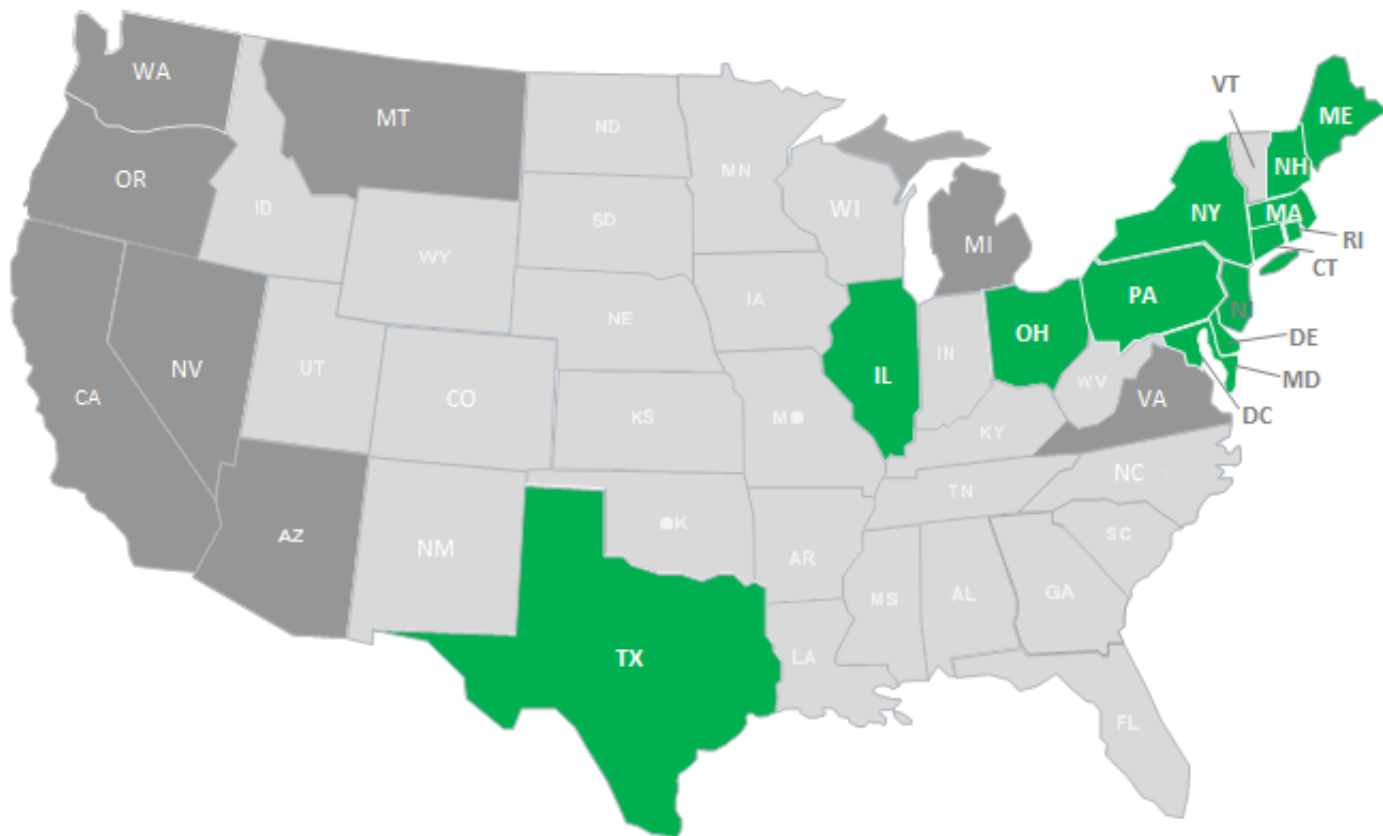


14 Customer Choice Jurisdictions

Figure 1 of The Great Divergence

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 U.S.



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Figure 1 (page 4) of The Great Divergence and Figure 3 (page 13) of Restructuring Recharged - Updated through July 2023

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 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. Therefore, they compete 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 the total load to be served competitively at retail while denying the great majority of customers a choice of supplier. These hybrid states are mainly regulated 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 other 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:

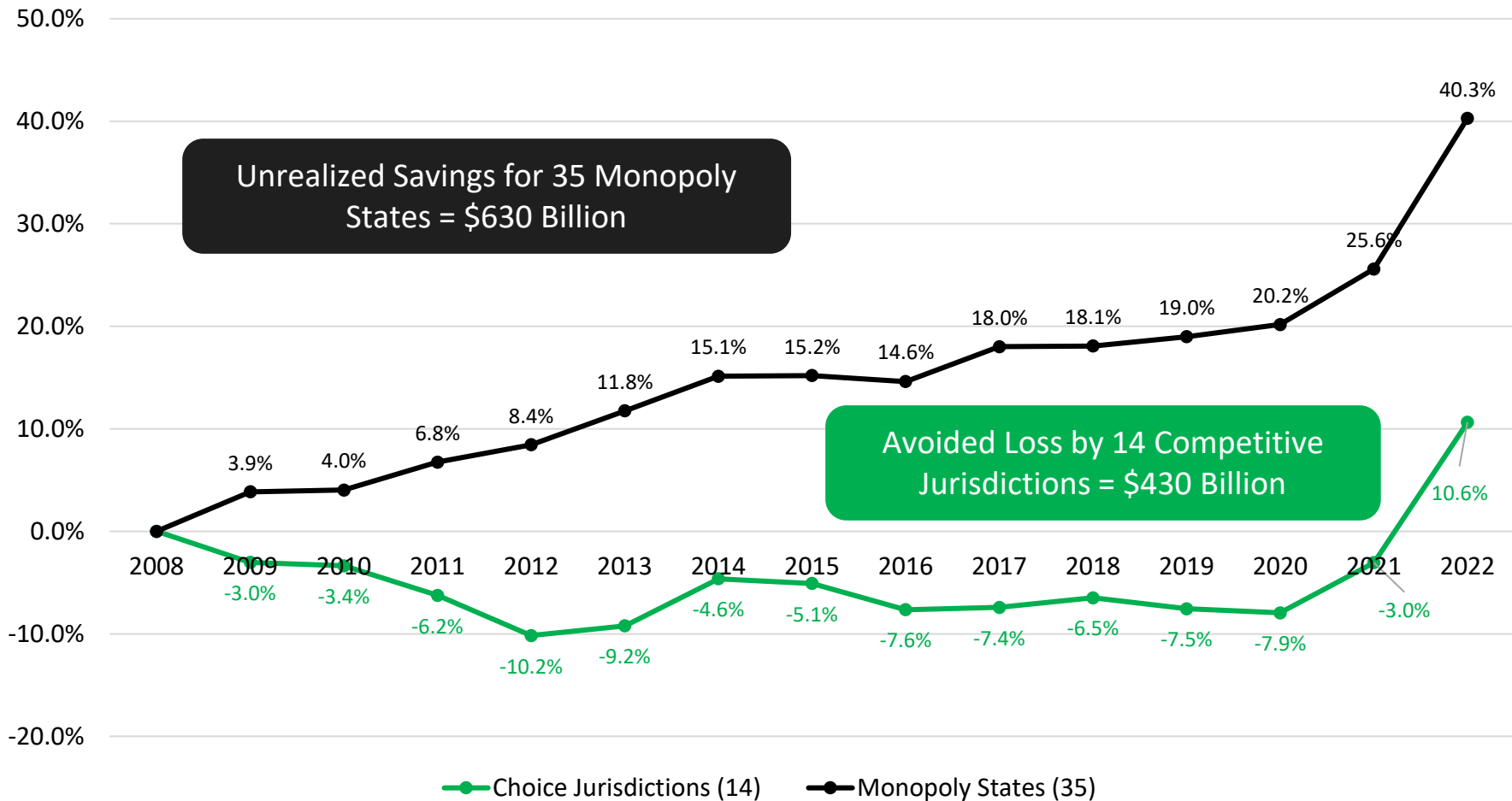
- Most utility generation had been divested to unaffiliated firms or devolved to competitive generation affiliates, resulting in nearly half of all productive capacity in the country being owned and operated by a diverse array of non-utility companies;
- Utilities had been compensated for “stranded” 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 were made at similar paces in 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 can 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 initially promoted for the ballot by large customers dissatisfied with utility and regulatory obstacles to electricity retail competition. However, in November 2018, that measure was largely voted down due to Nevada Energy (utility) opposition. Meanwhile, as of this writing (July 2022), other states are contemplating various forms of competitive markets such as Missouri, Oklahoma, and Louisiana.

All-Sector Weighted Average Percentage Price Change, Choice vs. Monopoly States, 2008-2022

% Price Change – 29.7% Spread
 Figure 2 of The Great Divergence
 Source: EIA-861M



A DECADE OF DIVERGENT PRICE PATHS

U.S. Energy Information Administration (EIA) data allow for comparing 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 35 monopoly states was 40.3% higher in 2021 than in 2008. In contrast, the All-Sector annual weighted average price for the competitive retail markets was 10.6% higher than in 2008.

The dollar implications of such spreads in price paths are large. If 2008-2022 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* more than half of a trillion dollars (\$630 billion). By major customer class, the savings (in the monopoly states) would have been \$210.9 billion for Residential, \$206.4 billion for Commercial and \$155 billion for Industrial.*¹

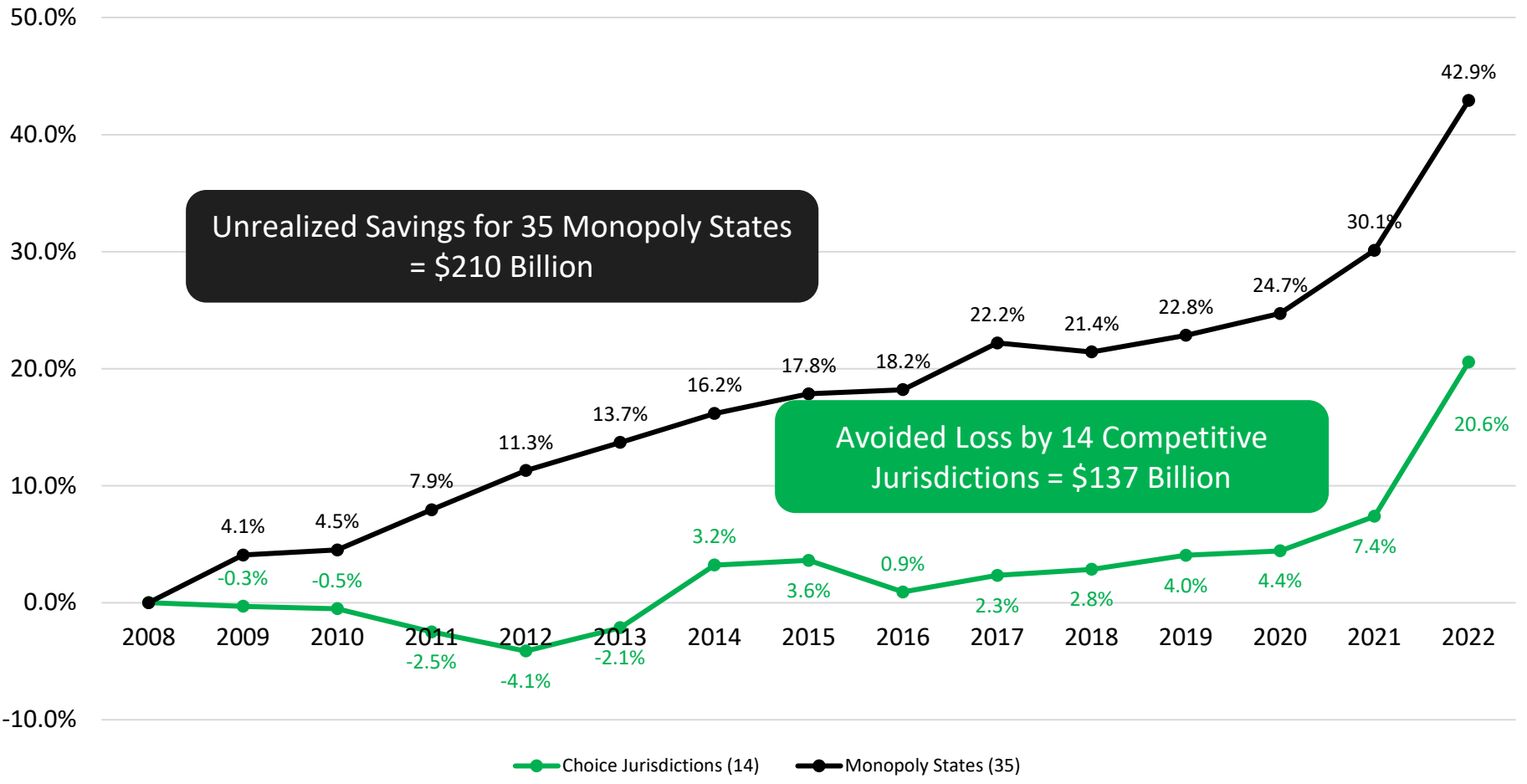
*1: The flip side is that if the same price trend patterns in the monopoly group had also prevailed in the competitive jurisdictions, the hypothetical cost to electricity customers in the fourteen choice markets would have been higher by \$430 billion for All-Sector. By major customer class, the avoided cost in the competitive jurisdictions is \$137.2 billion for Residential, \$197.34 billion for Commercial and \$94.8 billion for Industrial.

Residential Weighted Average Percentage Price Change, Choice vs. Monopoly States, 2008-2022

% Price Change – 22.3% Spread

Figure 3 of The Great Divergence

Source: EIA-861M



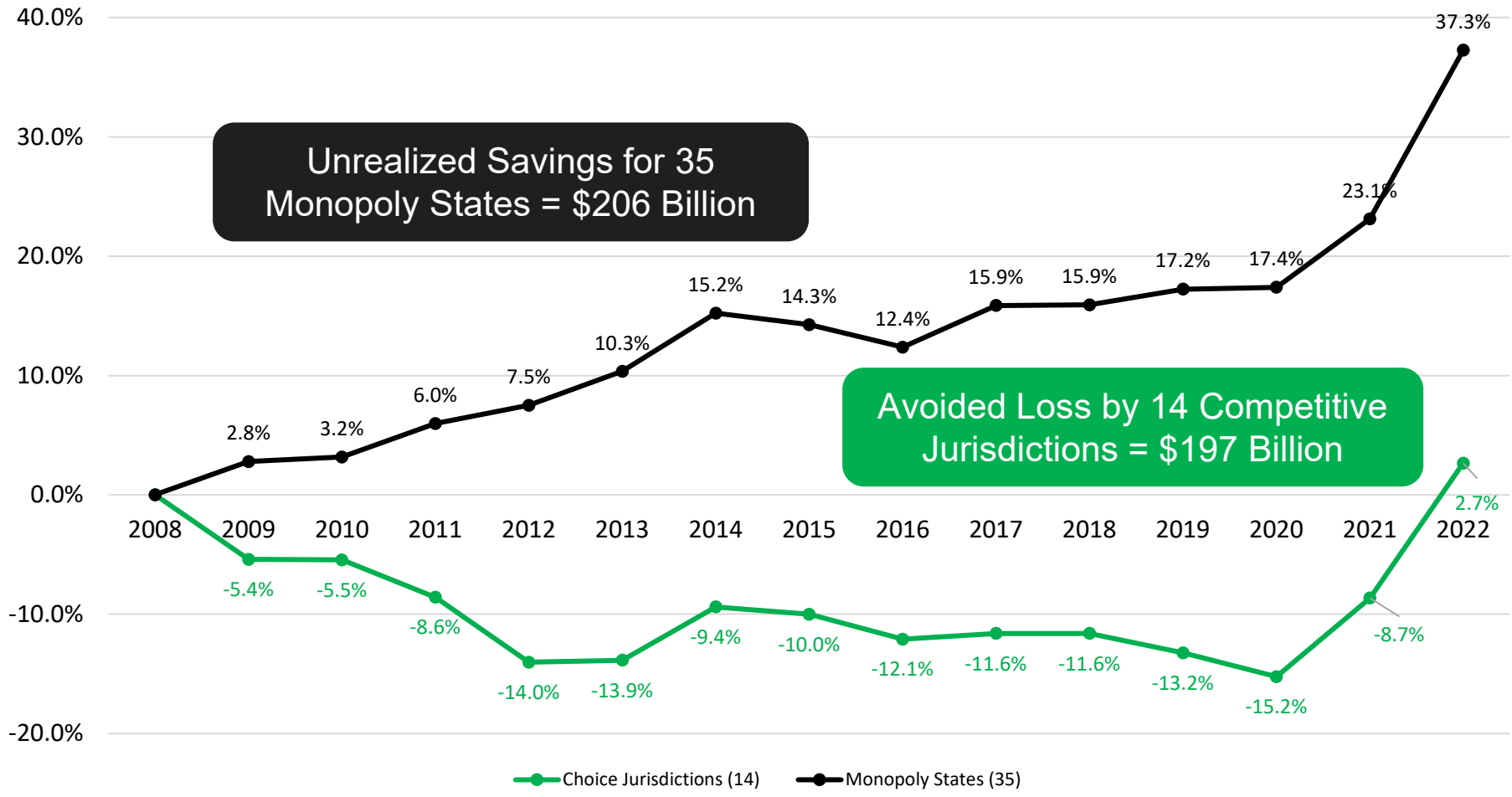
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A DECADE OF DIVERGENT PRICE PATHS

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. Figures **3, 4, 5 and 6** show stunningly different price trends in the competitive jurisdictions compared to the monopoly states. From 2008 through 2022, weighted average prices in 35 monopoly states have risen inexorably. By contrast, in the 14 competitive markets, commercial and industrial weighted average prices have trended significantly downward through 2020, and while the last few years have shown an uptick in prices, commercial, residential and industrial prices are still significantly lower than their monopoly state counterparts.

Commercial Weighted Average Percentage Price Change, Choice vs. Monopoly States, 2008-2022

% Price Change – 34.6% Spread
 Figure 4 of The Great Divergence
 Source: EIA-861M



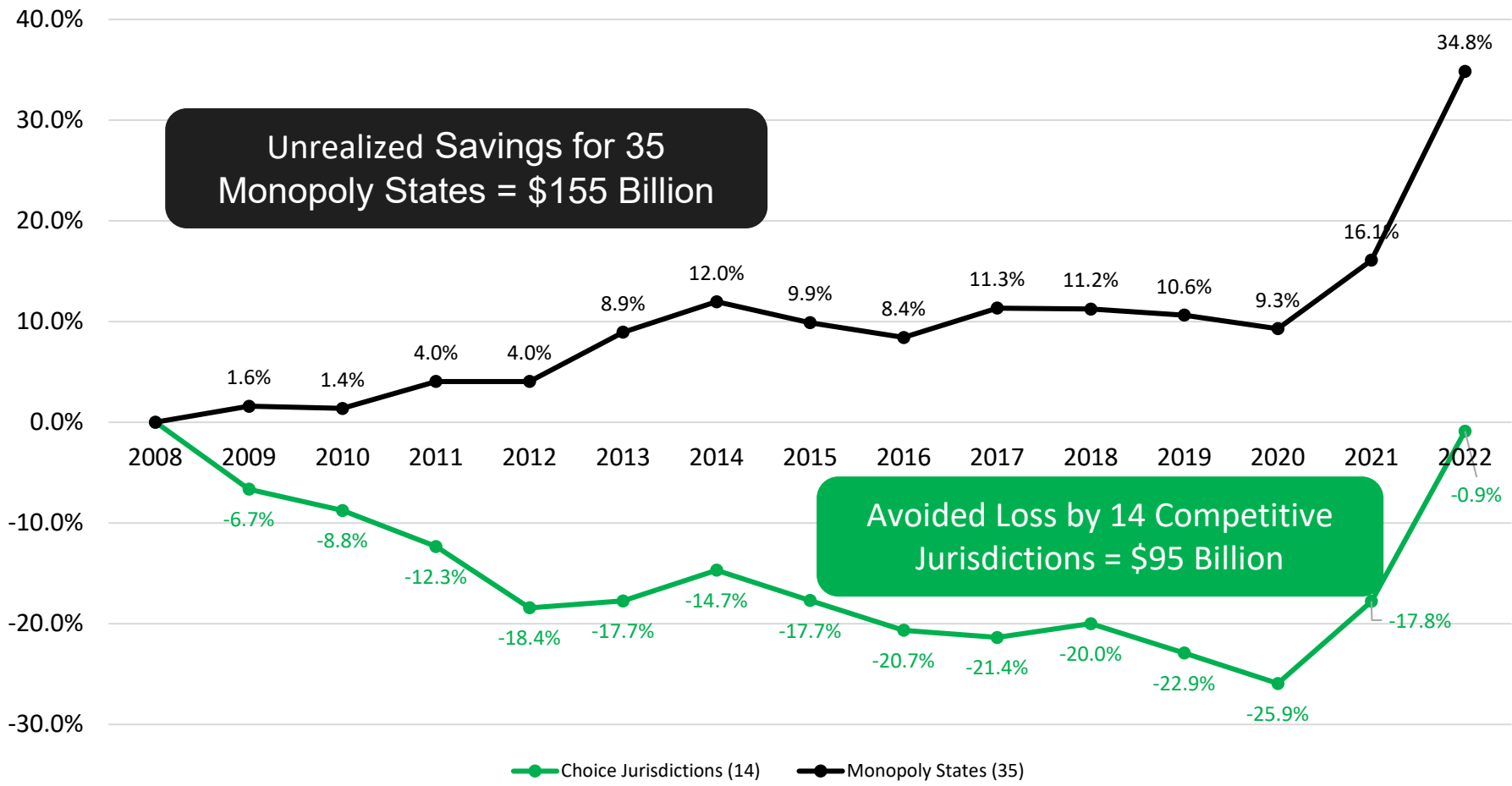
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A DECADE OF DIVERGENT PRICE PATHS

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Industrial Weighted Average Percentage Price Change, Choice vs. Monopoly States, 2008-2022

% Price Change – 35.7% Spread
 Figure 5 of The Great Divergence
 Source: EIA-861M



Unrealized Savings for 35 Monopoly States = \$155 Billion

Avoided Loss by 14 Competitive Jurisdictions = \$95 Billion

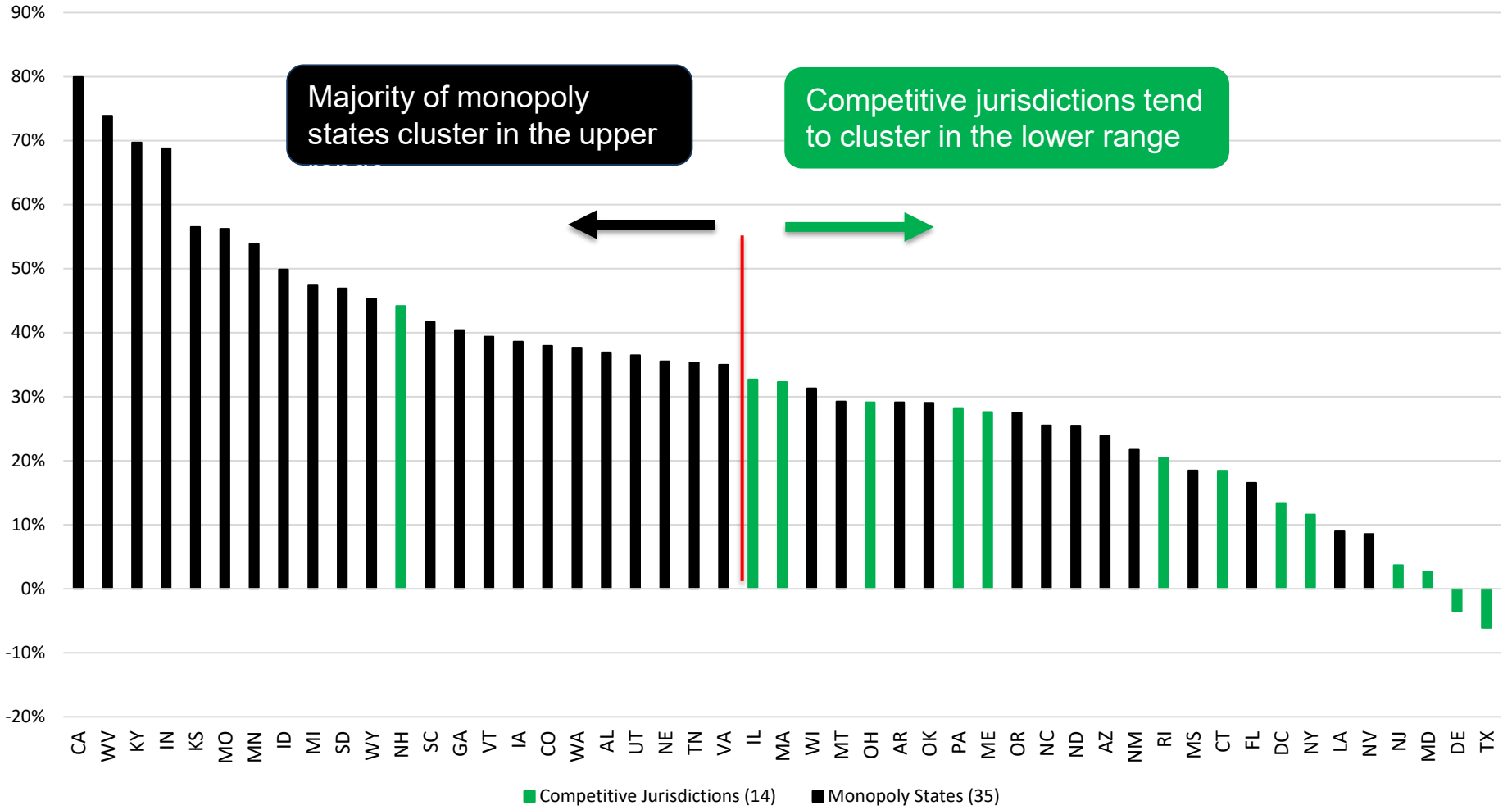
A DECADE OF DIVERGENT PRICE PATHS

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All Sector Price % Price Change by State, 2008-2022

Figure 6 of The Great Divergence

Source: EIA-861M



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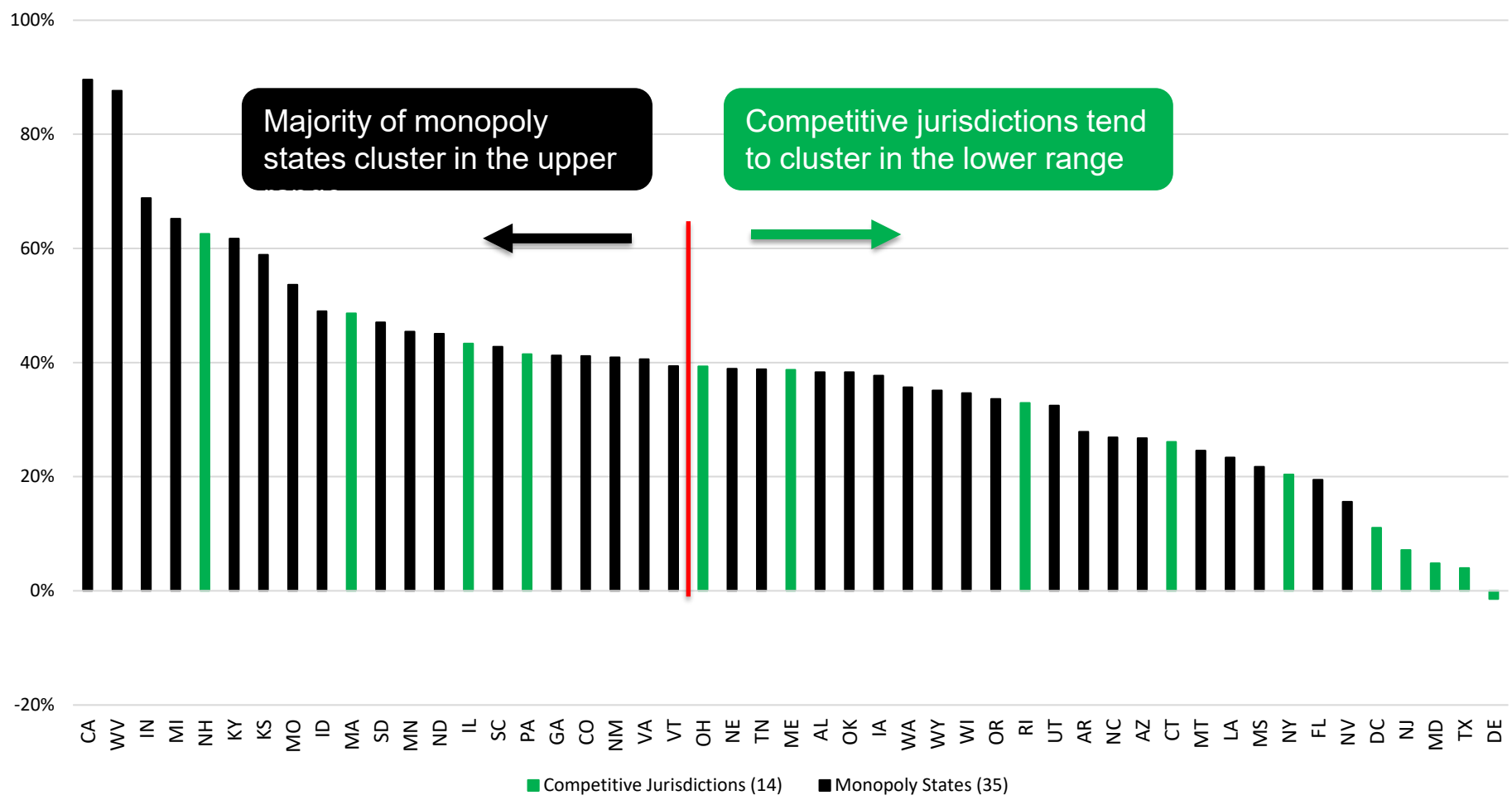
DIVERGENT DIRECTIONS AND STATE RANKINGS

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. Instead, 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 competitive states/jurisdictions reside on the right-hand side of this chart. While only two states have seen a net decline in price since 2008, both of these states (Texas and Delaware) have competitive markets.

Residential Price % Price Change by State, 2008-2022

Figure 7 of The Great Divergence

Source: EIA-861M



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DIVERGENT DIRECTIONS AND STATE RANKINGS

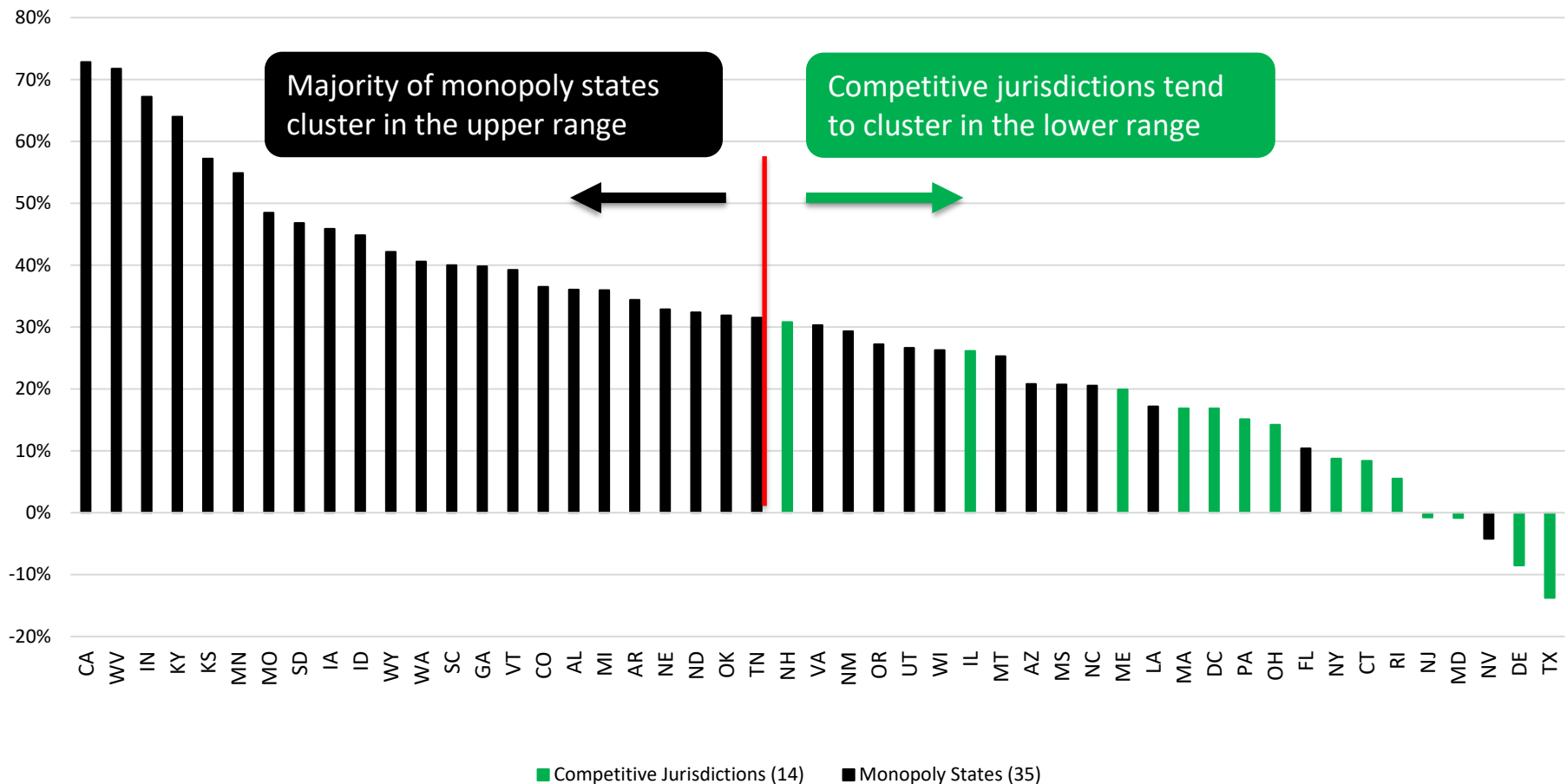
The large difference in percentage changes in weighted average prices between the monopoly and competitive choice jurisdictions is not the result of a few large states skewing the results in one direction or the other. Instead, when the states are ranked by percentage change in each state’s average residential 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, 2008-2022

Figure 8 of The Great Divergence

Source: EIA-861M



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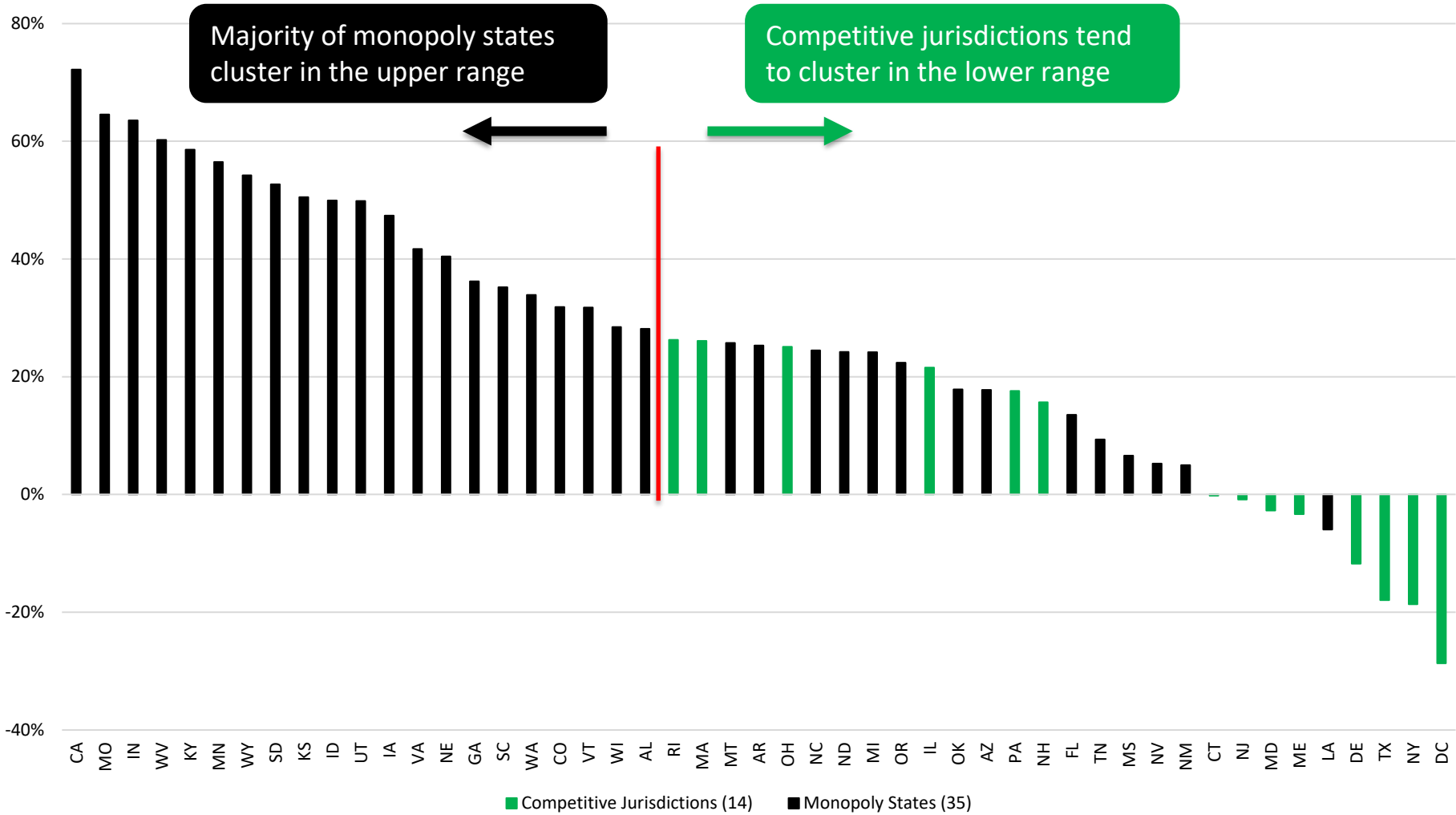
DIVERGENT DIRECTIONS AND STATE RANKINGS

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. Instead, when the states are ranked by percentage change 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, 2008-2022

Figure 9 of The Great Divergence

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. Instead, when the states are ranked by percentage change in each state's average industrial 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.

Generation Percentages by Energy Type in the 14 Competitive States/Jurisdictions, 1997-2021

Figure 10 of *The Great Divergence*

Source: EIA-861M

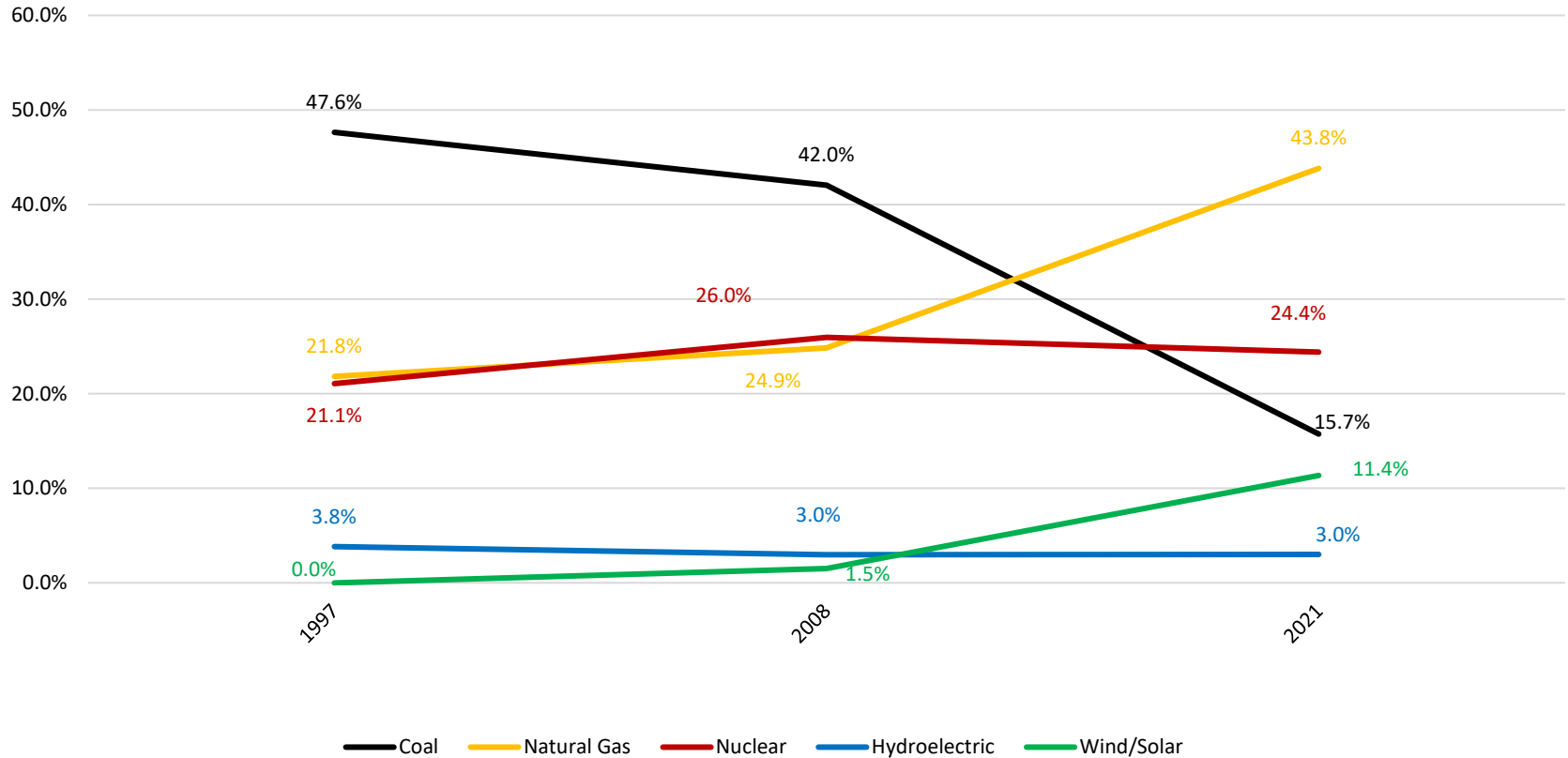


Figure 10 (page 8) of The Great Divergence and Figure 23 (page 28) of Restructuring Recharged - Updated through CY2021

Figures 10 and 11 of The Great Divergence show the 2008-2021 comparative changes in the proportion of electricity production from the major sources in the 14 competitive states/jurisdictions and the 35 monopoly states, respectively. Since the commencement of the customer choice era and the shale gas revolution, natural gas has been on track to overtake coal regarding installed capacity and production. This has been true in the 14 competitive states/jurisdictions and the 35 monopoly states.

Figure 10 of TGD shows that in the 14 competitive states/jurisdictions during the beginning of the competitive era in 1997, coal accounted for 47.6% of generation, while natural gas plants constituted 21.8%. By year-end 2021, coal's share of generation output had dropped to 15.7% while generation from natural gas had risen to 43.8% (again, in the 14 competitive states/jurisdictions). Figure 10 of TGD also indicates that 2012 was the first year natural gas-fired electric power production exceeded coal production in the 14 competitive states/jurisdictions. This flip has occurred in the 35 monopoly states, too, but not until 2018 (as shown in Figure 11 of TGD).

Figure 10 of TGD shows that electricity customers in the 14 competitive states/jurisdictions have experienced the benefits of low gas prices more promptly and effectively than those in the 35 monopoly states. Despite coal reclaiming its top position in 2013 and 2014, natural gas generation production has exceeded coal generation production since 2015 in the 14 competitive states/jurisdictions. Meanwhile, in the 35 monopoly states, Figure 11 of TGD shows that natural gas generation production didn't exceed coal generation production until 2018. There are several reasons:

- A greater share of generating capacity in monopoly states was accounted for by coal than in the customer choice states/jurisdictions where gas and nuclear are more prominent.
- In competitive states/jurisdictions, consumers pay only for the economic value of existing generating capacity, with prices set in open and transparent competitive auctions.
- In the 14 competitive states/jurisdictions, 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 require consumers to pay for capacity irrespective of economic efficiency.

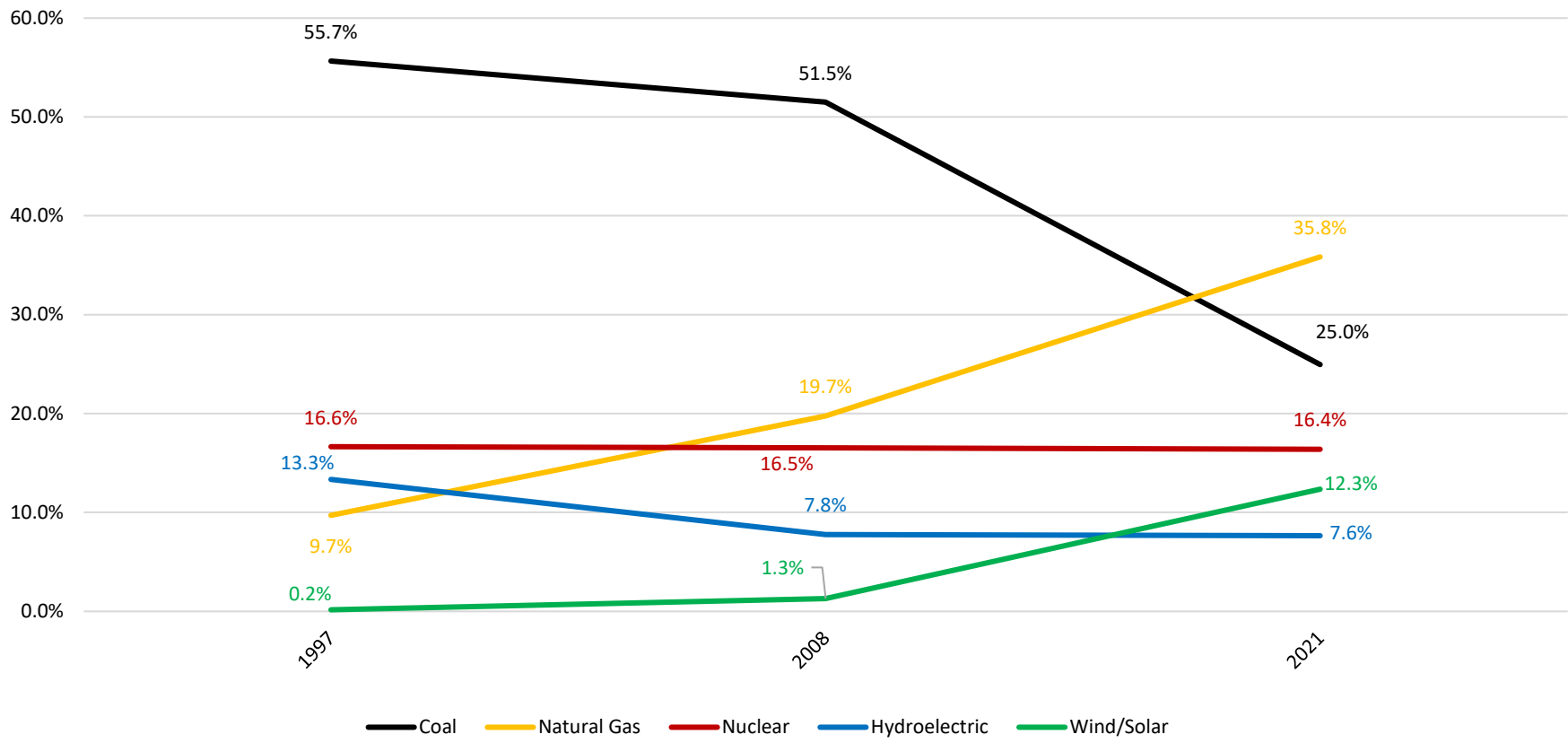
This data also supports that financial markets are willing to make billions of dollars in equity investment and low-cost debt available for non-utility generation, contradicting the claim that only a regulated monopoly could attract capital at favorable rates. Additionally, primarily commercial and industrial customers (which account for more than 60% of consumption) can adjust contract terms and prices to take advantage of market developments in the 14 competitive states/jurisdictions.

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. Figures 10 and 11 of TGD show that wind and solar generation production is roughly equivalent in the 14 competitive states/jurisdictions (11.4%) and the 35 monopoly states (12.3%), respectively. However, it is interesting to observe that if California were excluded from the monopoly state wind/solar totals, the monopoly state wind/solar generation percentage would drop from 12.3% down to 11.3%.

Generation Percentages by Energy Type in the 35 Monopoly States, 1997-2021

Figure 11 of The Great Divergence

Source: EIA-861M



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Figure 11 (page 8) of The Great Divergence and Figure 24 (page 28) of Restructuring Recharged - Updated through CY2021

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Figure 11 of TGD shows that in the 35 monopoly states during the beginning of the competitive era in 1997, coal accounted for **55.7%** of generation, while natural gas plants constituted **9.7%**. By year-end 2021, coal's share of generation output had dropped to **25%** while generation from natural gas had risen to **35.8%** (again, in the 35 monopoly states). Figure 11 of TGD also indicates that 2018 was the first year natural gas-fired electric power production exceeded coal production in monopoly states. This flip has occurred in 2012 in the 14 competitive states/jurisdictions, as shown in Figure 10 of TGD.

Figure 10 of TGD shows that electricity customers in the 14 competitive states/jurisdictions have experienced the benefits of low gas prices more promptly and effectively than those in the 35 monopoly states. Despite coal reclaiming its top position in 2013 and 2014, natural gas generation production has exceeded coal generation production since 2015 in the 14 competitive states/jurisdictions. Meanwhile, in the 35 monopoly states, Figure 11 of TGD shows that natural gas generation production didn't exceed coal generation production until 2018. There are several reasons:

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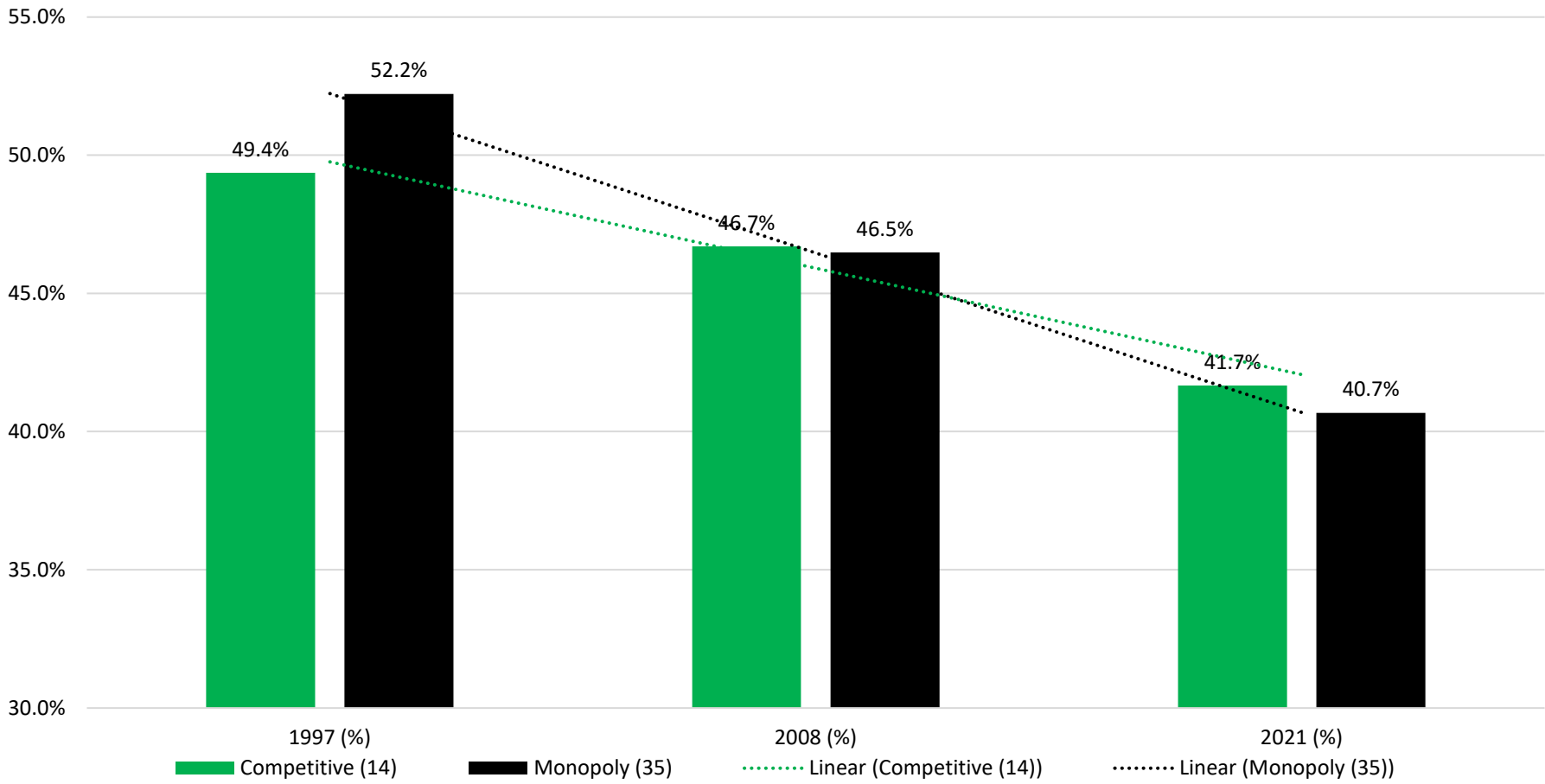
This data also supports that financial markets are willing to make billions of dollars in equity investment and low-cost debt available for non-utility generation, contradicting the claim that only a regulated monopoly could attract capital at favorable rates. Additionally, primarily commercial and industrial customers (which account for more than 60% of consumption), customers have the flexibility to adjust contract terms and prices to take advantage of market developments in the 14 competitive states/jurisdictions.

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. Figures 10 and 11 of TGD show that wind and solar generation production is roughly equivalent in the 14 competitive states/jurisdictions (11.4%) and the 35 monopoly states (12.3%), respectively. However, it is interesting to observe that if California were excluded from the monopoly state wind/solar totals, the monopoly state wind/solar generation percentage would drop from 12.3% down to 11.3%.

Change in Capacity Factor, 1997, 2008 & 2021 (Generation Output/Potential Output)

Figure 12 of The Great Divergence

Source: EIA-860, EIA-923



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Figure 12 (page 8) of The Great Divergence and Figure 19 (page 22) of Restructuring Recharged – Updated through CY2021

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 35 monopoly states than in the 14 competitive states/jurisdictions, as shown in this figure (note the increased slope of the black dotted line compared to the green dotted line).

The Capacity Factor in the 35 monopoly states declined from 52.2% in 1997 to 40.7% in 2021 (the most recent year for which EIA data are available). That is more than a one-fifth decrease compared to the much more modest decline in Capacity Factor in the 14 competitive states/jurisdictions from 49.4% in 1997 to 41.7% in 2020, a proportional reduction of about one-seventh. Plant utilization, as measured by the Capacity Factor, has declined in far greater proportion in the group of monopoly states than in competitive states/jurisdictions due in great part to the shift from coal toward gas. However, as long as rate-based generation assets are considered “used and useful” —even if underutilized— full cost recovery is accorded in the Monopoly States, with consumers absorbing those costs; in contrast, underutilized or uneconomic generation assets in the 14 competitive states/jurisdictions will tend to experience adverse financial consequences under the same conditions. The difference is that investors, not customers, bear the risk of changing market fundamentals.