April 8, 2020

Chairman Wayne Christian
Commissioner Ryan Sitton
Commissioner Christi Craddick
Railroad Commission of Texas
1701 North Congress Avenue
Austin, TX 78711

c/o Callie Farrer, Commission Secretary
RRCconference@rrc.texas.gov; Callie.Farrar@rrc.texas.gov

RE: Docket # OG-20-00003167 Motion for Commission-called hearing on the verified complaints of Pioneer Natural Resources U.S.A. Inc. and Parsley Energy Inc. to determine reasonable market demand for oil in the state of Texas
I DO WISH TO PROVIDE VERBAL TESTIMONY

Dear Chairman Christian and Commissioners Sitton and Craddick:

On behalf of the American Petroleum Institute (API),[1] I appreciate the opportunity to testify before the Railroad Commission of Texas (Commission) concerning requests by Pioneer Natural Resources U.S.A. Inc. and Parsley Energy Inc. to determine reasonable market demand for oil in the state of Texas.

API opposes the proposal offered in the complaint at issue in today's hearing. And, we strongly recommend the Commission not intervene by making the existing regulatory framework, designed to maximize production and protect correlative rights, more stringent to prorate oil production.

We remain confident that oil demand will be resilient once the effects of COVID-19 subside. Unfortunately, the Commission has been asked to prorate supply (and potentially negotiate internationally) at a time when there is maximum uncertainty in the current market and risks to market functions are the greatest.

As this testimony makes clear, there are several ways in which the market has responded flexibly and appropriately so far to unprecedented market conditions. Specifically, recent U.S. Department of Energy (DOE) action is likely to provide some near-term relief that mitigates one of the main concerns in the petitioners' requests in this proceeding.[2]

The testimony also shows how proration in Texas would mainly affect the most efficient and economic oil production; disproportionately harm producers in the Midland and Eagle Ford; and, potentially jeopardize long-term oil well productivity in the state.

Furthermore, a Texas proration appears unlikely to improve market conditions – and could become a precarious and slippery slope, as we have seen from other recent attempts to curtail production.

The United States needs Texas to be prepared to ramp back up quickly when COVID-19 subsides. The best pathway for the Commission would be to seek targeted policy solutions that help backstop the industry,

[1] API is the national trade association representing all aspects of America's oil and natural gas industry. Our 620 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.

[2] https://www.energy.gov/articles/us-department-energy-make-strategic-petroleum-reserve-storage-capacity-available-struggling

rather than impair its most productive contributors, and thereby send OPEC+ the message that U.S. production led by Texas can and will endure.

Q: What are the positions of the parties in this proceeding?

A: In their complaints to the Commission, Pioneer Natural Resources (Pioneer) and Parsley Energy Inc. (Parsley) requested the Commission exercise its statutory authority to prevent waste by prorating production and thereby attempt to raise prices.[3] However, in emphasizing low oil prices they expressed different objectives.

Pioneer concluded crude oil production "will quickly overrun available storage capacity and drive oil prices down to shut-in levels," and they urged Commission intervention to ensure shut-ins would occur in an "equitable and orderly manner."[4]

By contrast, Parsley asserted oil prices have already fallen below their shut-in levels but urged the Commission to "encourage our Federal government to coordinate with other governments to share the pain of market collapse, and to give it the means to negotiate a better deal for the United States and Texas."[5]

To these points, while we recognize that storage capacity is a growing concern, it is not inevitable that storage will become a binding constraint, as we will discuss in the next section.

Next, while oil prices falling below costs has been a rare and unfortunate occurrence, the Commission must recognize efficient price signals are key to good investments throughout the economy, and even the best-intentioned efforts at government intervention cannot replicate competitive market outcomes.

In this case, asking the U.S. and Texas to participate in production quotas and distort oil markets is beyond the Commission's present-day purview and essentially requires structural changes to the U.S. oil industry that harken to the perils of U.S. oil markets preceding and up to World War II, when proration policy was "employed in a bewildering variety of ways" and became a norm reliant on central government planning.[6]

Q: What is the current state of U.S. and global oil markets?

A: Petroleum demand in the United States and globally has recently decreased due to measures to stem coronavirus (COVID-19) transmission. Consequently, West Texas Intermediate (WTI) crude oil spot prices fell to $28.34 per barrel on April 3, compared with more than $61.00 per barrel at the beginning of 2020.

- By API estimates and U.S. Energy Information (EIA) weekly data, total U.S. petroleum demand fell by 2.5 million barrels per day (mb/d) (11.9%) as of March 27, compared with February 2020 and was marked by decreases for motor gasoline and jet fuel, but an increase for diesel.
- The U.S. petroleum trade balance was balanced in February with net exports of 0.045 mb/d by API estimates, but within this balance the U.S. imported 6.9 mb/d of crude oil in February.
- U.S. refineries reduced their throughput in March, and inventories consequently remained near typical levels of about one month of storage.

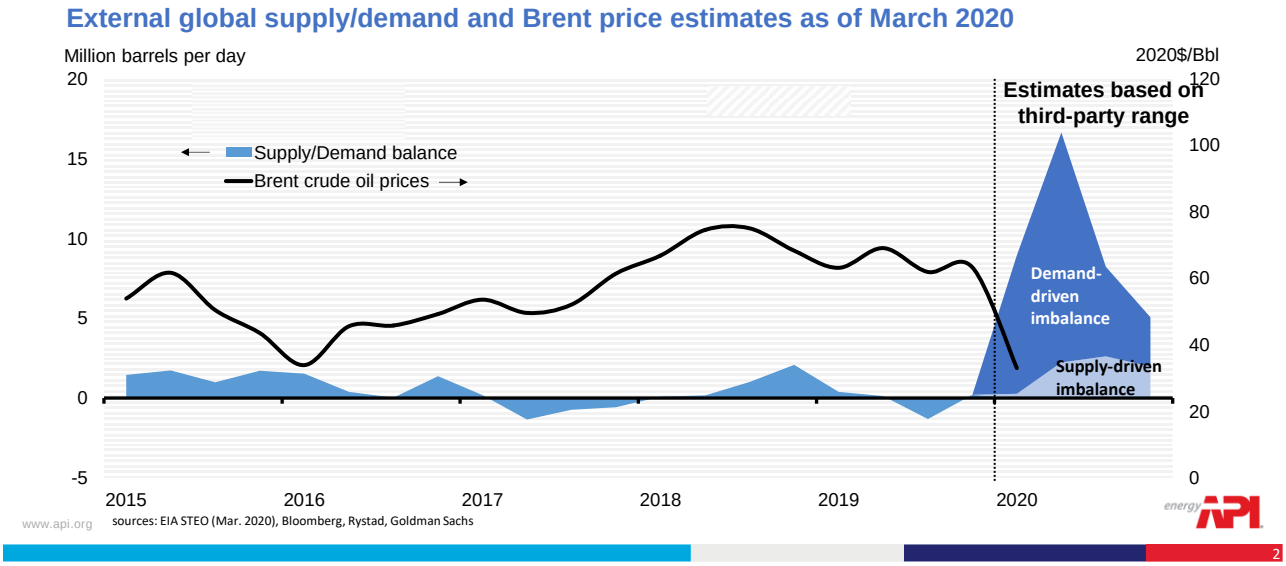
[3] https://www.rrc.state.tx.us/oil-gas/

[4] Pioneer Natural Resources comments of March 30, 2020.

[5] Parsley Energy Inc. comments of March 30, 2020.

[6] "Proration of Petroleum Production." The Yale Law Journal, vol. 51, no. 4, 1942, pp. 608–628. JSTOR, www.jstor.org/stable/792615. Accessed 5 Apr. 2020.

The supply/demand balance also remains uncertain but dominated by demand drivers



- Crude oil inventories rose to 469.2 million barrels (mbbls) as of March 27 per EIA, compared with 448 mbbls in February, which was still 12.9% below the maximum of the five-year range.
- The U.S. sustained oil production of 13.0 mb/d that EIA currently projects to decline beginning in May 2020. U.S. supply therefore appears to be responding to market conditions with a lag, at the same time as OPEC and Russia (OPEC+) announced oil supply increases.
- Global oil demand remains uncertain. Official projections from early March suggested upwards of 3.0 mb/d of lower global oil demand in 2020. However, a range of projections by nine third-party sources surveyed by API exceeded recent official estimates and suggested average demand decrease of about 8.0 mb/d in 2020.
- The global oil supply/demand balance remains uncertain, but an attribution of changes suggests demand is likely to have roughly five times the impact of supply, even though most policy-related discussions have focused on measures concerning supply rather than demand.

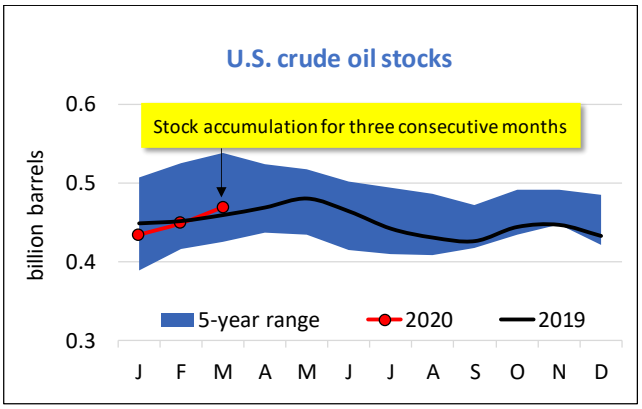
Q: Is U.S. crude oil storage running out?

A: Although crude oil storage capacity has become of increasing industry concern, it is not inevitable that storage will become a binding market constraint.

On April 2, 2020, the U.S. Department of Energy (DOE) solicited proposals to accept as much as 30,000,000 barrels of crude oil in Strategic Petroleum Reserve (SPR) storage facilities, and they should have the ability to add additional crude oil if needed.[7] Additionally, there should be at least 70,000,000 barrels of commercial storage available just to reach stock levels experienced over the past five years,[8] for a total of at least 100,000,000 barrels of additional storage capacity.

[7] Department of Energy Strategic Petroleum Reserve Project Management Office letter dated April 2, 2020.

[8] This is based on comparing EIA weekly crude oil stocks (469.2 million barrels as of March 27) with the maximum commercial crude oil stored since 2015 (538.6 million barrels in March 2017, API Monthly Statistical Report), suggesting 69.4 million barrels of remaining commercial crude oil storage (ex SPR).



sources: API Monthly Statistical Report (MSR) and EIA

Consequently, at the U.S. crude oil storage accumulation rate experienced between February and March, remaining constant and unabated by EIA-expected reductions in crude oil production beginning in May, U.S. commercial and SPR storage available to private companies could accommodate upwards of another five of stock building. With SPR storage being located at the end of the system, local bottlenecks may exist and still result in some shut-ins.

Companies across the industry employ different business models and consequently may be impacted differently by market disruptions. Through its actions, the Commission may intend to treat firms equally, but we can see from history and even recent examples the adverse consequences of trying to do so.

Q: What has happened in recent attempts to raise market prices by curtailing production?

A: Alberta, Canada, and the state of Oklahoma offer recent examples.

The province of Alberta contributes more than 98% of Canada's oil production, which grew by 8.9% between 2017 and 2018.[9] This rapid production growth occurred at the same time as Canada was unable to expand or build new export pipelines and resulted in exceptionally low oil prices for Western Canadian Select (WCS) heavy oil. WCS historically traded at prices about 20% below WTI but averaged nearly 50% below WTI over the second half of 2018.[10]

Consequently, "to protect the value of our oil, the Government of Alberta temporarily limited production to match export capacity to prevent Canadian crude from selling at large discounts."[11]

Within two months, the curtailment raised the relative price of WCS to within 15% of WTI. However, it turned out not to be temporary, remaining in effect almost a year and a half later, and has involved Alberta dictating even larger curtailments. Despite increased curtailments, the WCS crude oil discount re-widened to 33% below WTI in the fourth quarter of 2019 and grew to 75% below WTI at the end of March 2020. This price differential was not only worse than before proration, it led to lost opportunities for new investment, infrastructure expansions and economic growth over the period.

The Oklahoma Corporation Commission (OCC) announced that it would attempt to support prices by prorating natural gas production from April 1 through September 30, 2020. During its proceedings, OCC staff testified the proration would mainly be symbolic and unlikely to have a large impact on the state's

[9] https://www.cer-rec.gc.ca/nrg/sttstc/crdlndptrlmprdct/stt/stmtdprdctn-eng.html
[10] Bloomberg. Western Canadian Select and West Texas Intermediate spot prices, 2008-2017
[11] https://www.alberta.ca/oil-production-limit.aspx

natural gas production. Natural gas spot prices at gas trading hubs across Oklahoma have generally not risen in absolute or relative terms since the OCC decision was rendered on March 5.

Therefore, as the most recent examples prove, proration is either ineffective, or it actively sabotages the economy.

Q: Would a proration of Texas oil production be discriminatory among producers?

A: Despite well-intentioned efforts by the Commission, proration would inevitably create winners, losers, and outcomes that likely would be different from those produced by market-based forces. For example, the Commission's authority to limit production does not extend to marginal wells,[12] yet, proration would apply to the state's largest and most productive fields.

Out of more than 170,000 producing wells in Texas, API compared oil production and allowables for the 11,467 Texas oil wells that produced at least 100 barrels per day as of March 2020, based on data from the Commission and DrillingInfo. In total, these wells produced more than 3.6 mb/d of Texas' 5.5 mb/d total as of February, by EIA and API estimates. That is, less than 7% of producing wells in Texas accounted for nearly two-thirds of Texas oil production.

Suppose a market demand factor was applied uniformly across wells. Of every 10% curtailment of wells that produced at least 100 b/d, more than 75% of the curtailed oil volumes would come from wells that produced at least 250 b/d. And among wells that produced at least 250 b/d, 80% of them already have oil allowables that were limited to a potential test or by their past production in total to on average 78% of their estimated potential.

Technology, innovation and pacesetting shale well productivity have been the foundation of Texas' recent growth and progress as well as U.S. energy leadership in global markets. And it is Texas' most productive wells that would be the most impacted by a uniformly lower market demand factor.

Q: Would proration on a field level advantage or disadvantage the Delaware, Midland or Eagle Ford production areas differently?

A: Based on API's review of well-level production data – and assuming field-level proration based on a uniform reduction in the market demand factor – more than half of curtailments would occur in the Midland basin and more than one-third in the Eagle Ford. Consequently, production areas would be impacted differently.

Q: Could a proration by Texas have a measurable positive impact on global oil markets in the short-run and long-run?

A: Policymakers are seeking to understand whether prorating oil production could influence prices – and whether actions could help to stabilize markets without unintended consequences.

In theory, removing a barrel of oil supply from the global market could have a similar impact if it originates in Texas or anywhere else in the world.

[12] Tex. Nat. Res. Code § 85.048

In reality, OPEC and Russia have been unable to restrict production because of overproduction by Saudi Arabia and Russia.[13]

Furthermore, OPEC and Russia are not the only oil producers increasing their output. EIA and others expect increases this year and in 2021 from Brazil, Norway, Guyana and Argentina that together could easily offset the impact of any proration in Texas.[14]

With the likelihood of poor compliance coupled with known sources of new growth, it seems unlikely that even a large Texas proration could improve market conditions – and potentially would come at a large cost to the state and its producers.

Moreover, the amount of a potential Texas proration would likely be less than the 3.0 mb/d that Saudi Arabia announced that it alone would add to flood global markets by May 2020.[15]

Any attempt by Texas to prorate production and take on a portion of OPEC's mission is therefore a precarious and slippery slope that is unlikely to improve market conditions.

Q: What is the potential sensitivity of oil prices to changes in supply?

A: Assuming full OPEC+ compliance and expected growth from other non-OPEC sources, estimation of the potential prospective impact of supply proration on prices would be confounded by structural market changes that have occurred with the U.S. energy revolution, especially since 2015.

OPEC historically has been rewarded for reducing its output. Between 1990 and 2014, rising global oil demand and limited non-OPEC supply growth resulted in relative scarcity and higher oil prices. Specifically, a 1% reduction in OPEC supply corresponded on average with nearly 4% **more** gross oil revenues over this period, according to API analysis of historical OPEC supply and revenues.

However, the U.S. energy revolution appears to have altered this relationship by increasing oil resources and production more rapidly than global demand grew. In basic economics terms, the supply curve shifted outward and flattened, enabling more global oil production for any given price level and increasing the sensitivity of supply growth to oil prices.

Recently, however, COVID-19 has also lowered demand regardless of prices. As described in the aforementioned market summary, we apparently observed some substitution of driving (gasoline) and flying (jet fuel) in favor of shipping goods via freight transportation (diesel) between February and March.

Although we have reason to believe demand responsiveness will be resilient as the effects of COVID-19 subside, increased oil supply and responsiveness at relatively lower prices has been a structural characteristic of the market for the past five years.

Consequently, there may be marginal benefits to OPEC but none for Texas proration.

[13] https://www.usnews.com/news/business/articles/2019-12-05/opec-debates-deeper-production-cuts-to-push-up-oil-price

[14] http://www.worldoil.com/magazine/2020/february-2020/special-focus/special-focus-2020-forecast-international-drilling-and-production

[15] https://www.reuters.com/article/us-global-oil-saudi/saudi-arabia-plans-to-boost-oil-exports-to-106-million-bpd-from-may-idUSKBN21H1M4

Q: Is Saudi Arabia more dependent on higher oil prices than is Texas?

A: If cost was measured solely at the wellhead, Saudi Arabia's total production costs would generally be lower than those in Texas. However, consider for the moment that OPEC nations including Saudi Arabia are like conglomerates that serve multiple markets, some of which like their domestic energy tend to be monopolies and others that remain subject to global competition.

Historically, OPEC enjoyed monopoly power in its global pricing, but in recent years has faced disruptive technological changes with the U.S. energy revolution. Global oil market competition has increased competition such that cross-subsidizing low prices for other segments – in-country public services, energy and development – has become infeasible without national government borrowing.

While Saudi Arabia has very low oil lifting costs, the fact remains that Saudi Arabia requires oil prices near $80 per barrel to balance its national budget.[16] As of mid-March, Saudi Arabia was estimated to run a $61 billion (6.4% of GDP) budget deficit in 2020.[17] Consequently, Saudi Arabia has effectively used international debt to provide the liquidity needed to execute its oil market strategy.[18]

By contrast, Texas is a low-cost producer comprising thousands of independent entities that must adapt to changing market conditions on the strength of their own balance sheets.

From this perspective, OPEC's request of Texas to prorate production so it can cross-subsidize its public services and development is inconsistent with how market competition generally works.

Q: Would and should proration of Texas oil production "help get an international deal done"?

A: Much of what has played out recently in global oil markets reflects game theory. Oil prices have responded as much to uncertainty and announced changes as they have to actual data. OPEC has proposed cutting a deal with a sense of urgency in part because its leverage may evaporate as soon as COVID-19 subsides.

API supports market principles and competitive outcomes – and we are not asking for bailouts of any sort. We also recognize the effects of an unprecedented global public health crisis have been compounded by nation-state actions, but demand-side factors are the main driver.

For these reasons, it makes the most sense to target policies first and foremost as restoring economic activities, followed by targeted solutions that could help U.S. producers manage to survive a difficult period. Mandating supply proration would reward bad behavior by OPEC+ and would not be a viable long-term solution.

Q: Is there technical evidence that shutting in unconventional oil wells could permanently impair their productivity?

A: We generally have not experienced extended shut-ins or choking of wells since the U.S. energy revolution, so little appears in the refereed literature about the effects on well productivity, but as a threshold matter this is something the Commission should endeavor to understand and take into consideration before taking the traumatic step of statewide proration via a uniform market demand factor.

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[16] https://www.reuters.com/article/us-opec-oil-policies/russia-vs-saudi-how-much-pain-can-they-take-in-oil-price-war-idUSKBN20W21S

[17] https://www.arabianbusiness.com/politics-economics/443369-saudi-arabias-budget-deficit-forecast-to-widen-to-61bn-on-virus-oil-rout

[18] https://www.reuters.com/article/saudi-bonds/update-3-saudi-arabia-raises-5-bln-as-bond-investors-brush-off-gulf-jitters-idUSL8N29Q0GV

As former University of Texas coach Darrell Royal famously said, "Three things can happen when you throw the ball, and two of them are bad." Significantly choking or shutting in a well can introduce uncertainty about potential liquids accumulation in low-lying areas of long horizontal wellbores, water incursion or loss of permeability in the formation – which could permanently reduce well productivity.

API urges the Commission to thoroughly analyze future technical constraints on production that could arise from significant proration of unconventional fracture treated fields.

Q: Could a national proration movement be enforced by the states?

A: A national proration movement could not be enforced. Most states lack the legal authority and regulatory infrastructure to do so, and there is no mechanism for states to coordinate even if all producing states could impose proration.

Oil markets 90 to 100 years ago differ tremendously from those of present day in their size, integration, intertwined supply chains, and real-time trade and financial instruments. However, even a relatively simple market structure in the late 1920s through World War II demonstrated how difficult it is to coordinate U.S. production.

At that time, the Interstate Oil and Compact Division (a voluntary cooperative committee of representatives from producing states) managed state-level proration based on monthly crude oil and refined product forecasts from the U.S. Bureau of Mines.[19] Additionally, in the 1930s, it required martial law as an instrument of economic regulation to enforce.

To be clear, the U.S. will invariably have a role in oil market rebalancing, but it should play out based on market forces that by their nature can provide positive incentives for efficient outcomes.

Q: Why is the market a better arbiter of production levels than government actions?

A: Markets tend to allocate resources efficiently in response to efficient price signals, and proration unfortunately would not apply to the smallest fields and would tend to curtail the largest and most efficient wells, basins and producers.

Texas has earned its position in the global marketplace through leading innovation and productivity gains, and proration that spreads the proverbial pain differently than a competitive market outcome will invariably make Texas less globally competitive.

To summarize my testimony:

- We remain confident oil demand will be resilient once the effects of COVID-19 subside, and the Commission has been asked to prorate supply (and potentially negotiate internationally) when there is maximum uncertainty in the market.
- We have evidenced myriad ways the market is responding to these unprecedented market conditions, and this hearing is one of many actions focused on supply-driven factors, when the market's current imbalance mainly concerns demand.
- The supply side of the market is responding appropriately, and this is how well-functioning markets should work.
- With recent DOE action to augment available crude oil storage, there should be enough capacity for roughly five months at existing crude oil production levels that EIA expects will begin to drop by May.

[19] "Proration of Petroleum Production." The Yale Law Journal, vol. 51, no. 4, 1942, pp. 608–628. JSTOR, www.jstor.org/stable/792615. Accessed 5 Apr. 2020.

- Proration would affect the most efficient and economic Texas oil production – and disproportionately harm producers in the Midland and Eagle Ford – as well as potentially jeopardize long-term well productivity in the state.
- Ultimately, an attempt by Texas to prorate production is unlikely to improve market conditions and could become a precarious and slippery slope, as the example of Alberta evidences.

API appreciates the opportunity to provide this testimony and looks forward to working collaboratively to help address Texas' challenges. Should you have any additional questions, please contact me at (202) 682-8530.

Sincerely,

R. Dean Foreman

R. Dean Foreman, Ph.D.