Utilities in the "Perfect Storm"

ADI Weekly Webinar Series

May 14, 2020

ADI Analytics
OIL & GAS • ENERGY • CHEMICALS
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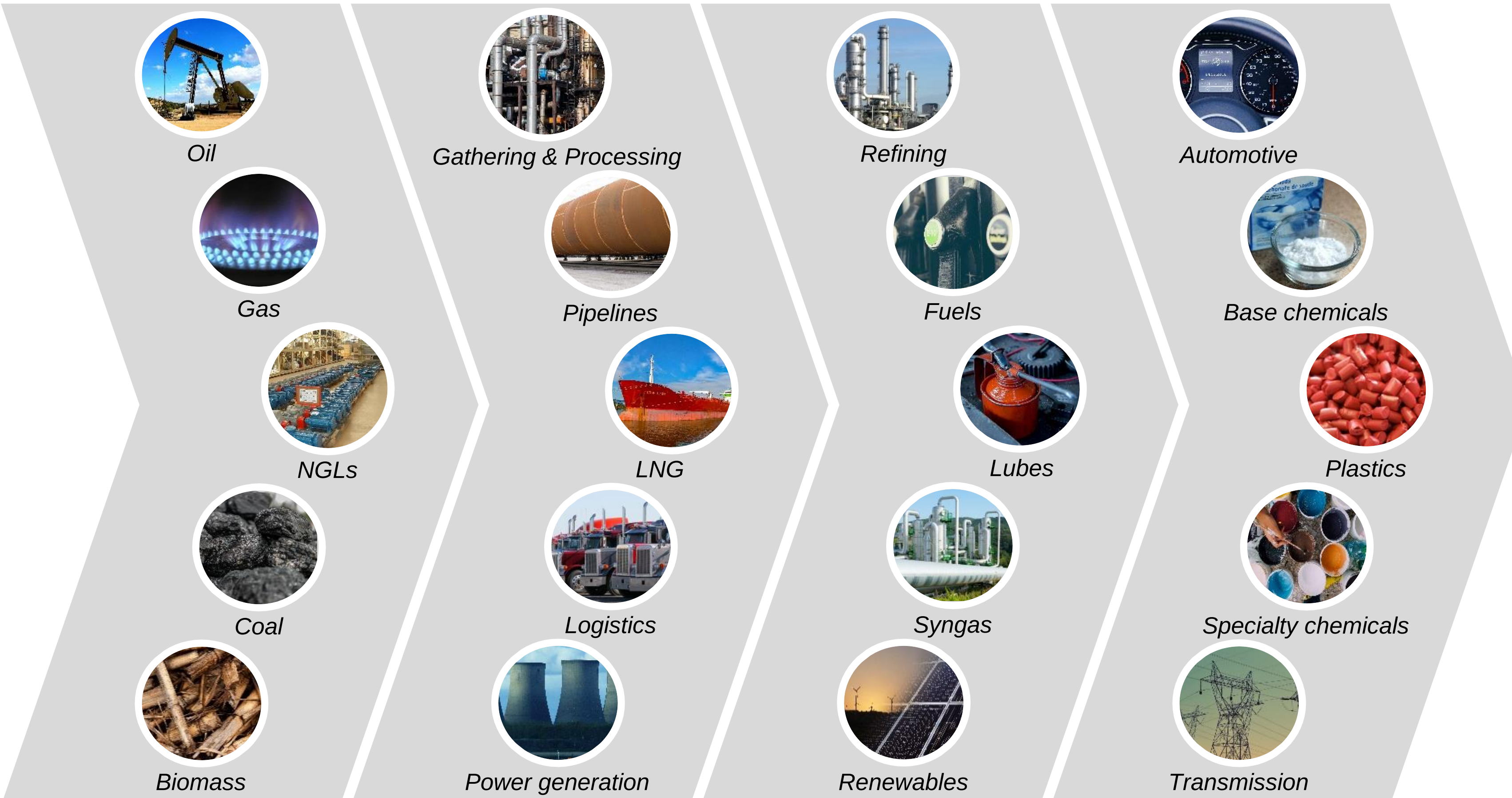
ADI Analytics is a consulting firm serving oil and gas, energy, and chemical companies with passion, expertise, and rigor

Operating companies | *Service providers* | *Equipment manufacturers* | *Investors* | *Traders* | *Government*



Markets | *Operations* | *Technology* | *Finance* | *Organization* | *Policy*

Fortune 500 and mid-sized companies, start-ups, investors, and governments have hired us to shape decisions globally

How are we helping clients navigate the oil price crash and COVID-19 impacts?

Target the right customers and market segments

Reorient offerings and value props for recovery phase

Benchmark and quickly cut costs to cope with the crisis

Support M&A strategy and due diligence

Reshape go-to-market plans with voice-of-customer research

Refine pricing and sales strategies via market-backed insights

Revisit customer and channel engagement models for recovery

Revisit R&D, innovation, and product devpt. portfolios

Our recent experience in utilities and power markets

1. **Environmental Systems OEM**

   Forecasted market size and growth outlook for environmental systems in coal- and natural-gas fired power plants

2. **Diversified Industrial**

   Assessed utilities' share of market growth for a leading gas and steam turbine OEM

3. **Early-Stage Start-Up**

   Developed sales and marketing strategy for an early-stage battery technology start-up serving remote power markets

4. **Natural Gas Producers**

   Evaluated growth outlook for gas-fired power in midwestern markets for a leading gas producer

5. **U.S. Department of Energy**

   Benchmarked costs and economics of various renewable energy technologies

Oil & gas in a "perfect storm" from price crash and COVID-19

Oil & Gas in the Perfect Storm

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March 2020

We could have borrowed from Gabriel Garcia Marquez's *Love in the Time of Cholera* to title this piece, "Oil & Gas in the Time of Coronavirus". But that would only recognize the coronavirus disease of 2019 (COVID-19) and its impact on oil demand and ignore the black swan in the concurrent supply shock posed by Russia's refusal to hyphenate itself with OPEC again in cutting oil production. Broader uncertainties from an election year in the U.S. and growing investor clamor for shale profitability and energy transition initiatives add further, even if now less urgent, uncertainties.

We at ADI instead see the "perfect storm" as a better metaphor for the collective impact from the Russian-Saudi spat and COVID-19. Metaphors and clever writing aside, how should we think about this perfect storm? We try to address this here with our firm's research and consulting work.

Why are we here?

Saudi announced plans to raise production from 9.7 million bpd in March to 12.3 million bpd starting April 2020.

The oil markets – led by Saudi and OPEC through the majors and the shale operators to the traders and analysts – were blindsided by Russia's refusal to cut oil production with OPEC in an year when oil demand growth was expected to decline independent of the coronavirus.

Russia made some noise about OPEC cheating on its commitments but abandoned its three-year alliance with OPEC primarily to harm U.S. shale supply, which has been, as such, constrained by rising investor disenchantment. Larger geopolitical reasons such as U.S. sanctions on Rosneft and Nord Stream 2 also motivated Russia which is today in a stronger economic position relative to the 2014 oil price crash.

Surveying the damage

Unwilling to lose market share and also force Russia to return to negotiations, Saudi announced plans to raise production from 9.7

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Locking Both the World and Oil Down

Oil & Gas in the Perfect Storm: Part 2 – Locking Both the World and Oil Down

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April 2020

Read our first "perfect storm" article to see how oil prices evolve going forward.

A third of the world's population is today living in countries that have enforced moderate to severe lockdowns on virtually all human activity to mitigate the spread of COVID-19. In all, 27 countries have imposed lockdowns with nearly all of them opting for severe measures. Only three countries – Israel, Ireland, and the Czech Republic – have chosen to impose moderate lockdowns. In addition, there are a handful of countries where lockdowns have not been mandated but citizens are being cautious and have voluntarily imposed limits on their activities.

How much oil demand is impacted?

ADI estimates that the countries under lockdown consume almost two-thirds of global oil demand

These lockdowns are collectively impacting oil demand in an unprecedented fashion. ADI estimates that the 27 countries that are under moderate to severe lockdown measures consume ~61 million barrels of oil daily. Including other countries such as Brazil where gangs are enforcing lockdowns, almost two-thirds of global oil demand -- ~66 million bpd – is under threat of significant impact from COVID-19 (see Exhibit 1).

Exhibit 1. Global oil demand impacted by COVID-19, million bpd.

Countries under lockdown

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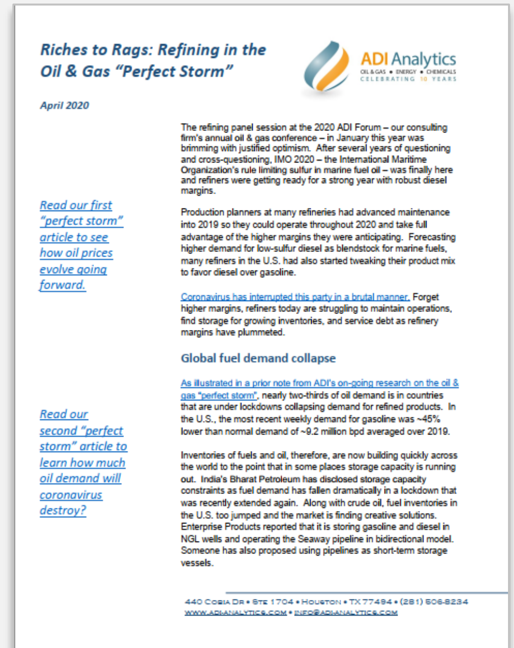
Riches to Rags: Downstream O&G in Perfect Storm



Riches to Rags: Refining in the Oil & Gas "Perfect Storm"

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April 2020

The refining panel session at the 2020 ADI Forum – our consulting firm's annual oil & gas conference – in January this year was brimming with justified optimism. After several years of questioning and cross-questioning, IMO 2020 – the International Maritime Organization's rule limiting sulfur in marine fuel oil – was finally here and refiners were getting ready for a strong year with robust diesel margins.

Read our first "perfect storm" article to see how oil prices evolve going forward.

Production planners at many refineries had advanced maintenance into 2019 so they could operate throughout 2020 and take full advantage of the higher margins they were anticipating. Forecasting higher demand for low-sulfur diesel as blendstock for marine fuels, many refiners in the U.S. had also started tweaking their product mix to favor diesel over gasoline.

Coronavirus has interrupted this party in a brutal manner. Forget higher margins, refiners today are struggling to maintain operations, find storage for growing inventories, and service debt as refinery margins have plummeted.

Global fuel demand collapse

Read our second "perfect storm" article to learn how much oil demand will coronavirus destroy?

As illustrated in a prior note from ADI's on-going research on the oil & gas "perfect storm", nearly two-thirds of oil demand is in countries that are under lockdowns collapsing demand for refined products. In the U.S., the most recent weekly demand for gasoline was ~45% lower than normal demand of ~9.2 million bpd averaged over 2019.

Inventories of fuels and oil, therefore, are now building quickly across the world to the point that in some places storage capacity is running out. India's Bharat Petroleum has disclosed storage capacity constraints as fuel demand has fallen dramatically in a lockdown that was recently extended again. Along with crude oil, fuel inventories in the U.S. too jumped and the market is finding creative solutions. Enterprise Products reported that it is storing gasoline and diesel in NGL wells and operating the Seaway pipeline in bidirectional model. Someone has also proposed using pipelines as short-term storage vessels.

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ADI "Perfect Storm" Research Service			
1	Oil & gas price updates and outlook	**7**	Deep dive into fuels and refining
2	COVID-19-related oil demand impact / recovery	**8**	Deep dive into natural gas and LNG markets
3	Deep dive into upstream incl. shale, conv., offshore	**9**	Deep dive into petrochemicals
4	Oil supply-demand balance and inventories	**10**	Oil & gas capital spend (CAPEX) outlook
5	Oil price forecasts, scenarios, and outlook	**11**	Oil & gas operating spend (OPEX) forecast
6	Deep dive into midstream and NGLs	**12**	Investor implications and opportunities

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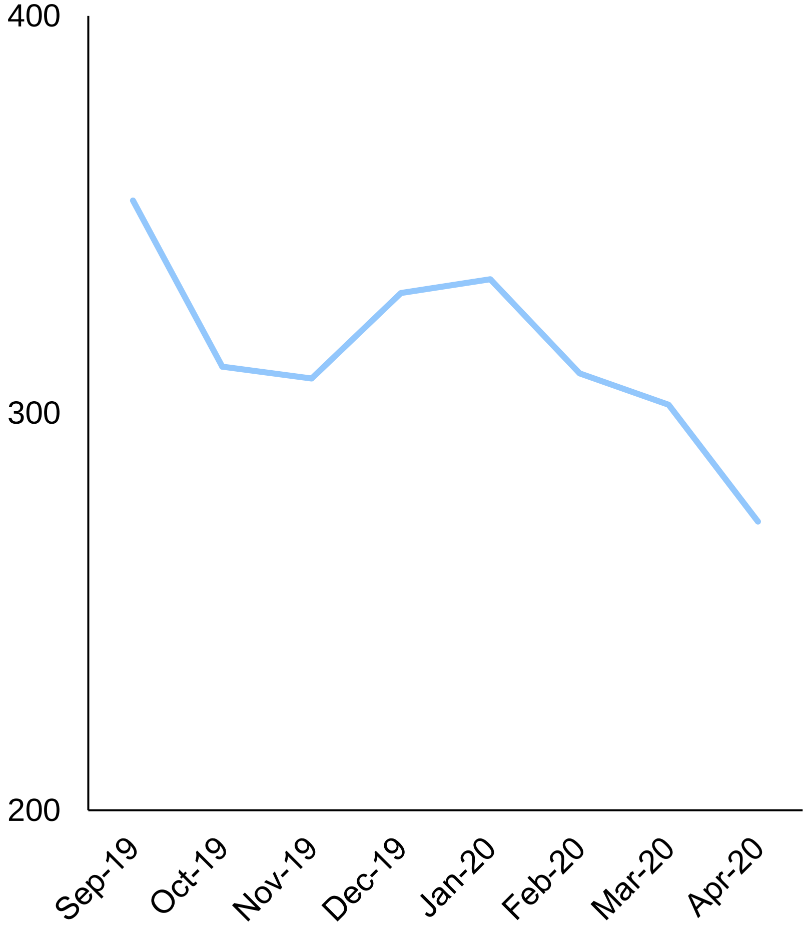
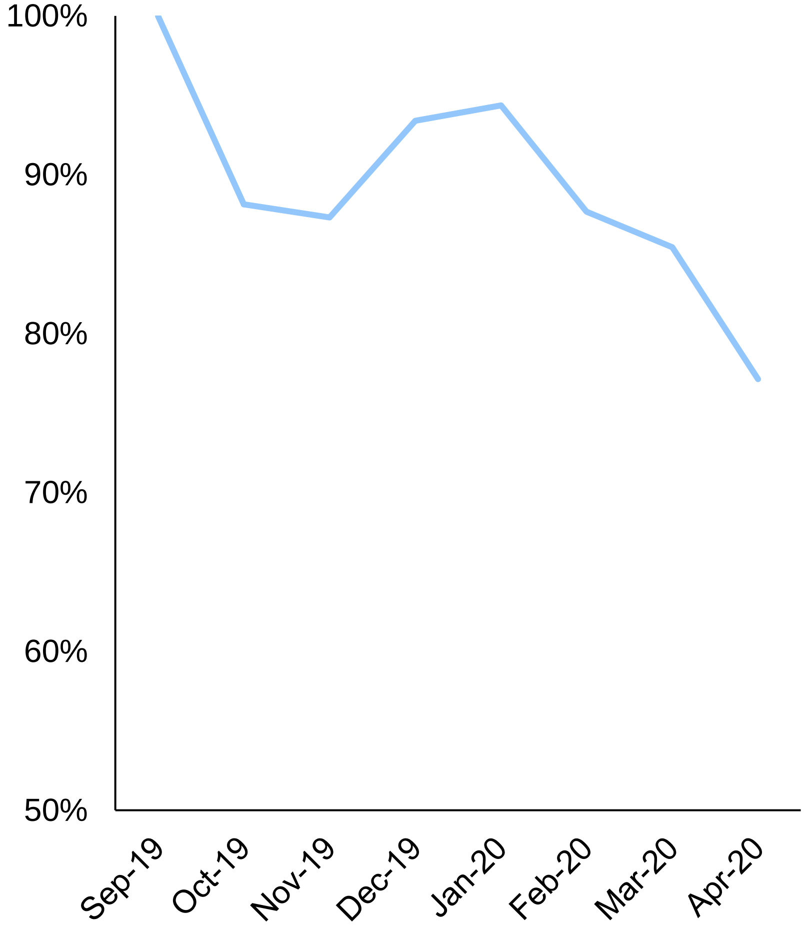
Electricity demand has fallen significantly and was ~5% lower yoy in April this year, and 25% lower than six months ago

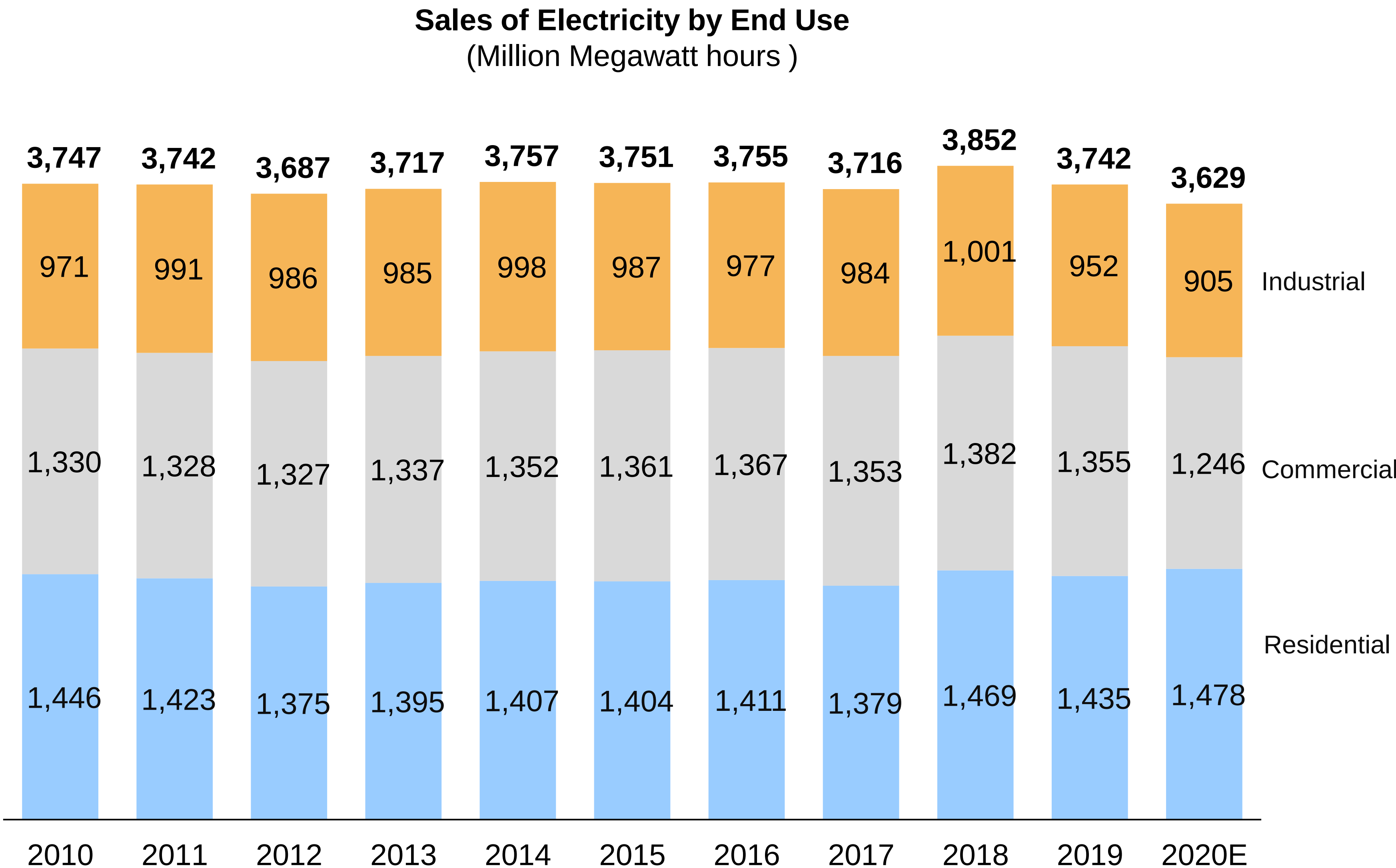
Total Monthly U.S. Demand
(Terawatt Hours)



Percent Relative to September 2019
(Percent)



We expect total electricity demand to decline by 3% in 2020, largely driven by declines in commercial and industrial uses



Utilities with a significant presence in residential markets are well positioned ...

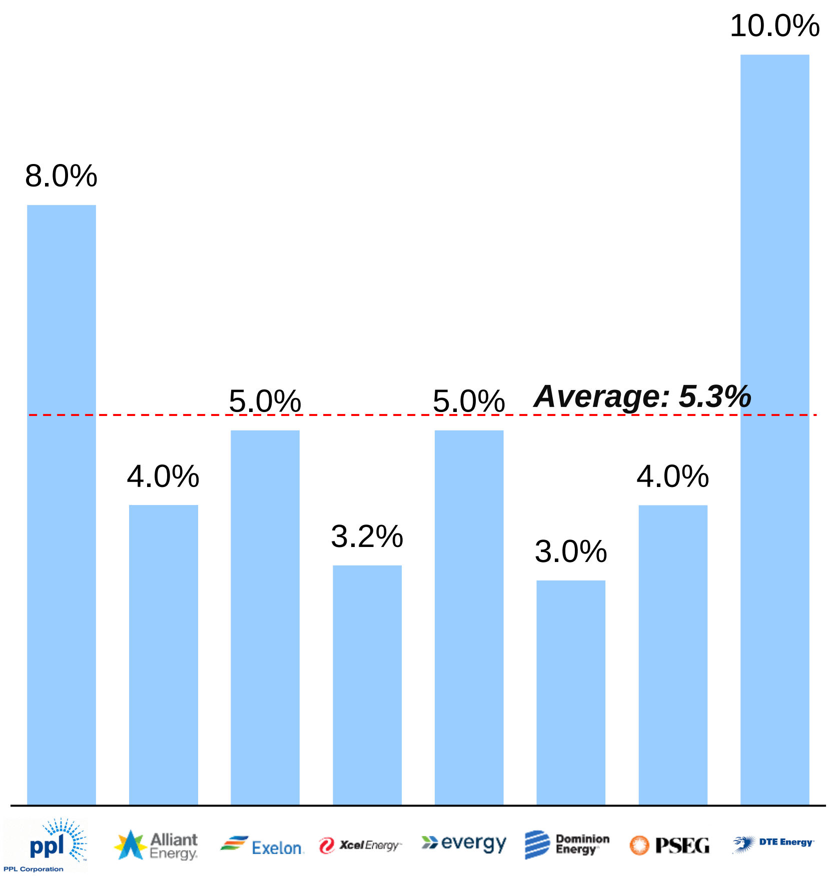
PPL Corporation	▪ Lower commercial and industrial volumes with a **strong increase in residential that partially offset other declines** ▪ Have various fixed and demand charges in our tariffs that help, e.g., in Pennsylvania, ~40% of margins come from transmission under FERC rate
Alliant Energy	▪ Residential accounts for 50% of retail electric margins ▪ C&I sales declined 13% in April ▪ Forecasting 5% lower overall retail sales in 2020
Exelon	▪ Expects commercial and industrial load to decline 9 - 15% and … ▪ **… Residential load to increase 4 – 7%**
Xcel Energy	▪ **Residential sales increased 3.2% …** ▪ … While commercial and industrial sales declined 13.7% ▪ Total retail electric sales declined 9.6% on a weather adjusted basis

… While utilities with primarily commercial and industrial customers will struggle through near- and medium-term

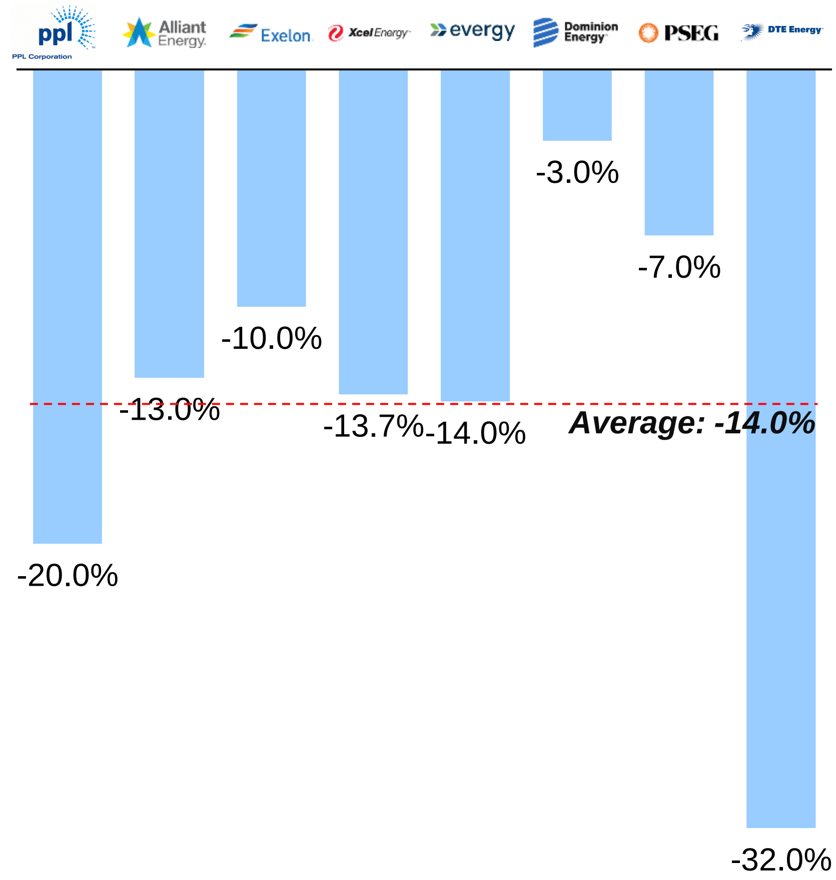
evergy	▪ Planning for a wide range of possible outcomes but are well positioned … ▪ … With strong liquidity and optionality on the O&M side limiting financial impact ▪ Residential sales increased ~5% while C&I declined 13% and 15% respectively
Dominion Energy	▪ Saw a weather-normalized commercial load decrease by only 3% … ▪ … Mainly due to data center demand growth and limited exposure to industrial ▪ Government and military demand -- 16% of revenue -- increased 4% y-o-y
PSEG	▪ PSE&G service territory experienced a weather-normalized decline of 5-7%
DTE Energy	▪ Residential load has increased by 10 – 11% in April ▪ Commercial load declined 16 – 18% and industrial load declined 40 – 46% ▪ Michigan represents a large portion of demand

On average, utilities are seeing a 5% increase in residential sales, and a 14% decline in commercial and industrial

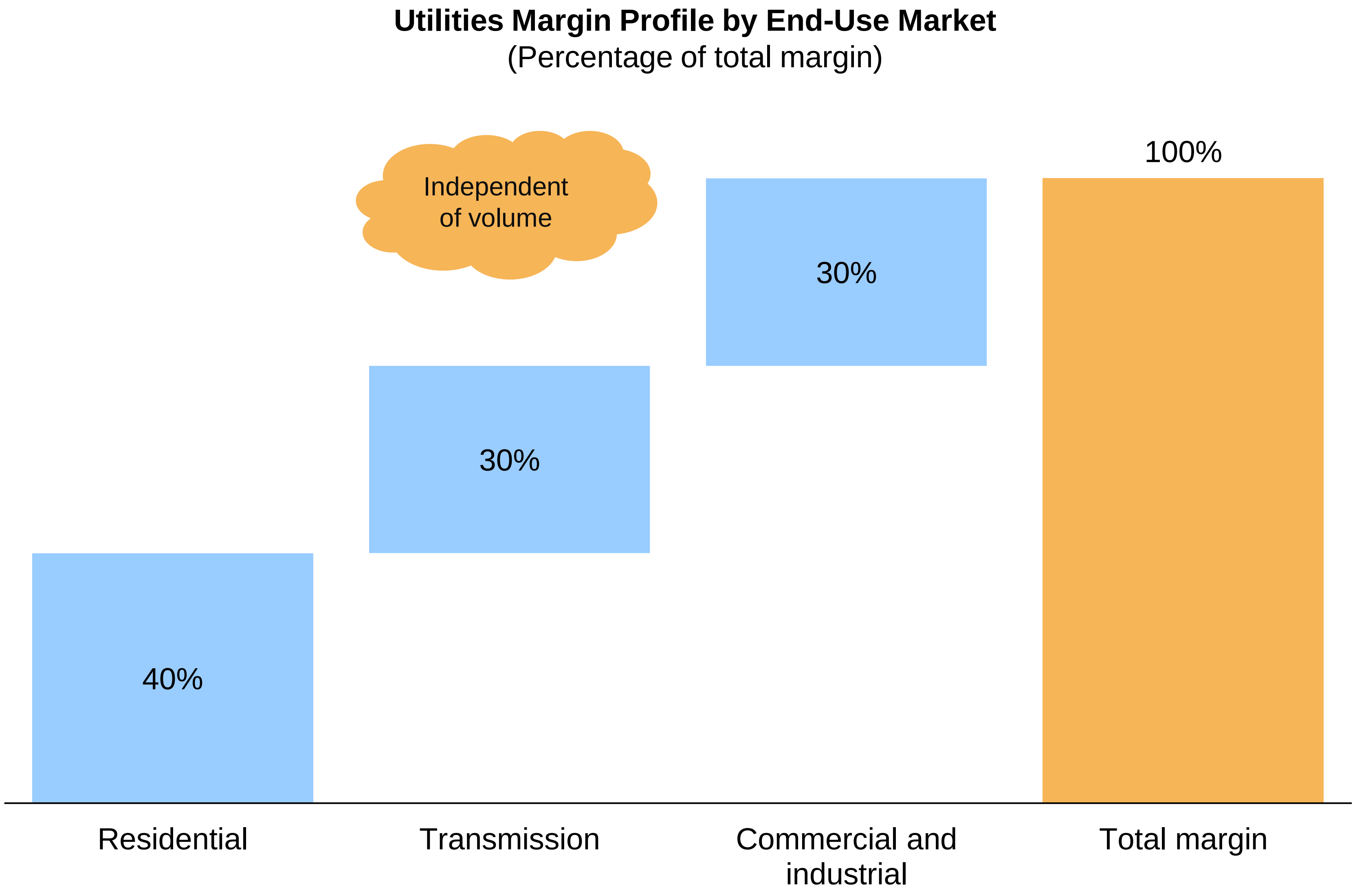
Residential Sales Change
(Percent change)



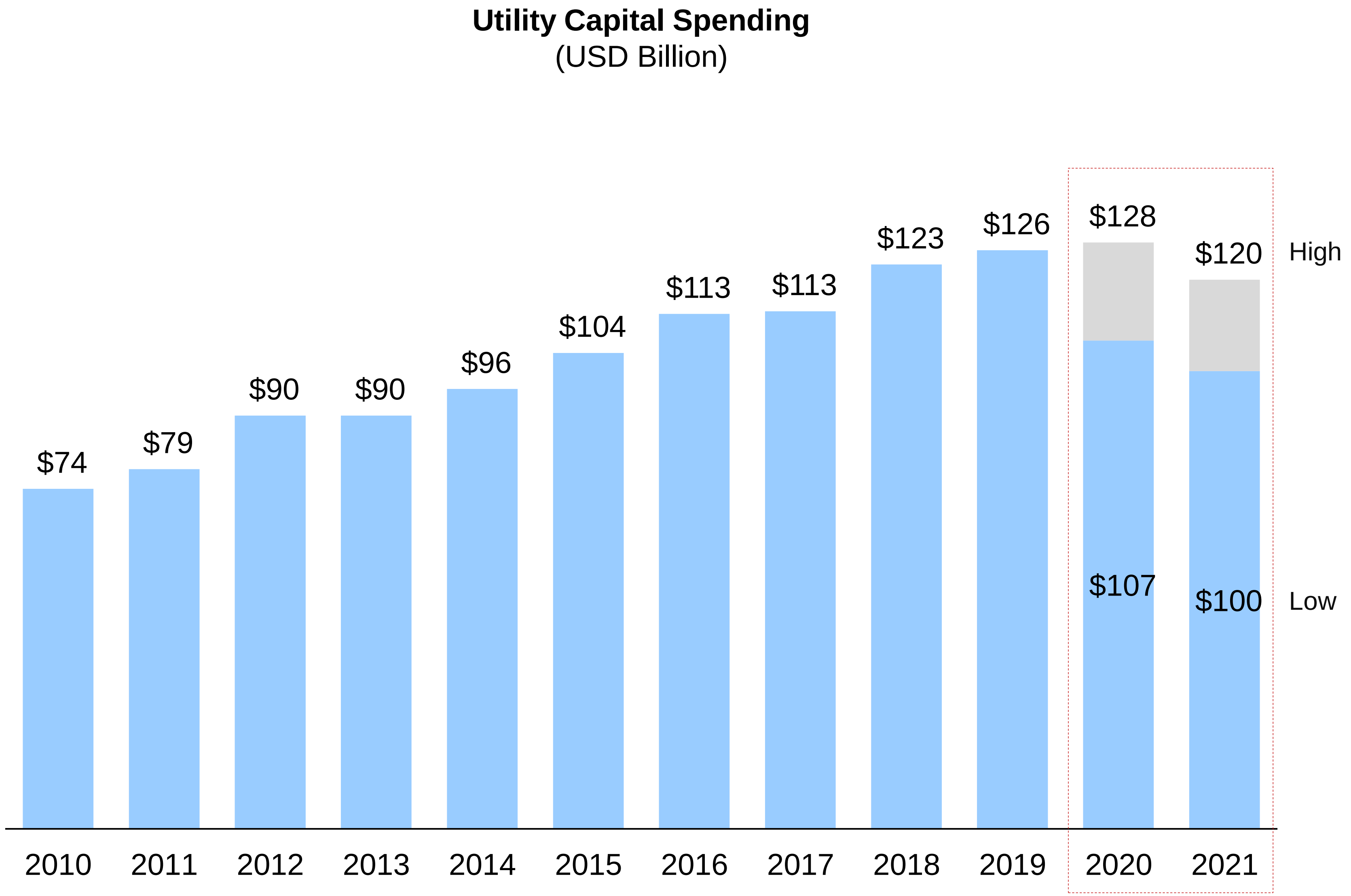
Commercial and Industrial Sales Change
(Percent change)



Residential sales have higher margins than commercial and industrial volume limiting the impact of the latter's decline



Utility capital spending is expected to decline through 2021 after growing steadily over the past decade



Strategic implications

1. Load declines will impact sales and revenues …

2. … Coupled with a difficult economic environment will impact revenues further through payment delays

3. Utilities are hoping they can pass this on to consumers but that is a risky approach

4. Limited capex changes but social distancing may impact this …

5. … Along with impacts on O&M programs

6. … Positioning the companies for sustained challenges well into 2021

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Key questions in utilities and power markets

1. What operational disruptions are utilities facing?
2. As demand falls, will we see lower electricity prices?
3. How is coal-fired power faring in the current crisis?
4. What is happening with natural gas in the utilities landscape?
5. What impact will COVID have on the energy transition?

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ADI webinar series on oil & gas in the “perfect storm”

April 17	Midstream (pipelines, gas processing, NGLs)
April 23	Downstream (refining and fuels)
April 30	Natural gas and LNG
May 7	Petrochemicals and plastics
May 14	Power and utilities

May 21	Industrials & OEMs - How to prepare for the downturn?
May 28	Capital projects and engineering, procurement, and construction (EPC) in the oil & gas downturn
June 04	What will the new "normal" look like in oil and gas?
June 11	Renewable and low-carbon power markets in a post-COVID world
June 18	Oilfield services: Survival outlook in the oil & gas downturn

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