Restructuring Recharged Updates (originally published in April 2017)
June 2020
These 14 jurisdictions (13 states plus Washington DC) each have enabled Retail Choice for Nearly All Customers. These jurisdictions represent nearly 1/3 of all electricity consumption in the continental US.
These 14 competitive jurisdictions shown in green (13 states plus Washington DC) account for one-third of U.S. electricity power production and consumption. The designation of “competitive jurisdiction” in this paper is defined as a jurisdiction that:

- Enables nearly all classes of customers to be able to choose a retail supplier without cumbersome restrictions or limitations, and,
- That the utilities in these jurisdictions have divested all (or nearly all) of their generation assets and are therefore primarily wires-only delivery service companies. Consequently, the generating assets in these states are not included in the rate-base of these delivery service utilities and are therefore competing within the wholesale power market parameters in place for business revenues.

It should be noted that several other states—including California, Michigan, Arizona, Oregon, Nevada, Virginia, Washington, and Montana—allow limited portions of total load to be served competitively at retail, while denying the great majority of customers a choice of supplier. These hybrid states are regulated largely under the traditional monopoly model and are treated accordingly in this paper (see note below concerning the ‘hybrid’ states). The primary focus of this whitepaper examines the various aspects and outcomes of these 14 jurisdictions (combined) vs. the 35 monopoly states (combined) on a whole host of measures including generator builds, performance and capacity factors, pricing performance by rate class, switching activity and the like.
The Transitional Decade 1998-2007
Each of the 14 competitive jurisdictions proceeded at different speeds and in different ways during the transitional decade. By 2007, phase-ins of customer class eligibility and the collection of stranded-cost charges had reached their prescribed end points in most states. The transitional decade witnessed a cautious, stepwise approach that set the stage for ongoing evolution and growth in competitive retail markets. Regulation would continue to adapt to this new model.

By 2008, in competitively restructured states:
- Most utility generation had been divested to unaffiliated firms or devolved to competitive generation affiliates, resulting in nearly half of all productive capacity in the country being owned and operated by a diverse array of non-utility companies;
- Utilities had been compensated for “stranded” investment in uneconomic generation;
- Large numbers of retail suppliers were offering competitively priced supply;
- Millions of customers, especially in the commercial and industrial classes, had embraced supplier choice;
- Nearly a majority of consumption in the 14 customer choice markets was satisfied by non-utility suppliers;
- Default service programs, mainly for residential and small business customers not choosing an alternative supplier, were functioning well, providing competitively priced supply, usually procured by utilities in the market and divorced from traditional rate-of-return price regulation; and
- Billions of dollars in new generation investment was made at similar paces in both monopoly and competitive states.

The ‘Hybrid’ States
Hybrid states are as varied in their approaches to limiting retail customer choice as are the choice states in the details of their market-based programs (perhaps even more so). In all cases, however, there is strong evidence of considerable customer demand for market access that is permitted to be satisfied under the rules. In Michigan, for example, more than twice as much load than the 10% permitted to access choice is enrolled in choice “queues.” Industrial and commercial customers in Arizona, California and Oregon have eagerly participated in legislative and regulatory proceedings considering expanded market access. In Nevada, the constitutional amendment adopted by a 72% voter majority in the November 2016 election was originally promoted for the ballot by large customers dissatisfied with utility and regulatory obstacles to electricity retail competition. However, in November 2018 that measure was voted down in large part due to Nevada Energy (utility) opposition. Meanwhile, as of this writing (May 2020), other states are contemplating various forms of competitive markets such as Indiana, South Carolina, Florida and Louisiana.
Residential Switching by Year
Source: DNV GL 2019 Retail Energy Outlook

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This figure shows the upward trend in shopping activity from residential customers with respect to accounts served by non-utility suppliers.

**Growth of Customer Choice**

As shown in Figure 4, millions of residential retail electricity customer accounts are served with competitively sourced market-priced power supply. Between 2003 and 2008, the number of residential accounts served by non-utility providers more than tripled from about 2.3 million to 7.1 million. Residential accounts served by retail suppliers more than doubled again in the ensuing years. In the most recent four years, 2015-2019, competitively served residential accounts averaged about 16 million annually. (Note that the primary reason for the drop-off from 2014 to 2015 is largely due to the return to default service of the approximately 750,000 City of Chicago municipal aggregation customers (primarily residential) which had been served by a retail supplier for several years previous to this). It is also important to remember that residential and small business customers taking utility default service in the competitive jurisdictions are also supplied with market-priced power procured in a competitive market. “Rate of return” pricing is a thing of the past in the 14 competitive retail jurisdictions. There are other reasons and issues concerning default service and that procured by retail energy suppliers that have caused a flattening of the shopping in recent years.
C&I Switching by Year
Source: DNV GL 2019 Retail Energy Outlook

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Figure 5 (page 15) of Restructuring Recharged – **Updated through CY2019**

Source: DNV GL 2019 Retail Energy Outlook. This figure is derived from data obtained from information from the annual report on competitive electricity accounts and loads issued by DNV GL. DNV GL, is a highly regarded international consulting and energy information firm that compiles information from state utility commissions and other sources to estimate a variety of statistics on retail electricity choice provided to subscribers in an annual Retail Energy Outlook Report.

This figure shows the upward trend in shopping activity from C&I customers with respect to accounts served by non-utility suppliers.

Figure 5 shows that between 2003 and 2008, the number of C&I customers served by non-utility suppliers grew 240%, from 463,351 to nearly 1.6 million. Competitive C&I accounts nearly doubled again between 2008 and 2019. Nearly 3 million C&I customers have switched to non-utility suppliers. C&I customers that have elected to take utility default service are billed at “rates” derived from market-based purchases in the competitive wholesale market.
Percentage of Load Switched in the 14 Competitive Jurisdictions

The great majority of eligible load in the choice jurisdictions is served by competitive suppliers.

Source: DNV GL 2019 Retail Energy Outlook
Figure 6 (page 16) of Restructuring Recharged – Updated through CY2019

Source: DNV GL 2019 Retail Energy Outlook. This figure is derived from data obtained from information from the annual report on competitive electricity accounts and loads issued by DNV GL. DNV GL, is a highly regarded international consulting and energy information firm that compiles information from state utility commissions and other sources to estimate a variety of statistics on retail electricity choice provided to subscribers in an annual Retail Energy Outlook Report.

This figure shows the upward trend in shopping activity from both residential and C&I customers with respect to load served by non-utility suppliers. In 2019, 72.0% of load eligible to switch in the 14 customer choice markets was served competitively with retail pricing and products by non-utility suppliers. It is interesting to observe that the vast majority of C&I load (85.8%) has switched to non-utility supply. Meanwhile, about half (47.5%) of the residential load in the competitive jurisdictions had switched to supply procured by retail suppliers. Most of the remaining load in the 14 markets, a little less than one-third of total eligible load in those jurisdictions, is served with market-priced supply procured in the competitive wholesale market by wires utilities acting as default providers.

The nature of utility default service is often misunderstood or mischaracterized as the equivalent of traditional utility “rate of return” tariffed service under the monopoly model that the utility provided prior to restructuring. It is significantly different in several ways:
• Wires-only utilities that provide default service to non-choosing residential and small business customers generally do not earn a profit from providing the market-priced default supply;
• Customers eligible for default service are generally free to switch from the utility default service and to choose service from a competitive supplier; and,
• Default service supply is customarily procured through forward purchases made in a competitive wholesale market in a similar manner as that procured by the retail suppliers.

*1: The word “eligible” in the slide title is meant to indicate that only those customers allowed to choose a retail supplier (usually those located behind IOUs in the competitive jurisdictions/states) are included in the calculation. Typically, customers located behind municipal utilities and rural cooperatives do not allow choice in their respective service territories even though they may reside in what this paper defines as a competitive jurisdiction/state. In any event, the proportion of load represented by the ineligible customers is usually small and would not change the percentages shown in a material way even if they were included.
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A DECADE OF DIVERGENT PRICE PATHS

U.S. Energy Information Administration (EIA) data allow for a comparison of trends in weighted average nominal prices between the monopoly group of states and the competitive jurisdictions. Figures 7, 8, 9 and 10 show stunningly different price trends in the competitive jurisdictions compared to the monopoly states from 2008 through 2019. Weighted average prices in the group of 35 monopoly states have risen inexorably. By contrast, in the 14 competitive markets, commercial and industrial weighted average prices have trended significantly downward as residential prices have flattened.
Commercial Weighted Average Percentage Price Change, Choice vs. Monopoly States, 2008-2019

% Price Change – 30.9% Spread

Source: EIA-861M

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Industrial Weighted Average Percentage Price Change, Choice vs. Monopoly States, 2008-2019

% Price Change – 33.8% Spread

Source: EIA-861M
A DECADE OF DIVERGENT PRICE PATHS
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All-Sector Weighted Average Percentage Price Change, Choice vs. Monopoly States, 2008-2019

% Price Change – 26.4% Spread

Source: EIA-861M

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A DECADE OF DIVERGENT PRICE PATHS

U.S. Energy Information Administration (EIA) data allow for a comparison of trends in weighted average nominal prices between the monopoly group of states and the competitive jurisdictions. The All-Sector annual weighted average price in the thirty-five monopoly states was 19.5% higher in 2019 than in 2008. In contrast, the All-Sector annual weighted average price for the competitive retail markets was 6.9% lower than in 2008.

The dollar implications of such spreads in price paths are large. If 2008-2019 annual percentage price changes in the thirty-five monopoly states had tracked with percentage price changes in the fourteen competitive jurisdictions, all consumers in the monopoly states would have saved one-third of a trillion dollars ($442 billion). By major customer class, the savings (in the monopoly states) would have been $146.6 billion for Residential, $184.1 billion for Commercial and $110.7 billion for Industrial.

*1: The flip side is that if the same price trend patterns that occurred in the monopoly group had also prevailed in the competitive jurisdictions, the hypothetical cost to electricity customers in the fourteen choice markets would have been higher by $301 billion for All-Sector. By major customer class, the avoided cost in the competitive jurisdictions is $94.4 billion for Residential, $140.4 billion for Commercial and $67.0 billion for Industrial.
Nominal Weighted Average Percentage Price Change by Customer Class, Choice vs. Monopoly States, 2008-2019

Source: EIA-861M

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Price Trend Divergence in the Flat-Load Era

The difference in risk allocation between monopoly and choice regimes is being manifested most clearly in the divergent electricity price trends during the flat-load era since 2008. This figure shows the aggregate inflation-adjusted percentage changes in weighted average prices of delivered supply for the groups of 14 choice jurisdictions and the 35 monopoly states from 2008 through 2019. It also shows stunningly different price trends in the competitive jurisdictions compared to the monopoly states from 2008 through 2019. The nominal weighted average prices in the group of 35 monopoly states have risen inexorably. By contrast, in the 14 competitive markets, residential, commercial, and industrial inflation-adjusted weighted average prices have trended significantly downward with the exception of residential prices which have flatlined.

Advocates for the monopoly model sometimes promote the notion that residential, small-business and non-profit customers such as schools are disadvantaged by choice. The assertion is that large commercial and industrial customers will reap the bulk of the benefits and that competitive suppliers will “cherry pick.” Opponents of retail choice argue that allowing large customers to leave utility service will necessarily drive up costs for the remaining customers. In a monopoly state with a commission-approved revenue requirement, that may be true. However, the data show that prices for residential customers in competitive retail markets have been on a favorable track alongside the benefits that have accrued to C&I customers (all customers benefit, although the non-residential customers benefit more). While percentage changes in price differ among the customer classes in both the monopoly and choice states, this is due in part to the greater volumes and more constant demand characteristics of larger customers. Additionally, the costs of delivery services allocable to residential and small business customers constitute a greater share of total price.
The divergence in price trends between the group of states that have incorporated competitive markets and the group that has remained under monopoly regulation is neither accidental nor aberrational. It is a function of entirely different public policies that prescribe quite different ways in which supply prices are set and risks are borne. Traditional regulation sets supply prices on the basis of past capital investment and current costs of operation, with little regard for the actual economic value of the product. In competitive markets, supply prices are set by the dynamics of supply and demand. The problem for consumers served by monopoly utilities in the flat-load era is not merely one of poor risk allocation. Traditional regulation necessarily sends inaccurate price signals. Because traditional rate setting is in great part retrospective, prices will tend to be set too high in periods of surplus in order to recover investment in power plants that are producing less power than anticipated. Similarly, traditional regulation distorts price signals, including setting prices too low in periods of impending shortage and too high in periods of surplus. This upside-down pricing is resulting in rising prices in monopoly states at the same time customers are restraining their electricity consumption from the grid. In choice jurisdictions, all customers have a clear line of sight to the economic value of electricity in wholesale markets. Price signals constitute some of the most valuable information for all stakeholders in a market. Accurate and timely price signals elicit efficient consumer and investor decisions. Poor price information encourages inefficient behavior.
Inflation-Adjusted Weighted Average Percentage Price Change by Customer Class, Choice vs. Monopoly States, 2008-2019

Source: EIA-861M
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Residential Price % Price Change by State, 2008-2019

Source: EIA-861M

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DIVERGENT DIRECTIONS AND STATE RANKINGS

The large difference in percentage changes in weighted average prices between the monopoly and competitive choice jurisdictions is not the result of a few large states skewing the results in one direction or the other. Rather, when the states are ranked by percentage change in each state’s average residential price change over this period, the competitive states tend to cluster in the lower range and the monopoly states tend to occupy the higher parts of the rankings.
Commercial Price % Price Change by State, 2008-2019
Source: EIA-861M

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in each state’s average commercial price change over this period, the competitive states tend to cluster in the lower range and the
monopoly states tend to occupy the higher parts of the rankings.
Industrial Price % Price Change by State, 2008-2019
Source: EIA-861M

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DIVERGENT DIRECTIONS AND STATE RANKINGS
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All Sector Price % Price Change by State, 2008-2019
Source: EIA-861M

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DIVERGENT DIRECTIONS AND STATE RANKINGS

The large difference in percentage changes in weighted average prices between the monopoly and competitive choice jurisdictions is not the result of a few large states skewing the results in one direction or the other. Rather, when the states are ranked by percentage change in each state’s average All-Sector price change over this period, the competitive states tend to cluster in the lower range and the monopoly states tend to occupy the higher parts of the rankings. It is interesting to observe that the largest 25 all-sector price changes over this time period are all monopoly states. Additionally, all 14 of the competitive jurisdictions reside on the right hand side of this chart. Furthermore, **50% (7/14)** of the competitive jurisdictions had price decreases over the period compared to **9% (3/35)** of the monopoly states.
Effectiveness Ratio, 1997-2018 [Summer Capacity (Δ%)]/[Consumption (Δ%)]

Source: EIA-860, EIA-861M, EIA-923
**Generation Effectiveness**

“Generation Effectiveness” is the extent to which generating capacity additions have kept pace with consumption, as measured by the ratio of the percentage growth in generating capacity to the percentage change in consumption over the same time period. As shown in Figure 17, both monopoly and competitive states have added capacity since 1997 approaching double the proportion of the percentage increase in electricity consumption. Figure 17 also shows that both groups of states added capacity at comparable effectiveness ratios of approximately two times the increase in MWh consumption: 1.76 in the Customer Choice Jurisdictions and 1.80 in the Monopoly States.
Change in Resource Adequacy Factors Ratio, 1997, 2008, 2018
(Generation Output/Consumption)
Source: EIA-860, EIA-861M, EIA-923

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A useful measure of "Resource Adequacy" in an electricity market or collection of markets is whether total annual generation production is equal to about 110% of total annual consumption. The 10% of production above consumption accounts for line losses and other production that does not reach the end-use meter. As shown in Figure 18, at the commencement of the competitive era in 1997, the 14 Customer Choice Jurisdictions, as a group, were net importers, generating 106% of total consumption. Thus, the group of 14 was a net importer.

By 2008, the competitive states had caught up with the monopoly states as far as this measure is concerned. However, by 2018, Customer Choice Jurisdiction’s resource adequacy had fallen to pre-restructuring levels. This drop was driven by a more rapid growth in consumption (0.46%/year) than generation (0.06%/year) over the 2008 to 2018 timespan. Large Customer Choice Jurisdictions, such as New York and Ohio, had rapidly dropping net exports (-9% and -14% respectively). On the other hand, monopoly states, such as South Dakota and Mississippi, saw a large increases in net exports (28% and 25% respectively).

While at first this trend seems favorable for monopoly states, the truth is more complex. Competitive jurisdictions have imported more of their electricity precisely because doing so is more economical. Wholesale markets have directed imports into Customer Choice Jurisdictions and out of Monopoly States, allowing for the Customer Choice Jurisdictions’ price drops seen in figures 6-9.
Change in Capacity Factor, 1997, 2008, and 2018
(Generation Output/Potential Output)
Source: EIA-860, EIA-923
The explanation of the Great Divergence between the monopoly states and competitive jurisdictions is not to be found in the similar trend lines moving from coal to gas and negligible differences in patterns of renewables and nuclear resources. There is, however, a knock-on effect that may partially explain the Great Divergence in price direction. Monopoly regulation and competitive markets accord fundamentally different treatment to power plant utilization. The decline in power plant portfolio capacity factor has been larger, both nominally and proportionally, in the monopoly states than in competitive jurisdictions as shown in this figure. The average capacity factor in the monopoly states declined from 52.2% in 1997 to 43.5% in 2018 (the most recent year for which EIA data are available). That is a one-fifth decrease (8.7%) compared to the much more modest decline in average capacity factor in the competitive markets from 49.4% in 1997 to 43.8% in 2016, a proportional decline of 5.6% or about one-fifteenth. Plant utilization, as measured by capacity factor, has declined in far greater proportion in the group of monopoly states than in competitive markets, due in great part to the shift from coal toward gas. However, as long as rate-based capacity is considered “used and useful”—even if underutilized—full cost recovery is accorded, with consumers absorbing those costs. In contrast, underutilized or uneconomic capacity in competitive markets will tend to experience adverse financial consequences under the same conditions. The difference is that investors, not customers, are the ones bearing the risk of changing market fundamentals.

We can add information here about specific energy source capacity factors.
“Potency” Ratio, 1997-2018 (Generation Output (Δ%))/(Consumption (Δ%))

Source: EIA-860, EIA-861M, EIA-923
Generation Potency “Generation Potency” is a measure of how well generating assets meet consumers’ electricity usage requirements over time. The Potency ratio compares the percentage change in generation production to the percentage change in consumption over a period of time. Figure 20 shows that in the Customer Choice Jurisdictions, production has increased at a ratio of 1.00 to the change in consumption, while in Monopoly States, production increased at a pace well below the percentage change in consumption, at a ratio of just 0.81. Thus, generation production in the Customer Choice Jurisdictions outpaced consumption, while in the Monopoly States consumption outpaced generation production.
State Ranking – Consumption Percentage Change 2008-2019

Source: EIA-861M

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As shown in Figure 22, well more than half of all states lost load over this time period. Developments in the fossil fuel industry may explain why it is that certain states are at the high end of percentage change in consumption or at the low end. Some states with increased load have been beneficiaries of increased domestic oil and gas production. Some of the states with reduced load have suffered from reductions in coal mining.

Nearly all competitive states (excluding Texas, Maine, New York), experienced a reduction in consumption over this period. All else equal, a drop in consumption would lead to price increases in a vertically integrated (monopoly) state, whereas, as we’ve previously shown this reduction in consumption in competitive states has lead to increase in competition which has further decreased prices.
Generation Percentages by Energy Type in the 14 Competitive Jurisdiction, 1997-2018
Source: EIA-861M
Figures 23 and 24 of RR show the 2008-2016 comparative changes in the market share of electricity production from the major sources in the 14 competitive jurisdictions and the 35 monopoly states respectively.
Generation Percentages by Energy Type in the 35 Monopoly States, 1997-2018
Source: EIA-861M
Figures 23 and 24 show the 2008-2016 comparative changes in the market share of electricity production from the major sources in the 14 competitive jurisdictions and the 35 monopoly states respectively.
Generation Percentages by Energy Type in the 49 Lower Jurisdictions, 1997-2018
Source: EIA-861M
Since the commencement of the customer choice era, gas has been on track to ultimately overtake coal, both in terms of installed capacity and production. In 1997, coal accounted for 53% of generation, while natural gas plants constituted less than 14%. By year-end 2018, coal’s share of summer capacity was 27.8% compared to 35.6% for natural gas. Figure 25 shows that 2016 was the first year in which natural gas-fired electric power production exceeded that produced by coal. This flip has occurred in both competitive jurisdictions and monopoly states.

However, electricity customers in competitive retail jurisdictions have experienced the benefits of low gas prices more promptly and effectively than have those in monopoly states. There are several reasons:

• A greater share of generating capacity in monopoly states is accounted for by coal than in the customer choice markets where gas and nuclear are more prominent.
• In competitive markets, consumers pay only for the economic value of existing generating capacity, with prices set in open and transparent competitive auctions.
• In the 14 choice markets, generating capacity is installed or taken out of service based on investor perceptions of the competitive economics. In the 35 monopoly states utilities build, contract or retire generating capacity under regulatory protocols that generally require consumers to pay for capacity irrespective of economic efficiency.
• Financial markets have demonstrated a willingness to make billions of dollars in equity investment and low-cost debt available for non-utility generation, contradicting the claim that only regulated monopoly could attract capital at favorable rates.
• Customers, especially commercial and industrial which account for more than 60% of consumption, have the flexibility to adjust contract terms and prices to take advantage of market developments.

Additionally, as the relative shares of electricity production from gas and coal plants flipped, there has been a steady contribution of nuclear and a strong recent upswing in the role of renewables.