricity product offers among which customers of all classes can choose. The rate at which new electricity products have been introduced in Texas traces the phased implementation of the state's regulatory changes. Prior to enacting these changes, Texas consumers had few choices regarding their electricity service providers. Following a path of exponential growth that began in 2002 and continues today, the average Texas residential consumer can now choose from more than 200 retail offers from approximately 40 retail electricity providers. With the ongoing deployment of smart meters capable of two-way communication, the market is poised for further growth in retail service innovation.

The starting point for this case study is the observation that Texas is unique in both the number of retail electricity providers, the vast majority of which are post-restructuring market entrants, and in the number of retail product offers available for consideration. This section reviews market data relevant to this observation.

3.2.1 Growth in Number of Firms

The steady growth in competitive retail electricity providers active in Texas, and the number of customers able to select among them, shows no sign of abating. Figure 6 shows the number of retail providers in each Texas utility territory over time. The average retail customer in Texas currently can choose from approximately 40 retail electricity providers. Another measure of the market activity of firms in Texas is the increased number of customers

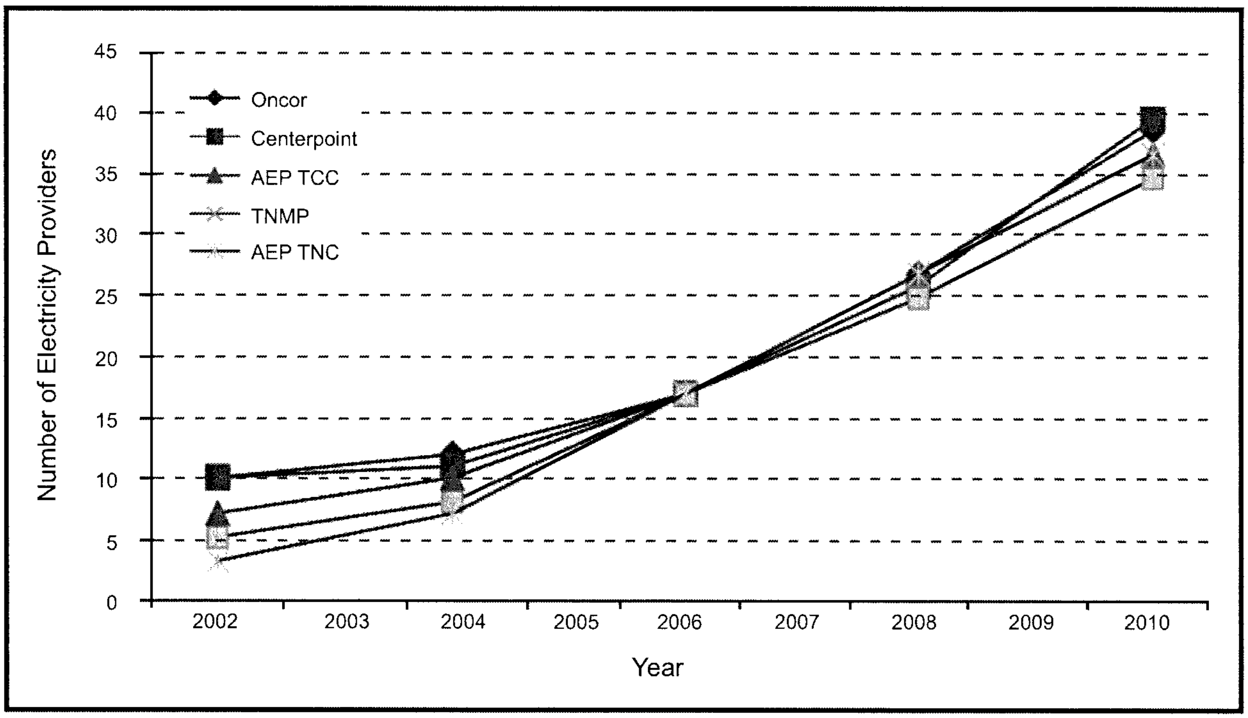
31 The design of the Texas retail market is a part of a comprehensive design of the ERCOT electricity market. While unique within the United States, the design of the ERCOT market is a variation of the same comprehensive design used in Australia, New Zealand, and the Canadian province of Alberta.

32 California, like many other retail markets, underwent restructuring but ultimately limited competition among providers. In its approach to restructuring, Texas promoted a stronger form of competition. In California, IOU customers were allowed to switch providers during market restructuring in 1999. But market competition was restricted in response to the market failure of 2001-2002. Those customers who had switched remained eligible to choose a provider, but all other consumers lost the right to choose. When the Texas market was restructured beginning in 1999, power generation companies, regulated transmission and distribution service providers, and retail electricity providers were legally separated. The customer choice option began in January 2002 and full competition, including residential customers, took effect in January 2007.

switching away from the incumbent electricity retailer. The Public Utility Commission of Texas (PUCT) reported a 44% switching rate in 2008.[33] By May 2010, reports from the Texas Public Policy Foundation indicates the share of customers remaining with their incumbent retail electricity provider has fallen below 40% throughout the ERCOT territory, and dropped to less than 20% in some territories.[34] KEMA's own data correlates well with these observations. The Association of Electric Companies of Texas (AECT), an industry group, claims that more than 85% of consumers are visibly demonstrating choice, either by switching providers or switching plans with their incumbent provider.[35]

The ease with which customers can leave their incumbent electricity provider was a matter of conscious choice and deliberate market structure in Texas, according to industry observers. One academic expert noted that in designing electricity restructuring, Texas lawmakers specifically sought to prevent incumbents from having any type of structural advantage over new retailers entering the Texas market.

Figure 6. Growth in the Number of Texas Retail Electricity Providers



Sources: PUCT 2003; PUCT 2005; PUCT 2007; PUCT 2009; powertochoose.org

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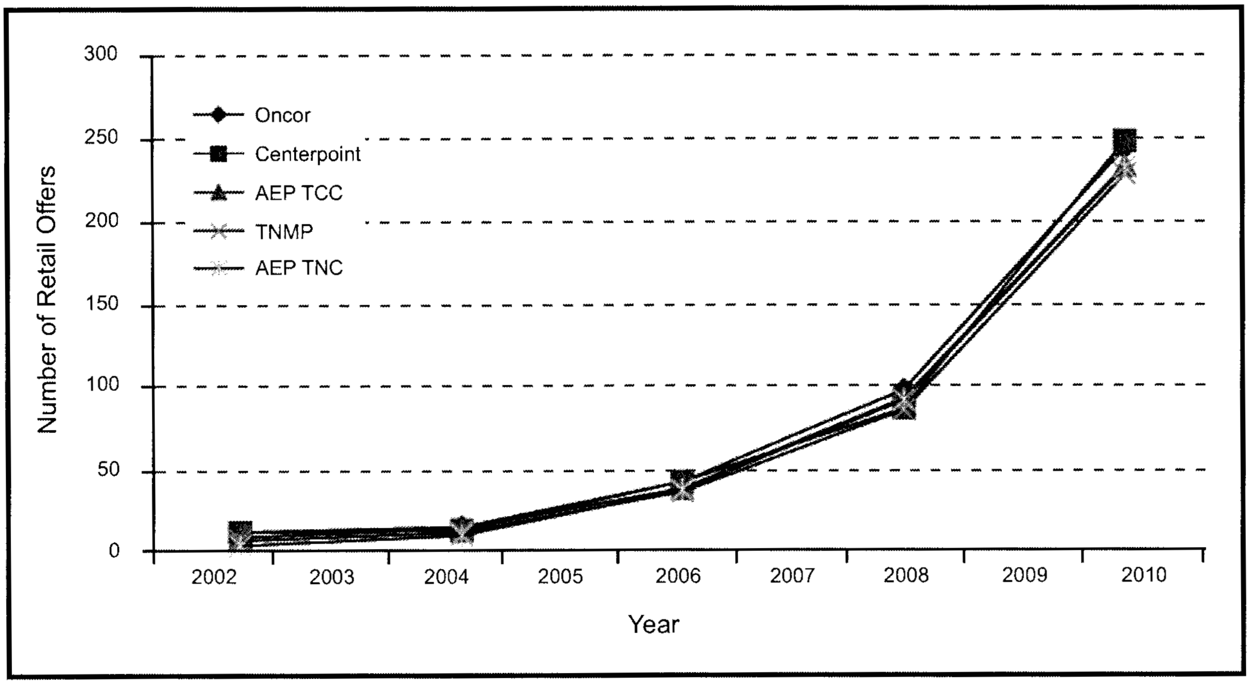
33 *PUCT 2009*
34 Peacock 2010
35 Based upon a letter from Bret J. Slocum to the Public Utility Commission of Texas, dated February 10, 2010.

KEMA

3.2.2 Growth in Number of Retail Offers

The degree of retail choice in Texas has also grown significantly, as shown in the number of retail offers available to that state's consumers. This total has grown exponentially since restructuring began in 2002, as shown in Figure 7.

Figure 7. Growth in Retail Electricity Offers in Texas



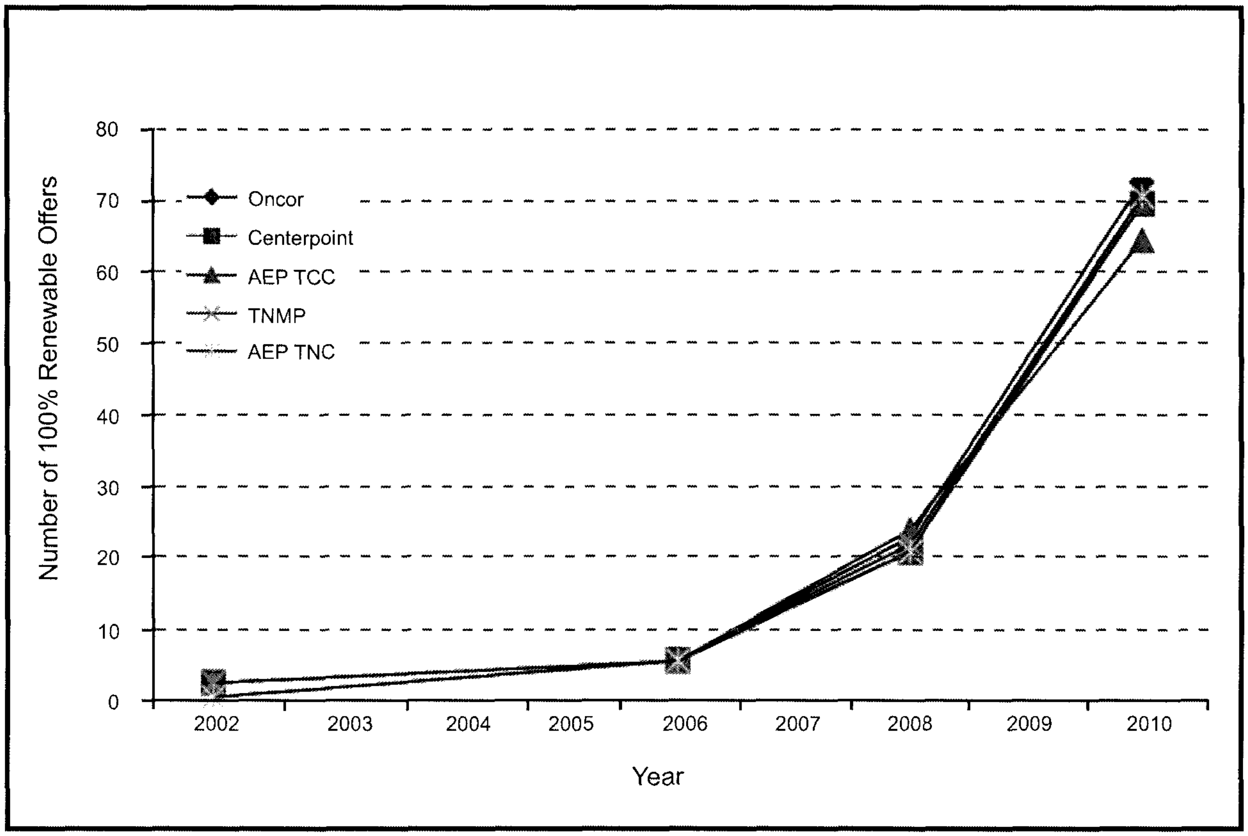
Sources: PUCT 2003; PUCT 2005; PUCT 2007; PUCT 2009; powertochoose.org

The typical retail customer in Texas can now choose from well over 200 retail electricity offers, more than twice the number of two years ago. A review of the options on the PUCT-sponsored website shows that the vast majority of the offer variation is in the following forms: length of contract, fixed or variable contract, branding, and amount of renewable energy.[36] Price varies as well, but contract offers of similar type (length, fixed versus variable, and amount of renewable) from different providers tend to have prices very close to one another on a per kilowatt-hour basis. KEMA has also observed Texas offers which reward customers for using web service and reward customers for their loyalty. KEMA is also observing an increase in the number of offers which leverage advanced meters with two-way communication now like prepay offers and time-of-use offers. Many more products which leverage advanced meters are planned according to all suppliers interviewed.

36 Public Utility Commission of Texas; Available online at: http://www.powertochoose.org

Another indicator of competitive innovation is visible in the number of offers based on 100% renewable energy, as allowed to be defined for marketing purposes. This number has increased substantially, as shown in Figure 8.

Figure 8. Number of 100% Renewable Retail Electricity Offers in Texas over time



Sources: PUCT 2003; PUCT 2007; PUCT 2009; powertochoose.org

The growth rate in renewable offers has exceeded the growth rate of all electricity offers in general, indicating that retail providers have seized upon renewable energy as a key point of differentiation. More than three times the number of renewable electricity offers is available to a typical Texas consumer today compared to two years ago. Retail customers can also now choose their flavor of renewable, specifying wind, solar, or lowest cost, per their preference. Further, retail energy providers are joining with solar installers to offer distributed generation as well (e.g., the TXU Energy and Solar City partnership, which does not even require the consumer to be a TXU Energy customer).[37] The innovation highlights box below notes other novel offerings available for selection in Texas.

37 Solar City 2010; Available online at http://www.solarcity.com/pressreleases/55/Affordable-Solar-Power-Arrives-in-Texas-.aspx

INNOVATION HIGHLIGHT: TEXAS RETAIL OFFERINGS

The Texas retail market has a variety of innovative electricity offerings. While most offers vary by prices, renewable contents, or terms, many allow customers to align electricity purchases with their needs and values in customized offerings.

> For each Champion Energy customer who enrolls in a "Texas Longhorn Energy" plan, a set of fixed-priced, 100% renewable retail energy offers, Champion Energy will make a donation to the University of Texas athletics department sustainability programs.

> Southwest Power and Light partners with the Arbor Day Foundation to offer a plan that plants a tree for every 1,000 kWhs of electricity consumed by residential customers enrolled in the plan.

> Reliant Energy has a "cap-and-save" option that indexes electricity prices directly to the natural gas commodity markets, thereby allowing customers who think natural gas prices will fall to capture those market dynamics with the safety of a price cap.

California consumers face a significantly different market landscape. Although the vast majority of residential customers of the regulated utilities do not have any options concerning their provider, it is theoretically possible for a consumer to choose among several retail offers from their incumbent utility.[38] The typical California consumer in a single-family residential home can choose from approximately 10 different rate plans. At the same time, while this could be described as a degree of choice existing in California, the nature of the variation in offers is quite different from that observed in Texas. California customers may choose from among several rate plans only—e.g., there is an electric vehicle rate plan, a time-of-use rate plan, a solar rate plan, and so forth. While the details of the plans vary among the individual investor-owned utilities, consumers with specified characteristics will find their options limited to the specific plan for which they qualify: a customer with solar panels will be on the solar plan and a consumer with an electric vehicle will be on the EV plan, and so forth. Typically the California Public Utility Commission mandates what plans must be offered. Commercial and industrial customers in California are starting to gain more access to offers from retail

38 Except for those residential customers who exercised choice prior to September 20, 2001. Certain electric utility customers who had previously signed up for Direct Access (the ability to change electric providers) are eligible to do so again by giving their utility a required six-month notice.

electricity providers, but the number of options does not match those in Texas, nor the variety found in other states (see Innovation Highlight Box).

In summary, the comparison between Texas and California shows a vastly different landscape of electricity product choices. A typical Texas consumer has more than 10 times the number of choices enjoyed by a typical California consumer.

3.2.3 AMI Deployment

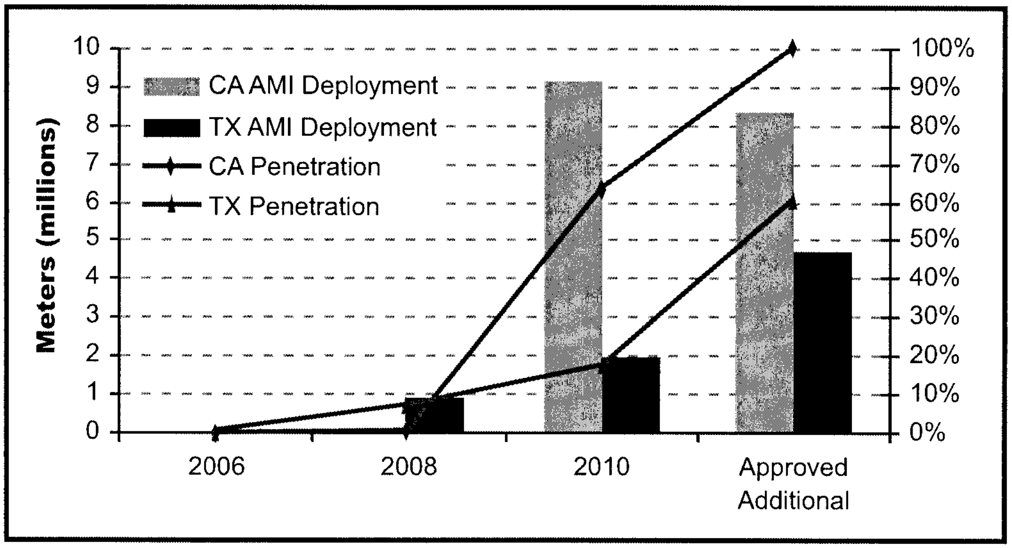
Advanced metering infrastructure (AMI) has the potential to impact the proliferation and variety of retail offer types beyond the impact of competitive market forces. To differentiate the effect of AMI versus competitive market forces, KEMA explored AMI penetration in the California and Texas markets. KEMA's analysis concluded that though AMI will likely impact rate offers in the future, to date, AMI has not been a significant driver of retail offers in California or Texas.

Both California and Texas are leaders in the deployment of advanced meters. In particular, California is the frontrunner, with current estimates topping 9 million retail advanced meters in operation, or nearly two-thirds of California electricity consumers. Although California has significantly more advanced meters deployed, most are within Pacific Gas and Electric Company (PG&E) territory. Southern California Edison Company (SCE) and San Diego Gas & Electric Company (SDG&E) have deployed advanced meters in similar numbers as the Texas company Oncor (1.1 to 1.3 million). Penetration in California's SCE territory is similar to penetration levels within Texas's CenterPoint Energy territory (20-25%).[39]

Within Texas, the number of offers and the number of retail electricity providers are similar within competitive areas of Texas, and between the AMI leaders and laggards. This suggests that AMI deployment has had little impact on the number of retail offers available to consumers in Texas so far.

39 King 2010; Berst 2010

Figure 9. AMI Deployment and Penetration in Texas and California



Data Sources: 2006 and 2008 year data from FERC 2009. Current and additional approved based on numbers from Chris King, Chief Regulatory Officer at eMeter, as reported by Jesse Berst in Smart Grid News (Berst 2010).

Nonetheless, while AMI deployment does not appear to have significantly influenced retail activity to date, there are early indications that it may play a larger role in the near future. A few retail products have been introduced that rely on AMI functionality, and retailers anticipate more in the future. Several retail providers have already introduced products that bundle supply and smart devices, notably TXU Energy and Reliant Energy.[40] At the same time, retailers also acknowledge that the rollout of these products is at a very early stage, despite the large potential over the next few years.[41]

3.3 Role of the Market

3.3.1 Meeting Market Needs

One differentiating characteristic of the Texas market is a re-orientation to the customer and what the customer needs. Several observers point to this dramatic change, calling it "a fundamental change to the utility mindset." Another called it "stepping out of the utility mind." Retailers also acknowledge the difference: "Our thought process is very different." One retailer described the old mindset as "selling kilowatt-hours as opposed to losing them, and that means revenue." It was critical to not to lose revenue by selling fewer kilowatt-hours.

40 For example, TXU Energy offers their customers iThermostats which help customers monitor and manage their air-conditioner electricity usage. (TXU Energy; Available online at: https://www.txupartners.com/thermostat/)
41 Tulloh, B. 2010

The retailer indicates that now, "I'm competing every day for my customers; I am motivated to serve these customers."

Re-orienting markets toward the customer is extremely challenging, according to one utility expert: "Making that culture leap is really hard for these companies. The industry culture is just challenged at the core to think this way." The expert also argues that even legacy Affiliated Retail Electricity Providers that inherited customers under the first phase of the Texas transition have had to focus on pleasing their customers in order to retain them, even while they must also compete for new customers. A quote attributed to an executive at one retailer in 2005 is particularly telling: "We've learned more about our customers in the last year than in the last 100 years. Prior to restructuring, there was no incentive."[42]

Beyond learning to think about their customers in a different way, Texas retailers have also begun to think about their products in different ways. A leading utility consultant summarized the challenge: "Service is the new concept; electrons alone are no longer enough." Texas retailers now recognize that the opportunities and risks driving their businesses have changed significantly. Regulatory risk may be significantly reduced, but market risk is increased fundamentally. As one retailer pointed out, "we have some regulatory certainty that the PUCT, the Legislature and the Governor all support retail competition. They think it provides value to the state." Therefore, the business risk is shifted from regulation to product development: "If you flop, you lose your investment. If you win, you are able to grow your market share and profitability." Another retailer described the same concept slightly differently: "The competitive market approach is, 'let the customers decide' and investors bear the risks if they don't meet customer needs."

As a market observer summed it up: "If they haven't done their homework, if they misunderstand customer needs, the risk is always of business failure."

One retailer made the comparison even clearer:

> *In my perception of regulated states, the thought process is different...The appetite for risk is different. In my perception of a regulated environment, it is simply 'don't fail.' However in a competitive environment, if you don't fail some, you haven't done enough. If you fail, you just haven't done it the right way. No one wants to fail, at the same time, it's the customer here who decides whether the product works or doesn't. Sometimes, you don't find that out until you present an option – sometimes, it's not a failure – it's just that not as many people choose it as you thought, sometimes many more choose it.*

42 Tulloh, B. 2005

3.3.2 Competing for Service

Rivalry, in the economic sense, is another key element that differentiates the Texas competitive market. An economist KEMA interviewed observed:

> *The Texas market design focuses on the concept of rivalry as an economic force among firms and among retailers. Rivalry is the most potent way to provide consumer value and consumer protection.*

This observation underscores research findings by Harvard economist Philippe Aghion. Aghion's research into the intersection of competition and innovation concludes that industries with neck-and-neck competition— rivalry— produced higher levels of technological innovation.[43] The proliferation of products and offers is indicative of firms in close competition seeking an edge.

The sense of competitive imperative is now inescapable for Texas electricity suppliers. "Compete or die is a necessity," according to one observer. Another market expert characterizes the actions of Texas retailers as: "[They] are desperately differentiating the commodity." The retailers themselves put it similarly:

> *If you didn't have competition, what's the incentive to create new products, or to consider or use new technologies? Now, if you don't offer something, you'll go out of business....Eventually, everyone will be using some sort of smart appliance, and if you're not part of that, if you're still offering a standard fixed rate, you'll probably go out of business.*

A different supplier described the significant investment it makes in developing new products:

> *We are forced to introduce products to keep up and therefore have product designers— and that's all they do.*

43 Aghion 2005

INNOVATION HIGHLIGHT: INNOVATIVE RETAIL OFFERINGS

Innovative offers for retail electricity offers or products for customers exist in a variety of competitive retail states. Below are examples from Connecticut, Michigan, Maryland, and New York.

> Customers of MXenergy in New York who enroll in the *Earth Friendly Partnership* program pay into a pool that buys commodity carbon offsets on the Chicago Climate Exchange for all emissions associated with their electricity generation.

> Direct Energy offers each Maryland customer a *Guaranteed Savings* Plan that guarantees a rate 5-7% below his or her incumbent utility's scheduled rate.

> When Michigan customers enroll in the *Glacial Energy Cares* program, Glacial Energy will donate $0.001 per kWh to the charity of the customer's choice.

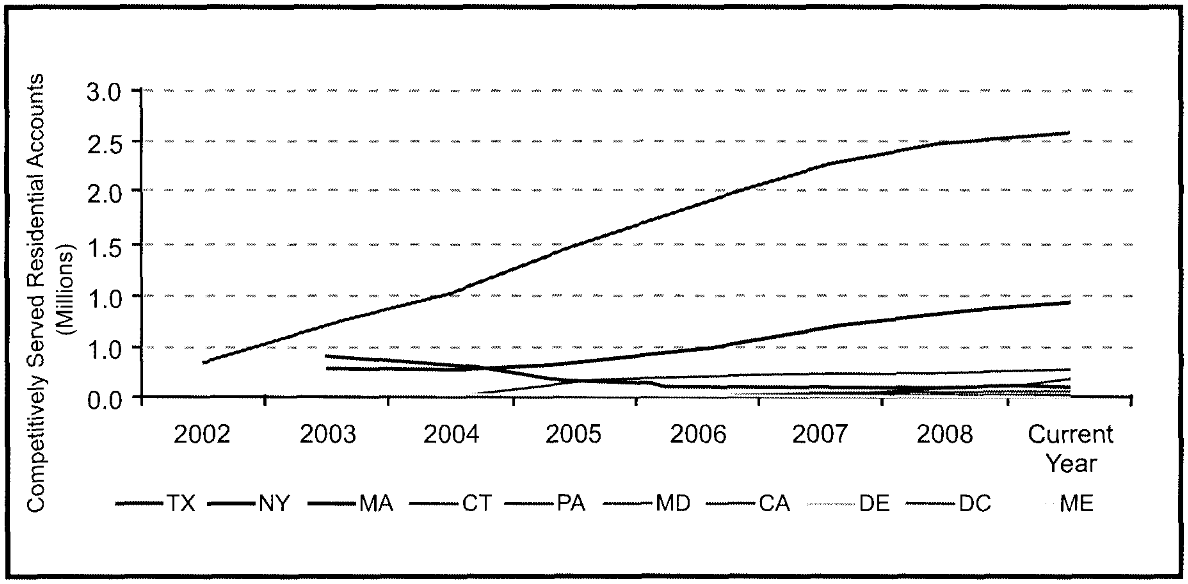
> Like many retailers, ConEdison Solutions offers *web special pricing* in Connecticut that provides additional savings to customers who go completely paperless for billing, payment, and service.

3.3.3 Advantages of a Level Playing Field

Observers widely acknowledge that one key component of the Texas approach, of introducing retail competition, was to lower any barriers to entry for new competitors as far as possible that were caused by an incumbency advantage of the affiliated retail electricity providers. The separation of generation and retail electricity markets fundamentally changed the business model. Market observers credited several aspects of the Texas market design for the reduced incumbency advantage that enables new entrants to enter the market and compete successfully.

As shown in Figure 10, Texas far outpaces other states in the number of residential customers who subscribe to a non-incumbent electric provider. Nearly all of the experts KEMA interviewed drew a link between market restructuring in Texas, lowered barriers to new retail electricity providers, and more providers and products.

Figure 10. Number of Residential Customers with Non-incumbent Electric Provider



Source: KEMA, state commissions, EIA 861

4. Conclusions

Over the past several years, the electricity industry has witnessed competition-driven innovation at the wholesale and retail levels. Based on the synthesis of three case studies from this era, this research confirms that competitive markets have contributed to innovation in the electricity industry. It finds that competitive markets support innovation by rewarding new ways of delivering power that improve upon existing approaches and by encouraging participants to develop services that meet market needs. It also highlights the role of competitive markets in providing a level playing field for developers of innovative offerings. Two case studies of the wholesale market illustrate how a technology-neutral approach to selecting resources, based on price and performance, can help non-traditional assets like DR and storage grow. Another case study of retail electricity offerings in Texas exemplifies innovation as a result of economic rivalry.

In addition, this research finds that competitive markets will likely continue to foster innovation in the future. Signs of continued innovation in competitive electricity markets are already present. As DR and electricity storage technologies advance, their role in the markets will likely grow stronger. Retailers anticipate offering additional electricity products with AMI functionality as the deployment of AMI continues. In addition, new technologies, such as plug-in electric vehicles will likely also begin to challenge the use of traditional resources for electricity service.

INNOVATION HIGHLIGHT: ELECTRIC VEHICLES AS A GRID RESOURCE

Plug-in electric vehicles (EVs) are an exciting potential resource for the grid. Similar to demand-response resources, EVs could offer services by adjusting charging levels over time. By charging and discharging power to and from the grid, EVs could also offer services like those supplied by short-duration storage devices.

Efforts to incorporate EVs as a grid resource are already underway. PJM is engaged with the Mid-Atlantic Grid Interactive Car Consortium (MAGICC) in a joint demonstration project to evaluate grid-interactive EV technologies. In 2010, MAGICC began operating three EVs to provide ancillary services to PJM in return for payment. Other markets are also considering revised rules to allow EV participation. In 2010, the ISOs/RTOs commissioned a study of potential EV services. The study identified ancillary services or emergency reliability services as potential near-term services.

Inherent in the conclusions of this paper is the observation that market structure is critical to determining the effectiveness of a market to spark innovation. Industry stakeholders identified market accessibility, market transparency, and a level playing field as key factors.

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A15

Commonwealth of Pennsylvania Public Utility Commission
Investigation of Pennsylvania's Retail Electricity Market
Docket No. I-2011-2237952

Retail Competition in Texas: A Success Story

"The mission of the Public Utility Commission of Texas is to protect customers, foster competition, and promote high quality infrastructure."

Chairman Barry T. Smitherman
Public Utility Commission of Texas
June 8, 2011

Why is fostering competition a key mission of the PUC of Texas?

Competition

- promotes diversity in offerings (different products, different customer services, different payment options, etc.);
- encourages consumers to become informed;
- enables consumers to "vote with their dollars," providing individual feedback directly to the electric industry;
- rewards timely responses to consumer demands and changes in the economy;
- results in more efficient decisions regarding construction, operation, and eventual retirement of facilities;
- produces lower prices; and
- in Texas, has contributed to substantial investments in smart-grid tools and clean energy, creating even more options for Texans.

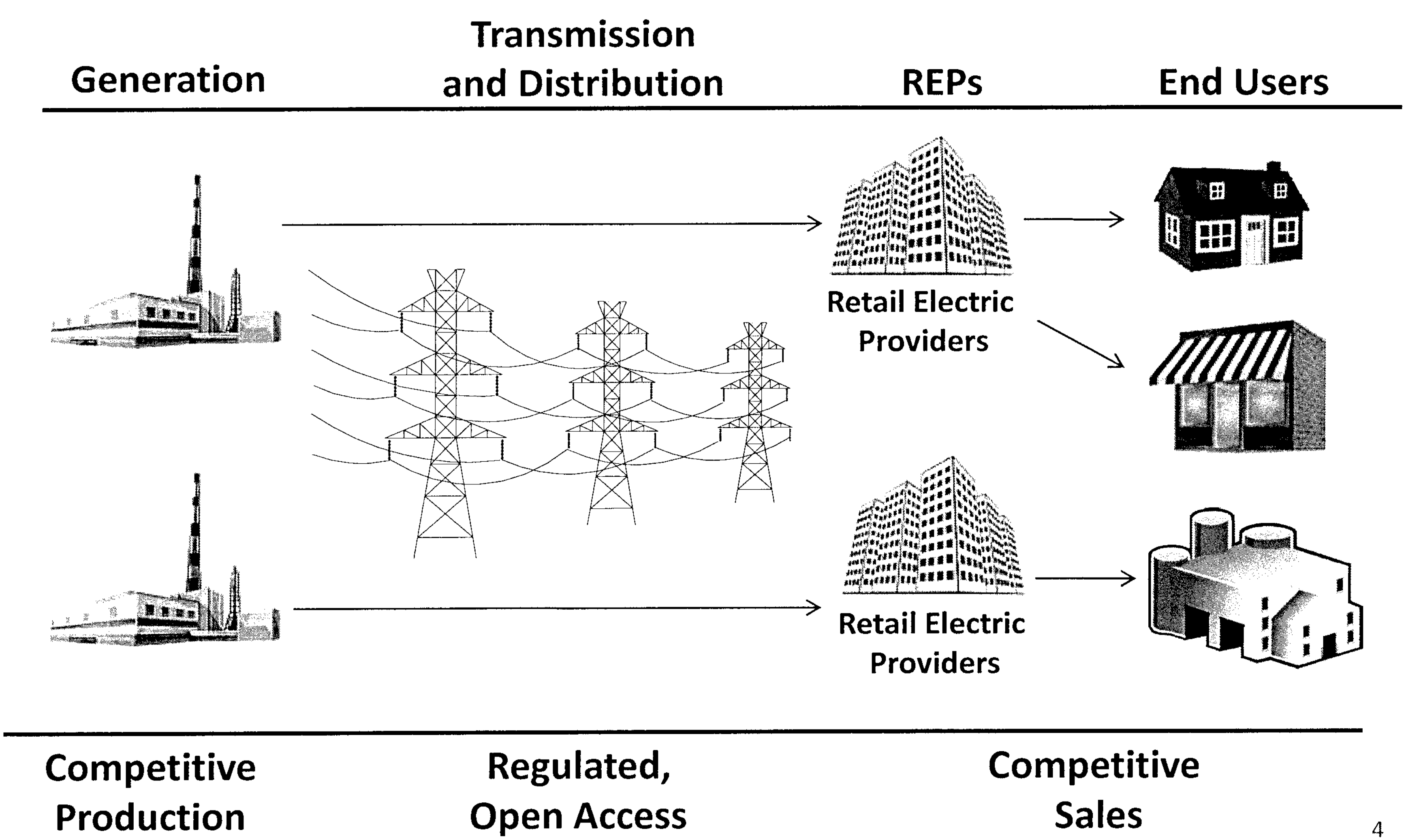
Background: Texas's Transition to Competitive Electric Markets

- In 1995, the wholesale, generation market became more competitive when the Texas Legislature amended the Public Utility Regulatory Act (PURA) to deregulate wholesale generation. Today there is wholesale competition throughout the State.

- In 1999, the Texas Legislature passed Senate Bill 7, introducing retail competition in much of ERCOT, the intrastate grid that serves 85% of Texas load.
  - S.B. 7 created a 2001 pilot project. Demand to enroll in the pilot project was so high amongst commercial and industrial classes that a lottery was held to select participants.
  - S.B. 7 took full effect on January 1, 2002 in the service areas of investor-owned utilities (IOUs) within ERCOT. About 6 million retail customers were opened to retail competition overnight.
  - A temporary price to beat (PTB) mechanism protected non-switching customers against excessive price hikes and created initial headroom for entrance of competitive REPs. Healthy competition led to the end of PTB in December 2006.
  - Currently, Provider of Last Resort (POLR) service is the only fully-regulated retail rate in Texas's areas of competition.

- But, today, vertically-integrated monopolies remain.
  - Municipally-owned utilities and co-ops in ERCOT
  - All areas outside ERCOT

ERCOT's Current Markets Structure



Competition in Texas's Retail Market

- The Texas retail market has now been open to competition for more than nine years.
- In the 2010 ABBACUS report, an assessment of restructured electricity markets in Canada and the United States, Texas was the only jurisdiction to earn the top ranking of "Excellent" in both the Residential and Commercial/ Industrial (C/I) segments.
  - Texas's Residential segment has received an excellent ranking 4 years in a row and its C/I segment has received an excellent ranking 3 years.
- 19 new REPs entered the market in 2008 and 26 new REPs entered the market in 2009.
- In the first half of 2011, residential customers have about 2.5 times more options for service than they did at the end of 2008.
  - 50+ REPs are serving at least 500 residential customers.
  - Most retail customers may choose from over 35 REPs, offering as many as 226 different rate packages.
  - Wide range of market differentiation/evolving product offerings
  - Continue to see new entrants; limited exit

Competition in Texas's Retail Market (continued)

- Texas retail customers may choose from diverse products.
  - Fixed
  - Variable
  - Indexed
  - 100% Green

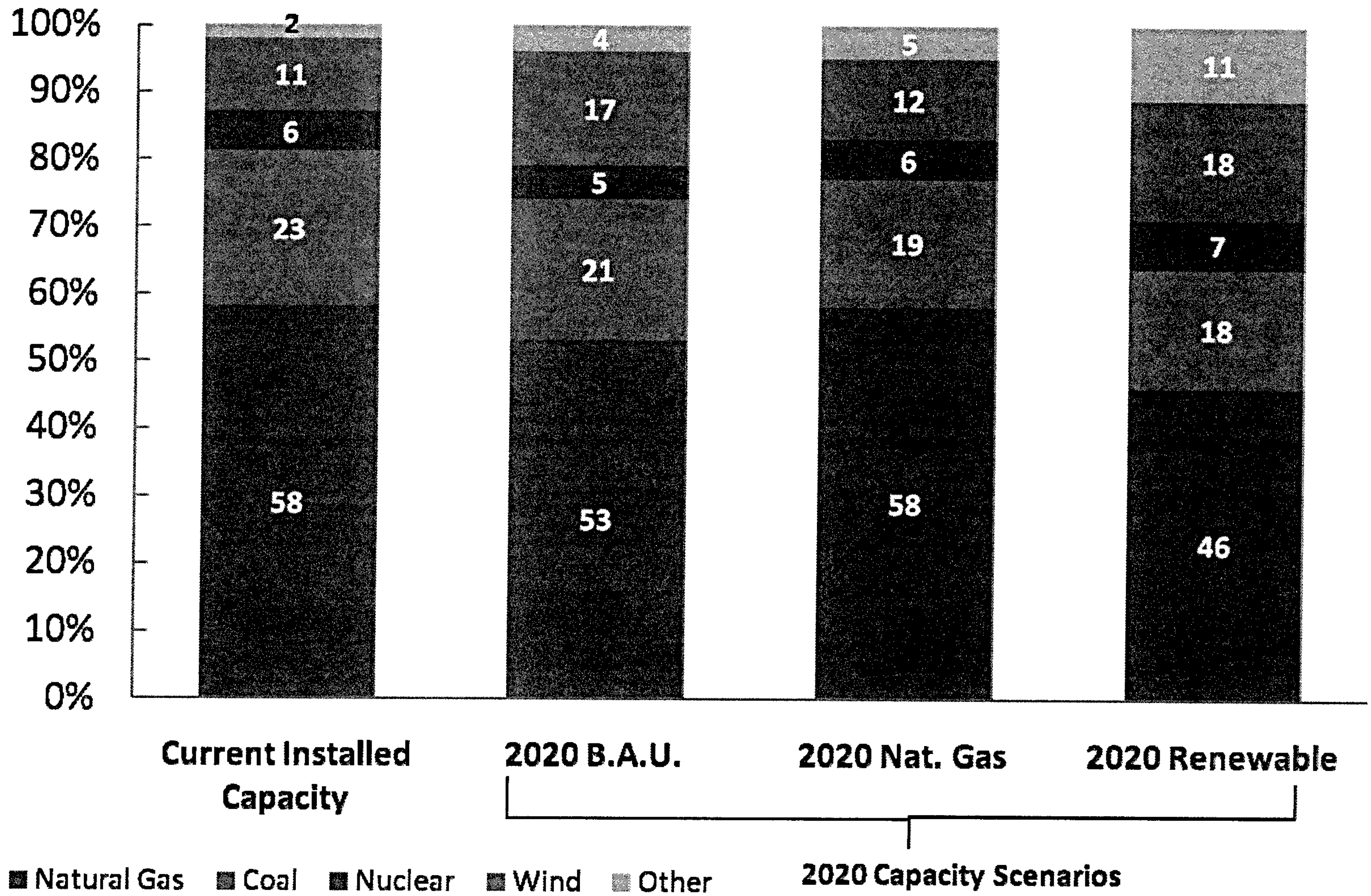
- Texas retail customers may choose from diverse payment schedules.
  - Traditional billing months
  - Prepaid
  - Calendar months

- Texas retail customers may choose whether to participate in energy-efficiency programs, demand response programs, distributed generation programs, etc.

- Several TDUs in areas of competition are deploying smart meters, enabling competitive REPs to further differentiate themselves through offerings of in-home usage devices and, in the near future, time-of-use pricing.

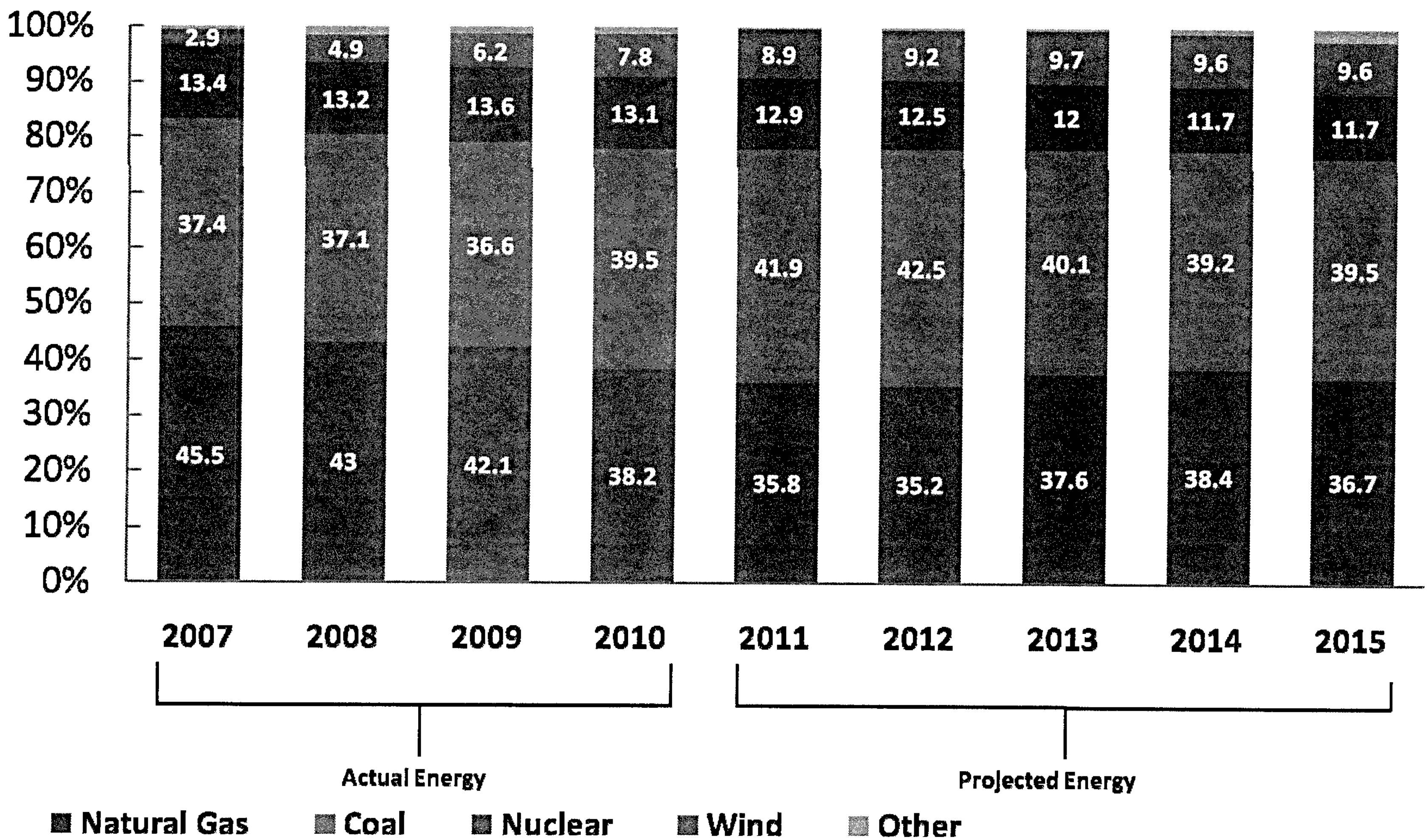
Retail competition has incented clean energy investment in Texas.

ERCOT's Current and Projected Capacity



Sources of underlying data: ERCOT's Quick Facts and ERCOT's 2010 Long Term System Assessment.

ERCOT's Diversified Energy Portfolio



* 2011-2015 projections regarding wind energy and "other" energy are conservative because only facilities with signed interconnection agreements are included and hydro facilities are not included.

Sources of underlying data: *ERCOT's 2008 Constraints and Needs Report*, *ERCOT's 2008 - 2010 Demand and Energy Reports*, and ERCOT transmission planning data.

Current Competitive Residential Retail Prices in ERCOT

Lowest Offers Available
(Price based on use of 1000 kWh, **May 31, 2011**, from www.powertochoose.com)

Service Area	Fixed-Price Offers (term of at least 3 months)	Variable Price Offers	Renewable Generation Offers (100% renewable)	Dec. 2001 prices (Not adjusted for inflation)	Dec. 2001 prices (inflation adjusted)
AEP – TCC	9.5¢/kWh	6.9¢/kWh	8.0¢/kWh	9.6¢/kWh	11.7¢/kWh
AEP – TNC	8.4¢/kWh	6.7¢/kWh	7.5¢/kWh	9.6¢/kWh	12.2¢/kWh
CenterPoint	8.6¢/kWh	5.4¢/kWh	7.3¢/kWh	10.4¢/kWh	12.7¢/kWh
Oncor	8.1¢/kWh	5.0¢/kWh	7.0¢/kWh	9.7¢/kWh	11.8¢/kWh
TNMP	8.3¢/kWh	6.6¢/kWh	7.2¢/kWh	10.6¢/kWh	12.9¢/kWh

Austin: 8.49¢/kWh (winter rate), 9.39¢/kWh (summer rate)
San Antonio: 9.43¢/kWh (January 2011 rate), 9.53¢/kWh (July 2010 rate)*

* Municipally owned utility rates are average rates for a residential customer who uses 1000 kWh.

Questions?

For this and other presentations, go to
http://www.puc.state.tx.us/about/commissioners/index.cfm and
follow the link for Chairman Smitherman.

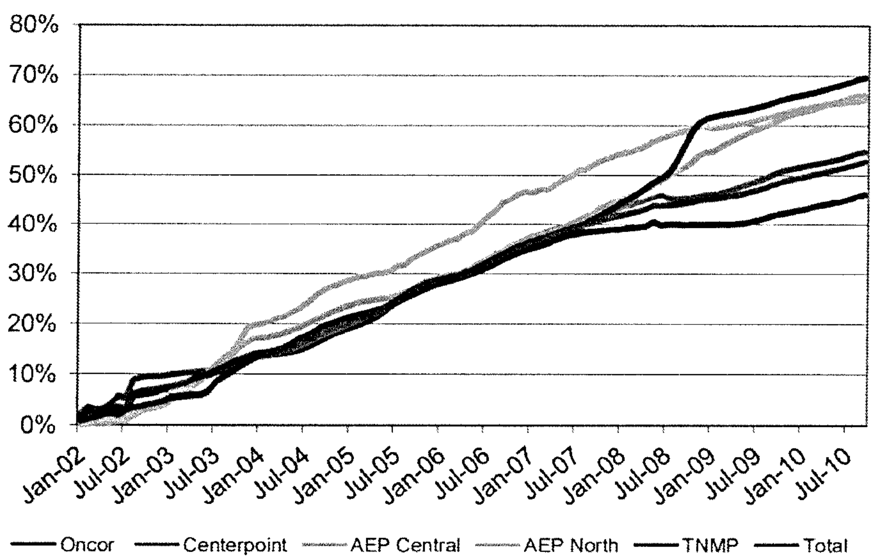
Appendix Slides Hereafter

“The Competitive Edge”

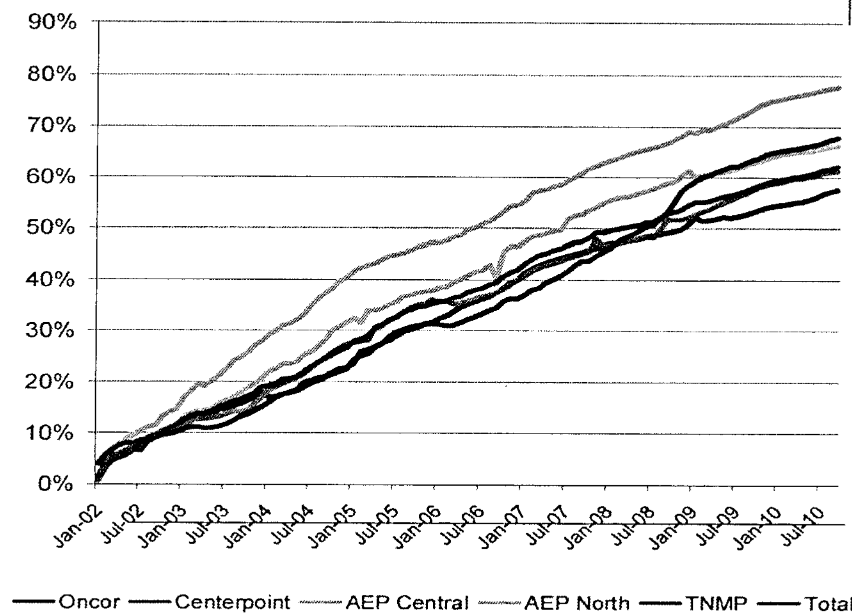
- About 18 years ago, I wrote an op-ed in the Houston Chronicle about the then-collapsing Soviet economy:
  - “Where there is competition, the public gets to choose the best product at the best price; where there is not competition, the public has no choice—it either takes the product or service offered, or does without.”
- Former Texas A&M Chancellor and former FRB-Dallas President Bob McTeer once noted, “Government monopolies are usually run by good people, but competition makes them better.”
  - He was writing in favor of school choice, but his point is equally well suited to utilities.
- Whether in air travel, long-distance telephony, or interstate trucking, deregulation from state-controlled economics to competitive markets consistently leads to leaner, smarter workforces, higher utilization, and more efficient cost structure.

Retail Customers Served by Unaffiliated REPs

Residential Customers with a
Non-legacy REP
(by Service Territory)



Secondary Voltage Customers with a
Non-legacy REP
(by Service Territory)



Issues still to-be-addressed in Texas's advanced competitive retail market

- How can information be most effectively presented so that retail customers may compare and contrast offers?
- Do the sometimes higher costs of value-added products skew the public's perception of the success of competition?
- How can we measure "value?"

Transitioning to Competitive Retailing: the Price to Beat (PTB)

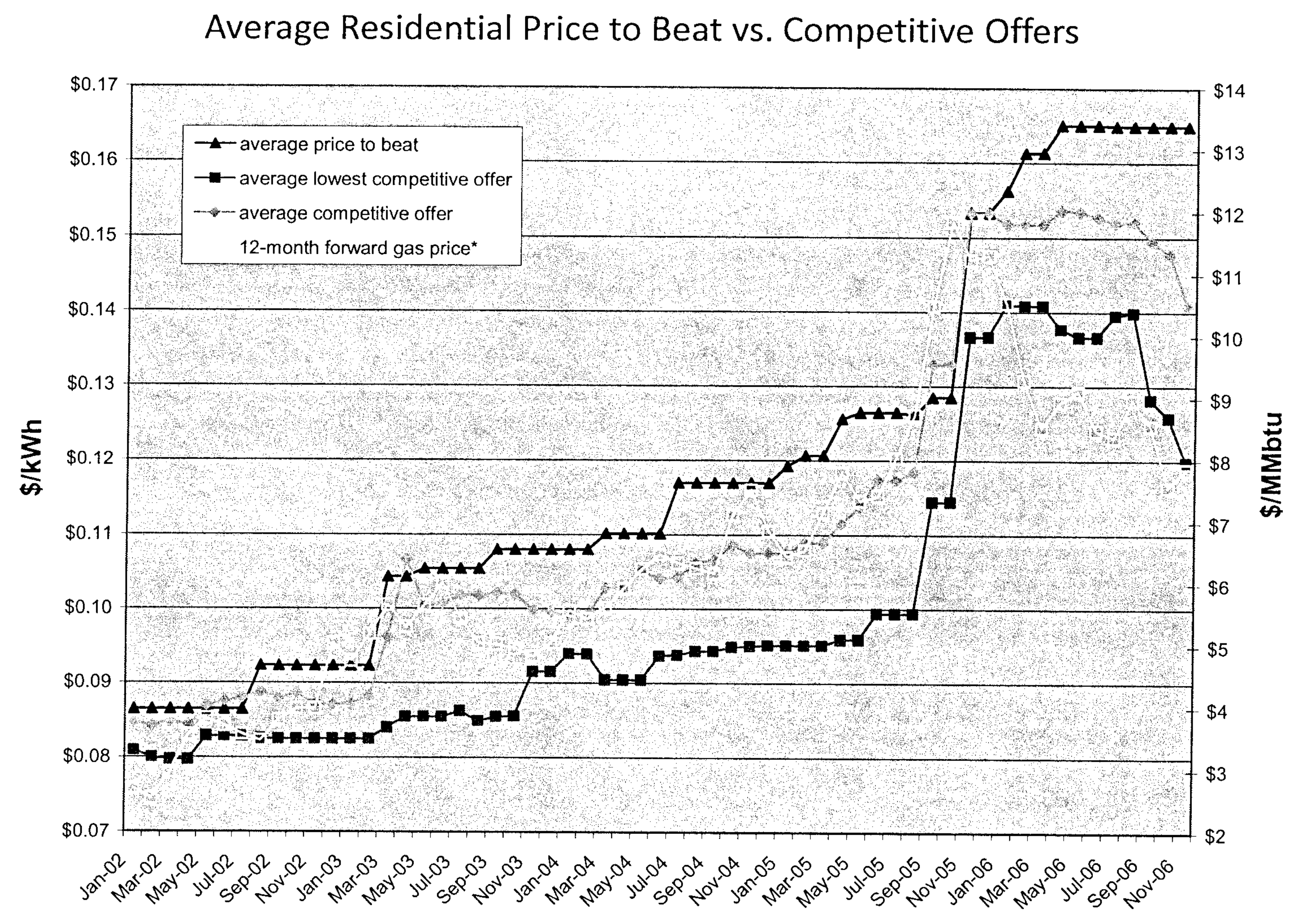
- The PTB formula at one time was January 1999 regulated retail rates, adjusted for January 2002 fuel prices, and then cut by 6%
  - Included an adjustment mechanism for increases in fuel costs

- SB7 required incumbent retailers (Affiliated Retail Electric Providers) to offer the PTB—and *only* the PTB—to residential and small (<1000 kW) commercial customers from Jan 2002 to Dec 2004
  - Exception: Once residential or small commercial customers representing 40% of power consumed switched to a competitor, the PTB restriction was lifted
  - All competitive areas within ERCOT surpassed the 40% threshold by late 2003 for the commercial class

- Twin Purposes of PTB
  - Protect non-switching customers against excessive price hikes
  - Create headroom for competitive REPs

- PTB remained a residential option until the end of 2006.

Transitioning to Competitive Retailing: the PTB
(continued)



Transitioning to Competitive Retailing

- Initially, customers remained with the affiliated REPs (aREPs).

- The number of switching customers steadily increased, however.

- Today, Texas is recognized as the most successful competitive retail market in North America.*
  - On average, more than half of residential customers in competitive areas have chosen to be served by unaffiliated REPS.

* *Annual Baseline Assessment of Choice in Canada and the United States.* Available online at http://www.defgllc.com/content/defg/abaccus.asp.

Responsive Retail Market Oversight

- During May and June 2008, high natural gas prices and transmission congestion drove up wholesale and retail electricity prices, putting financial stress on some of the REPs.
  - Several of the stressed REPs left the market. Their customers were transferred to Providers of Last Resort (POLR).
  - Some REPs also failed to meet their financial obligations to ERCOT or transmission and distribution utilities (TDUs).
- As a result, the Commission in May 2009 amended its REP certification rules to better protect REP customers against REP insolvency.
  - The amended rule requires REPs to meet higher standards for capitalization and risk management expertise.
- In 2010, the Commission amended its REP certification rule again to allow the PUC to draw on a REP's letter of credit in the event of a REP certification revocation.
  - The amended rule also defines a failure to remove a switch-hold in the prescribed timeline as a significant violation of Commission rules, for which a REP may be subject to administrative penalties and/or revocation of the REP's certification.
  - And the amended rule provides for a new REP certification, allowing third-party ownership of distributed generation facilities on the business premises of large customers.
- For most REPs, the amended rule requires a REP to demonstrate its financial qualifications by providing the Commission a letter of credit in the amount of $500,000 and ensuring the protection of customer deposits by putting deposits in an escrow account or covering the customer deposits with a second letter of credit for 100% of the deposit amounts.

Smart Meters

- Consumers can use the information provided by smart meters to help reduce their energy use and take part in new pricing or demand response programs.
- Smart meters also allow for customers to quickly switch to a different provider, encouraging customer choice.
- A 2010 Rolling Stone article listed smart meters as a "sure bet" of ways to "cool the planet."

Smart Meter Deployment in ERCOT

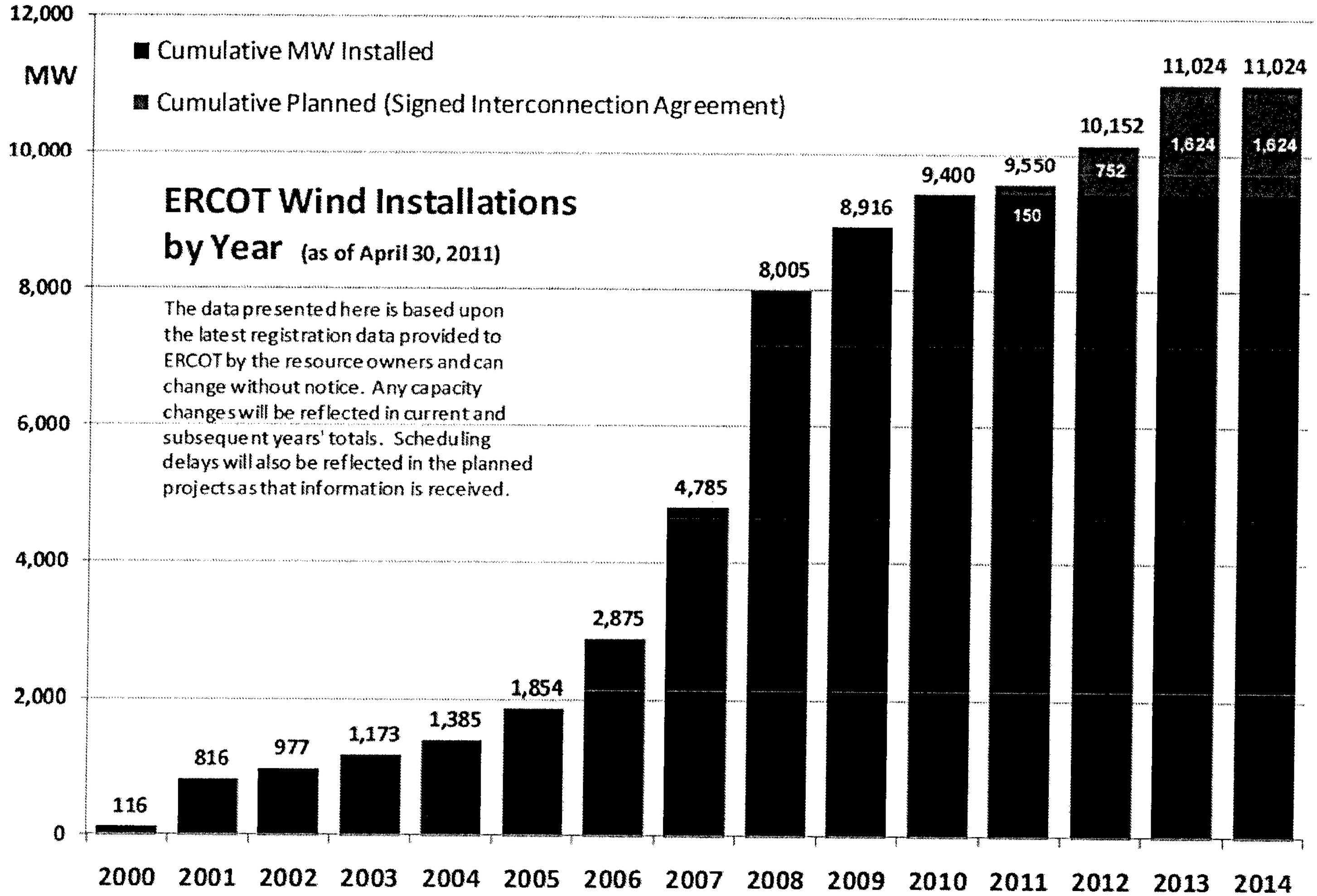
- To date, over 3,079,000 smart meters have been deployed in ERCOT.
  - Oncor: 1,634,603
  - CenterPoint: 1,204,049
  - AEP TCC and TNC: 240,509
- Over 6 million smart meters will be deployed by the end of 2013.
- Another utility's (TNMP's) proposed AMS deployment is pending.
- The joint web portal, www.smartmetertexas.com, is used by consumers, REPs, and TDUs to track and manage energy use.
- Several REPs are offering products and services that utilize smart meter functionality, such as energy monitoring, time-of-use pricing, or prepaid service.

Smart Meter-related Retail Products & Services Being Offered in Texas

- In Home Devices are being installed in customers homes today:
  - Champion Energy
  - Direct Energy
  - TXU Energy
  - Reliant Energy
  - 500 IHD rollout – CNP
  - 500 IHD rollout – Oncor
- Usage Insights services
- Time of Use Rate Plans
- Electric Vehicles

- Retail Services provided remotely (avoid truck roll)
  - Switching from REP to REP
  - Disconnection, and Reconnection of Service
- 3rd Parties
  - Customers in Texas can authorize a 3rd Party to have their 15-minute data
  - Working with NAESB Data Privacy Task Force
  - Will finalize business rules in 2011

Wind Generation in ERCOT



Source: *Grid Operations and Planning* report provided by Kent Saathoff, May 17, 2011, ERCOT Board of Directors Meeting.

Competitive Renewable Energy Zones (CREZ)

- Texas's CREZ Transmission Plan is the largest renewable infrastructure project in North America.
- The PUCT selected a CREZ Transmission Plan that, when completed, will have over 18,500 MW of transfer capacity, at an original estimated cost of approximately $5 Billion.
- The plan will serve to transmit electricity from five geographic areas identified as CREZs, which the PUCT designated after considering several areas' potential for wind generation and wind generators' demonstrations of financial commitment, to large load centers including San Antonio, Houston, Austin, and Dallas. Due to Texas's open access transmission network, non-wind generators will benefit from the increased capacity, as well.
- After designating the CREZs and selecting the transmission plan, the PUCT conducted a contested process in which the PUCT selected transmission service providers responsible for constructing, operating, and maintaining the CREZ facilities. The PUCT selected several entities that already operated in Texas, as well as three new entrants who had never before operated transmission facilities in Texas.

The CREZ Transmission Plan

When complete, the CREZ Transmission Plan will provide more than 18,400 MW of transmission capacity.

As of May 18, 2011,

- the Commission has decided the routes for 30+ CREZ CCN dockets.
- only one docket is pending and no more CCN applications remain to be filed.
- the Commission modified the plan in late 2010 because it found cost-effective alternatives to two lines.