■ Industrial Power

Securing Energy and Stabilizing Prices Through the Strategic Petroleum Reserve

Arnab Datta and
Skanda Amarnath

SUMMARY

The US economy requires stable commodity supplies, with current markets suffering from harmful volatility cycles that damage industrial suppliers and end-users. While storage facilities typically stabilize oil markets, critical market deficiencies undermine this function.The Strategic Petroleum Reserve (SPR) has become misaligned with today's energy landscape, focusing on heavy sour crude while domestic production and marginal refining capacity have shifted to light sweet crude, and lacking effective market engagement mechanisms.

This proposal recommends: (1) appropriating at least $4 billion for future purchases to stabilize the market; (2) expanding SPR with a new cavern at Richton, Mississippi, connected to the WTI Cushing market; and (3) reauthorizing an expansion of the SPR to establish a "Strategic Resilience Reserve" (SRR) that can actively manage market volatility for other industrial commodities.

This approach builds on successful recent initiatives and would employ both preventative measures (long-term contracts, contracting for

inventory minimums) and reactive interventions (strategic releases, market operations) to ensure stable, resilient commodity markets critical to US economic security.

PROBLEM

Stable and resilient commodity supplies are critical for the US economy. In 2022, 27.5 percent of petroleum used in the US was allocated to industrial and manufacturing sectors, not inclusive of fuel use in transportation. Unfortunately, commodity markets are inherently volatile, following "boom and bust" supercycles that impose painful costs on industrial users and, ultimately, consumers through inflation shocks and supply scarcity.

In effectively functioning commodity markets, storage can serve as a crucial shock absorber, dampening price spikes and preventing price crashes. During downturns, buyers "of last resort" can purchase and store until the market recovers and then sell the product at a profit. One mechanism through which this occurs is the West Texas Intermediate (WTI) crude oil financial contract, a contract bought and sold via the New York Mercantile Exchange (NYMEX). At the predetermined delivery date, the purchaser takes ownership of the crude oil, which delivers to a physical location in Cushing, Oklahoma, which has approximately 90 million barrels of oil storage capacity. Located at the heart of North America's oil pipeline network, the Cushing location provides producers, refiners, and traders ready access to purchase, sell, and transport oil barrels as needed. When demand softens or prices drop, participants can utilize Cushing's storage tanks rather than selling at unfavorable rates, helping to stabilize spot prices. Additionally, pipeline infrastructure connecting Texas production to Cushing enables rapid oil inflows when local prices rise, dampening the pace of price spikes.

However, two market deficiencies undermine this stabilizing function.

First, building sufficient storage capacity requires substantial investment that private market participants find economically unjustifiable. This results in limited storage capacity that proves inadequate during tail-risk scenarios. In March 2020, when Covid-19 and the Russia-Saudi Arabia price war crashed oil prices, insufficient storage capacity pushed WTI to negative prices. The 2020 price crash led to bankruptcies in the oilpatch. Even as the economy (and oil prices) recovered, domestic oil investment lagged. The parsimonious investment response ultimately set the stage for the price shock of late 2021 and 2022. This price shock was incredibly harmful for all consumers of petroleum products, including industrial users. The manufacturing sector experienced a sharp increase in costs between 2021 and 2022 for petroleum-based inputs such as lubricants, rubber, and plastics and transportation costs, weakening profitability. In the second quarter of 2022, Caterpillar Inc. reported that manufacturing costs had decreased their operating profits largely reflecting higher material and freight costs.

The second market deficiency emerges during precipitous price increases. Insufficient storage means private inventories may lack adequate product to keep prices at tolerable levels for consumers during severe shortages. Moreover, in certain extreme scenarios with supply uncertainty, such as following the Russian invasion of Ukraine, firms will engage in precautionary stock building rather than release product to relieve price pressure

These are both entirely logical business decisions—it is not the private industry's job to prevent tail risks, it is to operate and deliver returns for shareholders. But the resulting price shocks hurt all consumers of petroleum products. While the American media typically centers the individual gassing up their automobile, major industrial users suffer as well.

Sound policy is critical to avoiding the oilpatch bankruptcies and the attendant commodity cost dynamics that harm industrial producers and end-users. Unfortunately, long-duration storage facilities are particularly uneconomical for private investment, requiring significant capital expenditure with limited return potential.

Enter the Strategic Petroleum Reserve. Established in 1975 in wake of the Arab oil embargo, the SPR was traditionally valued for the quantity of crude oil stored, but the US energy landscape has evolved. As the US has become the world's largest producer and a net exporter, vulnerability to crude supply shortages has diminished. Instead, risks have shifted. The vulnerability of the American shale sector to price crashes is significant, and the American economy is typically more strained by the supply of refined products and critical minerals essential for industrial and energy applications. The SPR's infrastructure is not optimally configured to balance statutory requirements with the production mix of the market and its infrastructure.

Recent SPR acquisitions have been for sour, heavy crude oil, the grade of unrefined oil typically produced offshore in the US Gulf Coast and more heavily aligned with our domestic refining capabilities. However, this approach overlooks the significant shift in domestic production toward shale-derived light sweet crude over the past decade. These short-cycle wells are more responsive to policy influence than deepwater operations. Unfortunately, since grades cannot be commingled, there is not sufficient SPR storage capacity for sweet, light crude, limiting the government's ability to be a "buyer of last resort" to protect investment in the shale patch. Furthermore, because SPR acquisitions occur outside the liquid market for WTI contracts, the price stabilizing effect is somewhat muted. From a legal perspective, the Department of Energy is not only permitted but mandated to find a solution. The SPR's authorizing statute requires the Secretary to acquire petroleum in a manner that, among other things, minimizes cost, promotes competition, maximizes domestic production, and avoids excessive cost or appreciably affecting the price of petroleum products to consumers.

SOLUTION

- Congress should appropriate at least $4 billion to the Department of Energy to stabilize the market and protect the US shale sector in the event that prices crash precipitously.
- Congress should reauthorize and appropriate for the expansion of a new SPR cavern at the Richton, Mississippi site that previously received NEPA approval. Congress should additionally authorize the exploration and construction of a pipeline to connect it with Cushing (directly, or indirectly through the Nederland terminal), allowing intake of excess crude when existing private storage terminals reach capacity. Further infrastructural improvements are also needed to expand

intake capacity at existing caverns, which have deteriorated from poorly structured congressionally mandated sales.

- Finally, Congress should expand the Strategic Petroleum Reserve's authority to establish a Strategic Resilience Reserve to support market resilience for critical industrial and energy commodities beyond oil.

JUSTIFICATION

The proposed Richton, Mississippi SPR expansion addresses critical infrastructure limitations that have hindered the SPR's effectiveness in today's energy landscape, and allows SPR facility alignment with domestic production and marginal refining capacity that has shifted dramatically toward light sweet crude from shale formations. The Richton site received NEPA approval in 2007, making it an expedient choice for expansion. (The expansion plan was effectively terminated during the Obama administration; the Trump administration can remedy this mistake). Furthermore, connecting this facility to the Cushing, Oklahoma hub—the delivery point for WTI crude contracts—would create a direct mechanism for government intervention in the benchmark crude market. This connectivity would enable direct price stabilization of excess crude when private storage terminals reach capacity, as happened catastrophically during the 2020 market collapse when WTI prices went negative due to storage limitations. In the future, such a price-stabilizing mechanism could prevent a subsequent price shock that harms industrial users.

The proposed evolution from the SPR to a broader Strategic Resilience Reserve (SRR) builds on successful precedents while addressing the limitations of past approaches. The post-2008 financial systemic risk framework offers an instructive model, combining preventative measures with reactive tools to intervene when markets destabilize. Similarly, an SRR would deploy both preventative tools (long-term fixed-price contracts, inventory minimums) and reactive measures (strategic releases, market operations) to ensure commodity market stability.

The SRR would significantly improve upon current mechanisms by enabling direct intervention through market channels. Compared to the aforementioned clunky SPR acquisition process, an SRR trading physically cleared, financial benchmark contracts tied to storage facilities could act more quickly to stabilize market disruptions engineered by adversaries, and provide the necessary foundation for market infrastructure less vulnerable to external shocks and localized supply disruptions.

Furthermore, broadening the SRR's scope beyond petroleum to include critical minerals and other essential commodities would strengthen US economic security in an era of increasing supply chain vulnerabilities. Recent energy market turbulence has demonstrated that strategic intervention is necessary and justified to prevent harmful price shocks that weaken our manufacturing sector. ■

FURTHER RESOURCES

- Arnab Datta, Alex Williams, and Skanda Amarnath, "Contingent Supply: The SPR Is More Equipped Than Ever to Stabilize Oil Prices," Employ America, 2022
- Daleep Singh and Arnab Datta, "Reimagining the SPR," *Financial Times*, 2024
- Arnab Datta and Alex Turnbull, "Contingent Supply: The Federal Government's Interest in a Liquid Lithium Benchmark," Employ America, 2023

Arnab Datta is the Managing Director of Policy Implementation at Employ America. He previously worked for Senator Michael Bennet and clerked for the Senate Judiciary Committee.

Skanda Amarnath is the Executive Director of Employ America. He previously worked as an economist at MKP Capital and as a capital markets analyst at the New York Fed.

APPENDIX

Glossary

LIGHT SWEET CRUDE: A type of unrefined oil with low sulfur content that is easier and cheaper to refine, and often produced from shale formations.

NEW YORK MERCANTILE EXCHANGE (NYMEX): A commodity futures exchange where WTI crude oil contracts are traded.

SHORT-CYCLE WELLS: Oil wells that can be quickly brought online or offline, are typically associated with shale oil production, and can provide more immediate responsiveness to market changes.

SOUR HEAVY CRUDE OIL: A type of crude oil characterized by high sulfur content (making it "sour") and high density or viscosity (making it "heavy"). It is more challenging and costly to refine compared to lighter, sweeter crudes because its higher sulfur levels require additional processing steps to remove impurities, and its heavier nature often yields lower proportions of high-value products like gasoline and diesel. Sour heavy crude is commonly produced in regions such as the Gulf Coast and certain parts of the Middle East. US refining capacity is currently oriented more towards sour crude than with light, sweet crude produced in the shale regions.

SPOT PRICES: The current market price at which a commodity can be bought or sold for immediate delivery.

STRATEGIC PETROLEUM RESERVE (SPR): A government-controlled reserve of crude oil, established to provide emergency supply during shortages or price spikes. It consists of a set of storage facilities across four sites on the gulf coast; the storage itself is a

series of salt caverns where up to 714 million barrels of crude oil can be stored for extended periods.

WEST TEXAS INTERMEDIATE (WTI): A benchmark grade of crude oil used in trading and pricing, typically delivered and stored at the Cushing, Oklahoma hub.