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Power Sector Demand Destruction Forces Hard Choices

Key Points:

- While the long-term impacts of COVID-19 on the power sector remain unclear, belt tightening is a must and the industry has an opportunity now to adapt.
- Traditional prescriptive remedies for suppliers – namely, accelerated load recovery, higher wholesale power prices, or rate relief – might not emerge fast enough, suggesting tougher choices are ahead.
- Recent load recovery appears short-lived, with demand unlikely to revisit pre-pandemic levels until 2022 at the earliest. The longer this road to recovery, the greater the likelihood of structural accommodation.
- Coal generation has borne most of these demand losses, possibly fast-forwarding what would have otherwise been a decade-long cycle of energy transition in the U.S. dispatch stack.
- In the very near-term, utilities are likely to delay reinvestment, rely on capital markets to meet liquidity needs, and stretch the cost to rate payers over several decades.

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Introduction

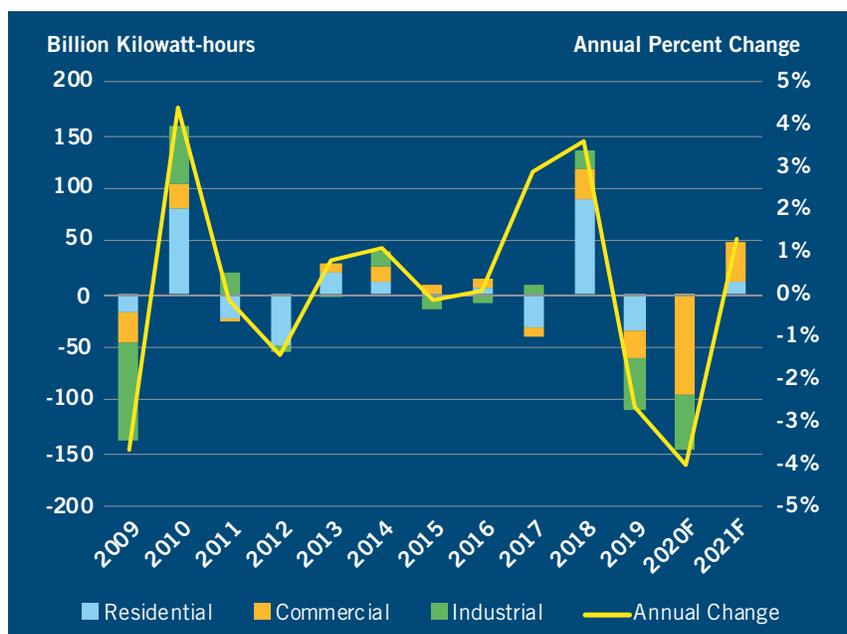
Energy market participants are used to volatility in supply, but not pronounced, fast-moving changes in demand. How should the industry respond to the demand destruction associated with COVID-19? Even now, after some local governments lifted stay-at-home orders, it's clear that demand recovery to pre-pandemic levels will be slow. The longer this road to recovery, the more likely it is that structural change is inevitable.

Demand: Recent Load Recovery Likely Short-lived

The U.S. consumed roughly 4.3% less electricity during the second quarter of 2020 compared to the same time in 2019. While it isn't common, a sharp decline like this could occur during a shoulder (low demand) period with extreme swings in the weather. However, what interests us most is how COVID-19 restrictions have altered electricity consumption patterns and continue to threaten demand, which is leaving the industry vulnerable to operational and financial risk.

As hundreds of millions of Americans have adapted their lifestyles under the pandemic, they're shifting energy supply and demand curves too – not only altering demand among consuming sectors but also changing the time of day

EXHIBIT 1: U.S. Electricity Demand by Sector, Annual Change



Source: U.S. EIA Short-Term Energy Outlook, July 7, 2020

and possibly the location where it is consumed. While the patchwork of policy responses makes insights on regional trends challenging, the population density and probable concentration of “essential” industries in rural locations suggest unusual load departures, with more urban areas possibly seeing a higher concentration of demand losses. Yet, at the moment, load composition appears to play a more important role for risk at the service territory level.

These changes in demand reverberate through the supply chain, impacting not only generation but also transmission and the last mile delivery to end consumers.

The recent stay-at-home orders especially affected commercial businesses such as restaurants and hotels, as most were either forced to close or radically scale back (*Exhibit 1*). Electricity demand from these consumers fell 12.7% year-over-year (YoY) during April through June, according to U.S. Energy Information Administration’s (EIA) latest estimates. Although somewhat shielded from the restrictions, industrial demand fared only slightly better, shrinking 8% as a consequence of the slowing economy. Partially offsetting these declines were the 9.6% residential gains as more people remained at home and temperatures were below normal in April and above normal in June.

Most recently demand has begun to improve, with the 7.4% losses in May halved to just 3% in June. But this improvement occurred under exceedingly favorable conditions. The gradual lift in COVID-19 restrictions generally enabled business to resume while a vast number of people continued working at home – the best case scenario for electricity producers. Under normal conditions, some amount of residential space cooling/heating demand would likely shift over to the commercial side of the ledger as workers migrated back to offices.

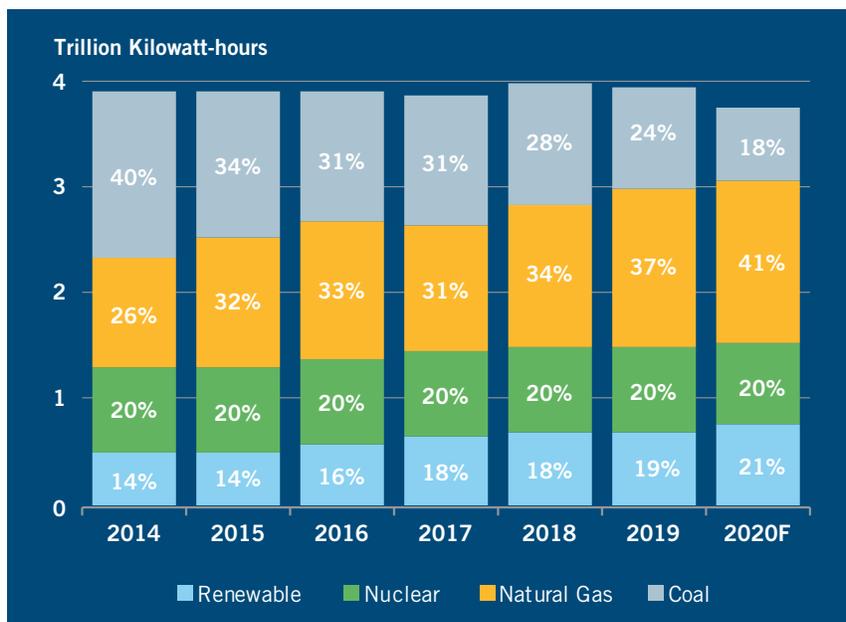
Warm weather was another reason for June’s robust showing. Indeed, summertime air conditioning demand will likely mask the underlying weakness caused

by the pandemic. As temperatures begin to moderate, loads will once again noticeably soften.

Nevertheless, as conditions improved over the past month, EIA has revised its guidance, now anticipating U.S. electricity consumption to decline by just 4% in 2020 compared to its previous forecast closer to 6%. Yet, with more than half of the re-opened states now pausing or considering new restrictions to limit recent spikes in new coronavirus infections, the resulting electricity demand destruction will not soon reverse. Emphasizing this point, EIA continues to guide toward a slow convalescence, seeing only a 1% improvement in U.S. electricity demand in 2021.

Still, even flat demand might prove elusive. Thus far, residential demand has staved off the worst of the losses, but there are worrisome signs that this sector will also begin to weaken – as federal jobless benefits lapse, service disconnections won’t be offset by new service requests. In particular, the prospect that one-in-five Americans has already been dislocated by the pandemic suggests an additional drag on total demand is coming before year-end. This population shift is reminiscent of the migration that occurred during the Great Recession, when a large number of Americans were forced to move back

EXHIBIT 2: U.S. Electricity Generation by Fuel



Source: U.S. EIA Short-Term Energy Outlook, July 7, 2020

home, resulting in a sharp fall in household formation that cut the new residential electric customer growth rate by two-thirds for three years following the crisis.

Supply: COVID Accelerates Energy Transition in the Dispatch Stack

The generation losses over the past quarter, associated with the contraction in demand, has largely been borne by U.S. coal-fired power plants (*Exhibit 2*). According to EIA and up-to-date independent system operator data, this segment of supply has fallen a record -31.4% YoY. While coal generation's market share has been trending down since 2010, the pandemic has intensified fuel competition and accelerated this development – possibly fast-forwarding what would have otherwise been a decade-long cycle of energy transition in the U.S. dispatch stack.

In recent years, natural gas prices have been low enough to enable the economic dispatch of natural gas-fired generators to satisfy electricity demand for longer periods of the day. Yet, with the cost of natural gas for generators falling to the lowest levels in 25 years over the past quarter, coal generation has been dramatically priced

out of the electricity market. Adjusting for the differences in fuel efficiencies, combined-cycle natural gas units operated at roughly a \$6.75/MWhr advantage to coal units last quarter.

Where does the industry go from here, and what are the implications for generation owners? EIA expects that a strong recovery in gas prices will enable coal units to recapture market share. On this point, we disagree.

Excess natural gas inventory alone would prevent this level of price recovery. However, what most concerns us is the relative weakness in demand that has triggered the excess stockpiling. As domestic oil production begins to recover, the prospect for additional volumes of

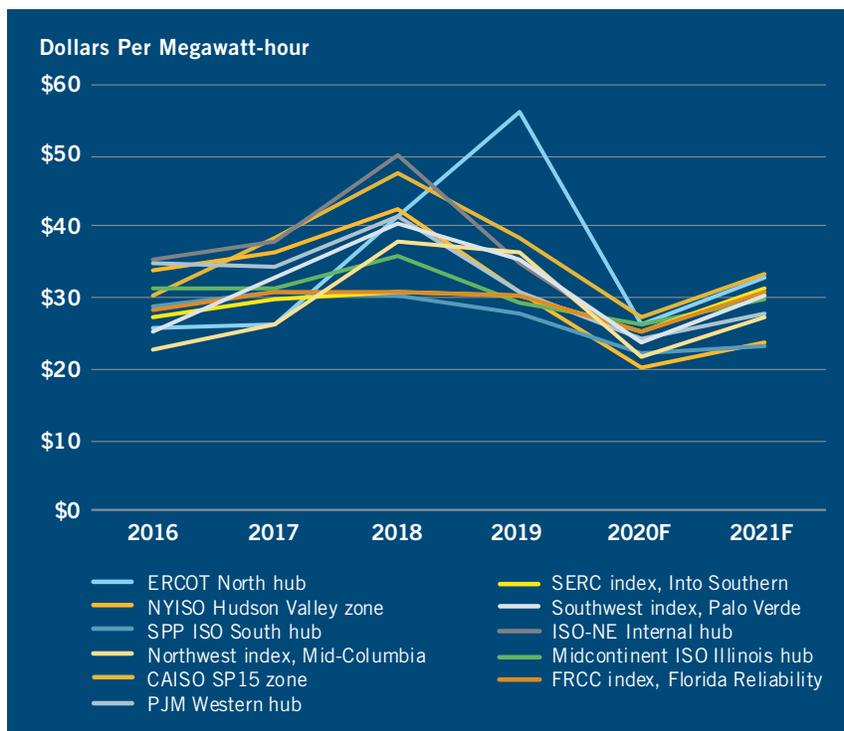
low-cost associated gas add slack to U.S. gas balances. With fuel competition unlikely to abate, there is little chance to realign the dispatch stack. We might look back on 2020 and refer to the current transition as “fuel-switched” instead of the transient term “fuel switching” now used.

Price: Load Contraction and Fuel Competition Will Continue to Pressure U.S. Power Prices

Price has always played an important role as a barometer of market tightness. Based on recent trend in the data, it appears that supply/demand balances will remain relatively loose – curbing a more immediate route for suppliers to recoup COVID-related losses.

During the second quarter, U.S. wholesale electricity prices declined by an average \$6/MWhr YoY, as falling demand and lower natural gas prices pressured many regions to multi-year lows. The largest price concessions occurred in the eastern half of the country, with load weighing down price more heavily in the Northeast and low natural gas prices pressuring electricity prices in the Southeast.

EXHIBIT 3: Wholesale Market Average Electricity Prices



Source: U.S. EIA Short-Term Energy Outlook, July 7, 2020

Of the 11 wholesale trading locations tracked regularly by the EIA, only two (ERCOT North Hub and MISO Illinois hub) achieved average prices in excess of \$20/MWhr in the second quarter. Why these locations fared better than the rest might relate to the timing and limited scope of COVID restrictions as well as the mix of demand (composition of residential, commercial, and industrial consumers). But weather also played an important role. Recent demand spikes in Texas are directly tied to hot weather, giving the state a seasonal premium. On balance, however, the past quarter's price performance is the exact reverse of the dynamic that played out in 2019, when only two western locations (Mid-C and Palo Verde) remained below \$20/MWhr – largely the result of mild weather and ample nuclear and hydro generation availability.

Looking ahead at the balance of the year, we expect U.S. electricity prices to remain near their 5-year lows, as fuel prices remain discounted and loads depressed. We expect annual declines ranging from 10% in the Midwest to 50% in Texas, and U.S. average in 2020 coming in roughly 25% lower than 2019 (*Exhibit 3*).

Conclusion

More than four months into the pandemic, its financial impact on the electricity sector has yet to fully register. Already there is some indication that electricity suppliers nationwide have potential net income losses of up to 30% YoY for the past quarter – depending upon the severity of local COVID-19 outbreaks, composition of load, and ability of consumers to pay electricity bills.

Such concerns were top of mind during Federal Energy Regulation Commission's recent technical conference, convened to measure COVID-19's impact on the energy industry. Speakers noted that electricity suppliers could survive this kind of loss, but the money has to come from somewhere. The industry is searching inward for resolution as state regulators have rebuffed some of the initial attempts to recoup these losses directly from ratepayers and the federal government is unlikely to provide a bailout.

The Brattle Group has advised that securitization, rather than cost recovery, might be the best option for shoring up near-term liquidity needs. The firm notes that issuing bonds would provide utilities with the money they need up front, while avoiding rate shock by

stretching the cost to rate payers over several decades. Yet, this option is hardly a panacea given the credit implications of disintermediation.

All told, it appears at the moment that traditional prescriptive relief for suppliers – namely, accelerated load recovery, higher wholesale power prices, or rate relief – might not be available this time around. This suggests to us that the power sector will likely need to make tough choices to navigate the pandemic.

The available avenues for upstream adaptation start with belt tightening. Namely, shifting or deferring capital spending and reassessing underutilized assets are in order. More to the point, the prospect of a sustained drag on demand might fast-track coal unit retirements as owners simply find the operating overhead too costly. ■

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