January 13, 2021

Chair Todd Hiett
Vice Chair Bob Anthony
Commissioner Dana Murphy
Oklahoma Corporation Commission
2101 N. Lincoln Blvd.
Oklahoma City, OK 73105

RE: Cause CD No. 202002102, Statewide proration formula for unallocated gas wells for the period of April 2021 through March 2022.

Dear Chairman Hiett, Vice-Chairman Anthony and Commissioner Murphy:

On behalf of the American Petroleum Institute (API),[1] I appreciate the opportunity to submit these comments as part of the January 15 Oklahoma Corporation Commission (Commission) technical conference concerning the statewide proration formula for unallocated gas wells for the period April 2021 through March 2022.

Natural gas markets and pricing have evolved since the Commission lowered the prorationing market demand factor to 50%, pushed for greater industry-wide compliance, and thereby made the regulation more stringent beginning on April 1, 2020.

Specifically, U.S. natural gas supply has fallen faster than demand, and prices have risen since April 1. At the same time, Oklahoma's gas production fell by nearly three times the national rate and twice that of Texas, and in fourth quarter of 2020 the state's relative prices surpassed historical norms based on pipeline transportation costs. The latter is a potential indicator of local natural gas undersupply in Oklahoma.

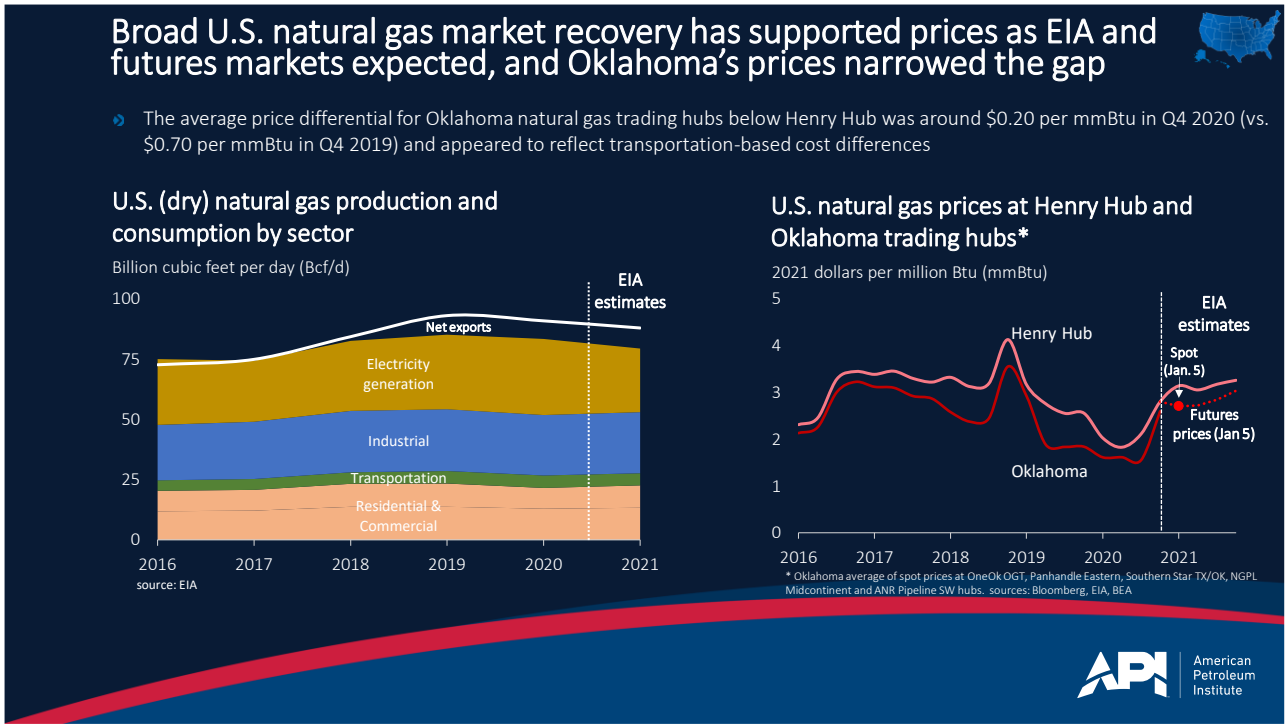
Although prorationing is one among many factors that has affected the state's natural gas market, its changes have been unique to Oklahoma as other major gas-producing states fared better over the last three quarters of 2020. In fact, Oklahoma's losses in natural gas production and drilling activity stood out as the worst among major gas-producing states since April 1, 2020. Furthermore, there were **zero** active gas-directed rigs operating in the state as of January 8, 2021, and future production will continue to decline without new drilling.

Based on API's analysis of the Commission's data, Oklahoma's prorationing appears to have contributed materially to lowering the state's natural gas production. As API and several of its members operating in Oklahoma have emphasized throughout these proceedings, prorationing works against the most productive and economic wells, reduces well economics, and undermines incentives for drilling, investment and trust in consistency of Oklahoma's natural gas regulation.

Accordingly, API strongly recommends that the Commission implement a market demand factor of 100% within its proration formula. The main points of API's latest analysis for Oklahoma follow, beginning with the national backdrop and then delving into new well-specific analysis of the Commission's data.

[1] API is the national trade association representing all aspects of America's oil and natural gas industry. Our 600 corporate members - from large integrated oil and gas companies to small independent companies - comprise all segments of the industry. API member companies are producers, refiners, suppliers, retailers, pipeline operators and marine transporters as well as service and supply companies providing much of the nation's energy.

- **The domestic natural gas market shrank in 2020 and is estimated to do so again in 2021 with average Henry Hub spot prices near $3.00 per mmBtu in EIA's view.**



Broader natural gas market conditions provide context for Oklahoma and have generally progressed along the lines suggested in API's previous testimony before the Commission.[2]

In 2020, U.S. natural gas consumption fell by 2.0% y/y (1.7 billion cubic feet per day, bcf/d), mainly due to decreased residential and commercial heating needs and industrial demand through the 2020 COVID-19 recession.[3] Consequently, natural gas spot prices at Henry Hub averaged $2.03 mmBtu, their lowest in more than two decades. The low prices motivated less production, which fell for the first time since 2016 despite record-high natural gas demand for electricity generation and exports.[4]

For 2021, the U.S. Energy Information Administration (EIA) expects total dry gas production to decrease by 3.3% y/y (3.0 bcf/d), due to historically low drilling activity and less gas associated with U.S. oil production. In their view, this could correspond with spot prices at Henry Hub averaging over $3.00 per mmBtu in 2021 for the first time since 2018. However, these prices could back out 5.2 bcf/d of natural gas from electricity generation and more than offset a potential recovery in other sectors' consumption as well as continued U.S. natural gas export growth. Consequently, EIA sees smaller recent and prospective natural gas markets into which Oklahoma and other producing states must compete. This reinforces the importance for Oklahoma to foster productivity and therefore its economic competitiveness.

[2] See API comments in OCC RE: Cause CD No. 202001262, Statewide proration formula for unallocated gas wells for the period October 2020 through March 2021. Aug. 18, 2020.

[3] EIA Short-term energy outlook, December 2020, see https://www.eia.gov/outlooks/steo/

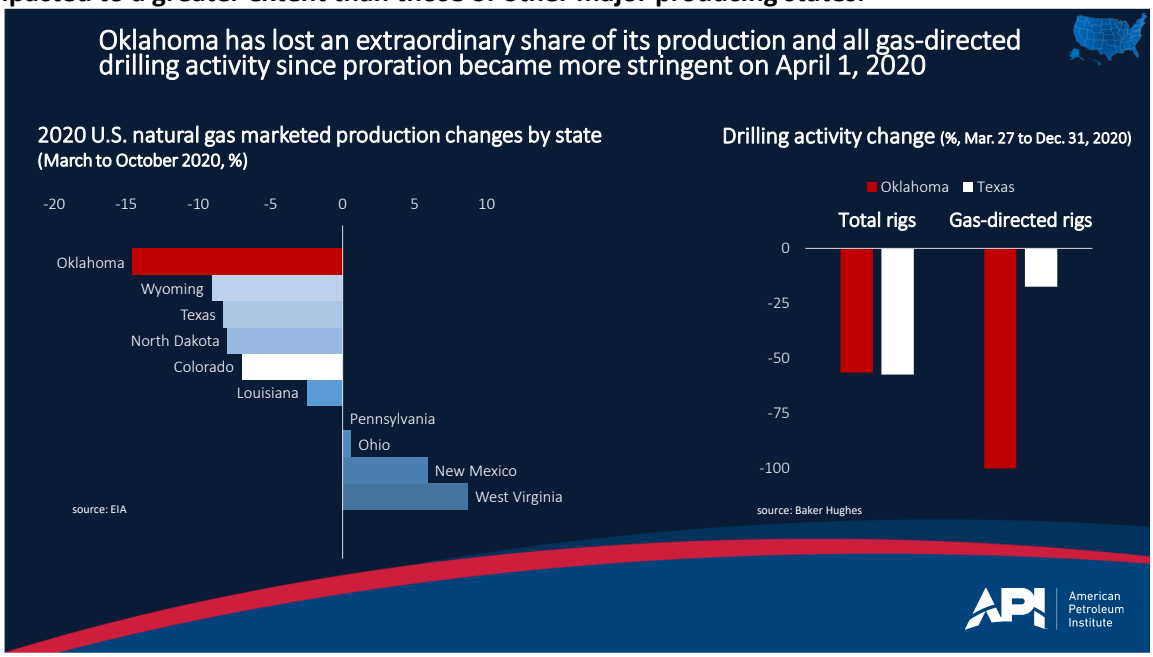
[4] EIA, see https://www.eia.gov/electricity/data.php

- **In 2020, Oklahoma's natural gas spot prices reflected those at Henry Hub to a greater extent than they have historically.**

In 2020, Oklahoma's natural gas prices became relatively stronger as the average price differential among Oklahoma gas trading hubs fell to a discount of $0.33 per mmBtu in 2020 from $0.61 per mmBtu in 2019.[5] In the fourth quarter of 2020 and so far in 2021, Oklahoma's average discount below Henry Hub fell to around $0.20 per mmBtu – on par with hubs across north Texas.[6] By comparison, the historical (2010 to 2019) average discount for natural gas at Oklahoma gas hubs was $0.27 per mmBtu below Henry Hub and $0.13 per mmBtu below north Texas, adjusted for price inflation.

Consequently, interpreting the historical difference between natural gas prices in Oklahoma and north Texas hubs as an indicator of incremental pipeline transportation costs to Gulf Coast markets, Oklahoma's relative natural gas prices in late 2020 and early 2021 appeared to strengthen more than transportation-based costs might suggest. If these relative prices are sustained, it would suggest that Oklahoma consumers may pay relatively more than they historically have, and as the state's production has fallen (and there is less gas available to export other states) Oklahoma's interstate natural gas deliveries could come under additional pressure. Next, consider how Oklahoma's production and drilling activity have recently changed.

- **Since April 1, 2020, Oklahoma's natural gas production and drilling activity have been adversely impacted to a greater extent than those of other major producing states.**



Oklahoma's natural gas production and drilling activity have fallen precipitously. Oklahoma's natural gas marketed production fell to 7.3 billion cubic feet per day (bcf/d) in October 2020 from 8.9 bcf/d in March, a 21.2% drop and loss of 1.3 percentage points of U.S. market share in production according to EIA data.[7] In fact, Oklahoma's share of U.S. production fell by more between March and October 2020 than it did over

[5] Oklahoma average of spot prices at the OneOK OGT, Panhandle Eastern, Southern Star TX/OK, NGPL Midcontinent and ANR Pipeline SW hubs sourced from Bloomberg.

[6] North Texas average of spot prices at the NGPL TX-OK East, NorTex Tolar, TETCO ETX hubs sourced from Bloomberg. Consumer price inflation adjustments based on U.S. Bureau of Economic Analysis and API Team calculations.

[7] EIA natural gas marketed production, see https://www.eia.gov/dnav/ng/ng_prod_sum_a_EPG0_VGM_mmcf_m.htm

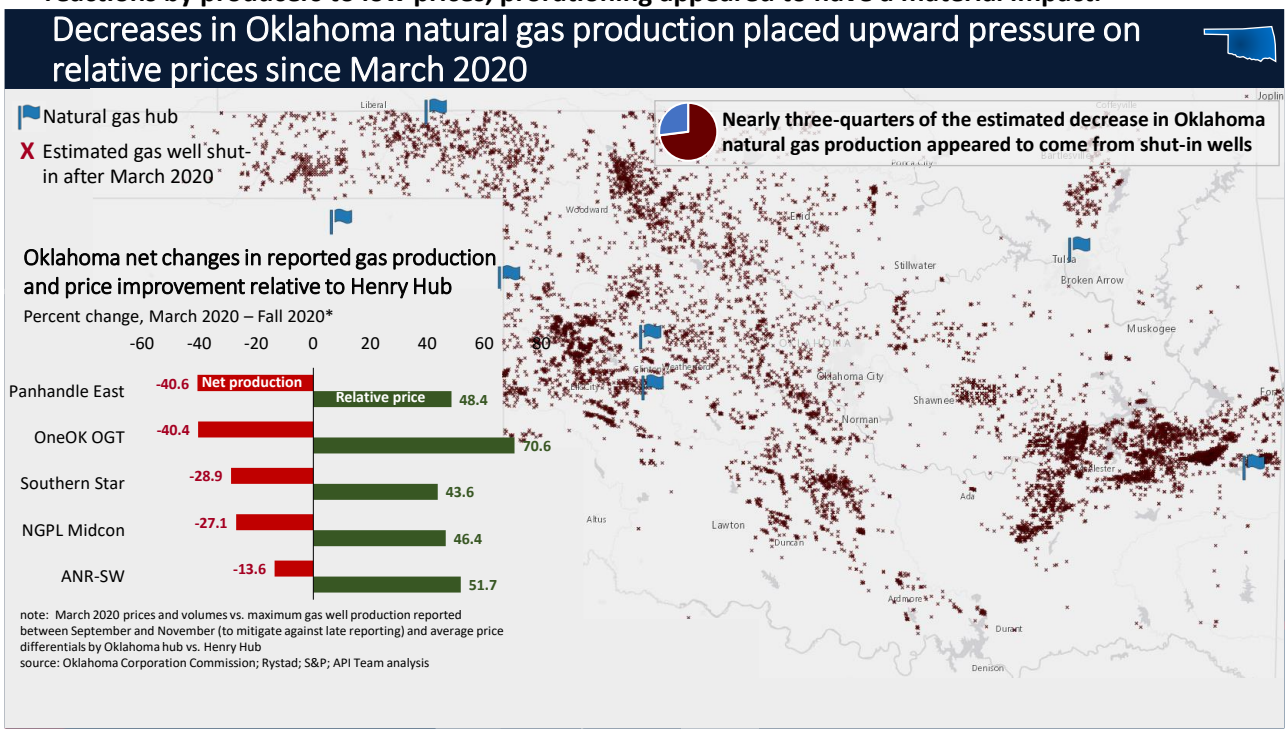
any similar period on EIA record since 1973.

Furthermore, Oklahoma's natural gas production fell by the greatest percentage among major producing states, while some – Ohio (+0.6%), New Mexico (+5.9%) and West Virginia (+8.7%) – increased their output over the period. As suggested in API's testimony before the Commission last year,[8] other producing states have continued to improve their competitiveness and filled the gap as Oklahoma produced disproportionately less.

Additionally, drilling activity offers a perspective on current investment and future production in Oklahoma, and it too has fallen disproportionately. At first blush, one might look at total drilling activity side-by-side for Oklahoma and Texas and posit that both states lost roughly 60% of their activity from April 1 through year-end 2020. However, for gas-directed drilling activity, Texas saw a 17.4% decrease in rigs while Oklahoma was left with no rigs running as of December 31, 2020, per Baker Hughes.[9]

These metrics should concern Oklahoma. The state's severance tax collections fell by $121.3 million or 54% y/y in the third quarter of 2020 (latest).[10] Although the decline reflected a combination of lower prices and prorationed volumes, the recent idling of Oklahoma gas drilling does not bode well for the state's natural gas industry, where its productivity depends in part on continuous improvement and learning-by-doing.

- **Although Oklahoma's recent natural gas production decreases primarily reflected market-based reactions by producers to low prices, prorationing appeared to have a material impact.**



API has analyzed the Commission's gas production master database, which provides 2020 monthly volumes

[8] Written comments and verbal testimony on February 28, 2020.

[9] Baker Hughes North America Rig Count, see https://rigcount.bakerhughes.com/na-rig-count.

[10] U.S. Census Bureau, 2020 quarterly summary of state & local tax revenues, available at https://www.census.gov/data/tables/2020/econ/qtax/historical.html

as recently as November.[11] The reported wells represent a subset (roughly half) of total gas production in the state and present a measure that API has attempted to aggregate and compare with price changes by natural gas trading hub.

Let's begin with the change in production. Among wells for which production declined after March 2020, nearly three-quarters of the total reported production decrease by last fall came from wells that were shut-in at some point between April and September.[12] Since shutting-in a well is a last resort (and appears different in the data from curtailment one might expect for compliance with prorationing), this suggests that market conditions (rather than prorationing) have been the primary driver of production decreases. This is consistent with a finding in API's August 2020 testimony, which relied on an external set of well-specific data.[13]

Next, consider reported natural gas wells that produced continually through 2020 but decreased to a much greater extent than a natural decline in production would suggest.[14] Reported wells in this category, which are an approximation of aggregate curtailments due to more stringent prorationing, represented 5.2% of the gross decrease and 11.1% of the net decrease in reported well production. Although it was not the largest driver of change, curtailments due to prorationing have been material to many large gas wells and producers.

- **As Oklahoma's natural gas production fell, relative natural gas spot prices strengthened broadly – and generally to a larger extent among the hubs with the largest net decreases in production.**

API mapped the database of Oklahoma natural gas wells to their nearest corresponding natural gas trading hub and compared the net volume changes with the average price difference from that at Henry Hub. Consistent with economic fundamentals, lower net production appeared to correspond with upward pressure on prices.

For example, for reported wells in proximity to the OneOK OGT gas trading hub, net production decreased by 40.4% since March, and the hub's average price differential strengthened by 70.6% to a discount below Henry Hub of $0.16 per mmBtu in September through November from one of $0.55 per mmBtu in March. By comparison, production decreased by smaller percentages at the ANR-SW, Southern Star and NGPL Midcontinent hubs, and their relative prices strengthened to lesser extents.

Since the Commission's reported gas well production data encompass about half of total gas production in the state, this exercise (showing an expected inverse relationship between supply and prices) reinforces confidence that the data may be reliable and representative.

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[11] Oklahoma Corporation Commission, Gas Production Master data through November 2020, available at https://oklahoma.gov/occ/divisions/oil-gas/oil-gas-data.html. Comparisons based on 26,530 wells with reported production as of March 2020. Beginning with wells for which production volumes were reported in March 2020 – that is, a starting point just prior to application of the lowered calculated absolute open flow rate parameter and the Commission's efforts to improve the enforcement of existing proration regulations –compared with the highest production volume observed between September and November, which are the last three months of data to account for wells for which reporting may be delayed. Next, wells were coded as to whether they were shut-in if production decreased by more than 70% in any single month since March. More than 9,700 wells appeared to have been shut in for one or more months since March.

[12] The OCC Gas Production Master data contained reported gas volumes for 26,530 wells in March, 22,724 wells in September, 20,198 wells in October, and 7,701 wells in November.

[13] API comments in OCC RE: Cause CD No. 202001262, Statewide proration formula for unallocated gas wells for the period October 2020 through March 2021. Aug. 18, 2020.

[14] Considering wells with reported production over 1,000 mcf/d between March and their highest production between September through November, the median and mean reported production decreases by well were 12% and 13%, respectively, with a standard deviation of 13%. The total production from reported wells that exhibited declines at extraordinary rates – that is, one or more standard deviations above the mean – amounted to 5.2% of total reported decreases over the period.

To summarize, Oklahoma's natural gas industry was harmed disproportionately more than that of other states during the 2020 COVID-19 recession. Since the Commission lowered the prorationing market demand factor to 50%, pushed for greater industry-wide compliance, and thereby made the regulation more stringent beginning on April 1, 2020, Oklahoma's natural gas prices rebounded in absolute and relative terms – so much so that beginning in the fourth quarter of 2020 it overshot historical norms based on pipeline transportation costs. If the Commission previously believed that Oklahoma gas was oversupplied, recent relative prices suggests that it may have become undersupplied.

While the natural gas industry shares common ground on most policy issues, the gas market impact of the 2020 COVID-19 recession magnified divisions among producers, and throughout these proceedings the Commission has endeavored to strike a balance through prorationing. However, prorationing does so – as API and several of its members operating in Oklahoma have emphasized – mainly by hampering the most productive and economic wells, reducing well economics, and weakening the incentives for future drilling, investment and trust in consistency of Oklahoma's natural gas regulation.

Oklahoma now has zero gas-directed rigs drilling even as activity has increased in some other states, including parts of neighboring Texas. A lack of gas-directed drilling activity would appear to be a problem for Oklahoma, its natural gas industry and infrastructure investments, and local consumers who depend on having advantaged feedstocks.

API strongly recommends that the Commission implement a market demand factor of 100% within its proration formula to enable Oklahoma to compete more effectively. API appreciates the opportunity to provide this testimony and looks forward to contributing to the January 15 technical conference and February hearing. Should you have any additional questions, please contact me at (202) 682-8530.

Sincerely,

R. Dean Foreman

R. Dean Foreman, Ph.D.