



**Statement before the Senate Committee on Energy and
Natural Resources**

***“MODERNIZATION OF THE STRATEGIC
PETROLEUM RESERVE AND RELATED
ENERGY SECURITY CONSIDERATIONS”***

A Testimony by:

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Good afternoon Chairman Murkowski, Ranking Member Cantwell, and members of the Committee. Thank you for the opportunity to testify today on the *potential modernization of the Strategic Petroleum Reserve and related energy security issues*. My name is Sarah Ladislaw and I direct the Energy and National Security Program at the Center for Strategic and International Studies (CSIS). CSIS is a bipartisan, nonprofit organization headquartered in Washington, D.C. The CSIS Energy and National Security Program provides strategic insights and forward-thinking policy guidance that balances economic, environmental, and security priorities against market and geopolitical uncertainties. My remarks and written testimony represent my views and not the views of my colleagues or CSIS as an institution.

The Strategic Petroleum Reserve (SPR) is not only one of the world's largest government-owned and managed emergency stockpile of crude oil, it is also part of a much larger, globally coordinated system of emergency petroleum supplies that have been around since the oil market disruptions in the mid-1970s. These strategic stockpiles are perhaps one of the most visible and enduring examples of shared energy security policies among the world's major energy consumers. The SPR is a fundamental pillar of that system. At the same time, a great deal has changed since the advent of the global strategic stock system and the creation of the U.S. SPR. While the current context of oversupplied markets, low oil prices, and record levels of U.S. production may obscure the dangers of an oil supply disruption, it is important to be clear-eyed about existing threats facing global oil markets and the economic vulnerability associated with a potential disruption. The last forty years have proven time and again that we as analysts, policymakers, and market participants should be humble about our ability to forecast future oil market dynamics and take prudent measures to protect against unanticipated supply disruptions.

In February 2015 the CSIS Energy and National Security Program published a report titled *Delivering the Goods: Making the Most of America's Evolving Oil Infrastructure* which describes the changes to the North American oil supply delivery system resulting from the surge in U.S. oil production and proposes five key areas of policy concern that arise from these changing market conditions. Modernization of the U.S. SPR was one of the five issues identified - along with addressing crude oil exports, rail and pipeline safety issues, Jones Act provisions, and climate and environmental policies. Much of the testimony below is taken from this report, though the opinions expressed therein are my own and not necessarily those of my co-authors.

Background on the U.S. Strategic Petroleum Reserve¹

The United States began discussing oil stockpiles as early as World War II. Then, in 1973, the Organization of Arab Petroleum Exporting Countries imposed an oil embargo on the United States in retaliation for supporting Israel in the 1973 Yom Kippur War. The embargo caused a significant spike in oil prices and contributed to a recession in the United States, which was then heavily dependent on oil both for transportation and for electricity generation. Major oil

¹ This section of testimony is taken from the CSIS publication [*Delivering the Goods: Making the Most of America's Evolving Oil Infrastructure*](#).

consuming nations responded to the economic disruption of the 1973 embargo by creating the International Energy Agency (IEA), a new international organization under the rubric of the Organization for Economic Cooperation and Development (OECD). The IEA is dedicated to promoting energy security by increasing market transparency, reducing demand in consuming countries, and providing an international legal framework for responding to supply disruptions through the coordinated release of strategic stocks. Consuming nations are bound by the treaty to hold emergency supplies equivalent to 90 days of net imports of petroleum.² It was left to individual countries to determine the composition of the stocks (crude oil versus products) and how the stocks would be held (through the government or privately held).³

In order to comply with the IEA treaty and to bolster U.S. energy security, Congress created the Strategic Petroleum Reserve. The SPR's primary mission is to provide an emergency response mechanism to support U.S. energy security by storing and supplying crude oil to mitigate the impact of a severe crude oil supply disruption. The SPR section of the Energy Policy and Conservation Act (EPCA) of 1974 is the domestic implementing legislation that delineates how the United States will fulfill its international obligations under the Agreement on an International Energy Program.⁴ The legislation authorized the U.S. Department of Energy to manage the reserves up to a capacity of 750 million (later revised to 1 billion) barrels of crude oil (the U.S. government holds limited product stocks⁵). EPCA allows a drawdown of these stocks either due to a supply disruption or to carry out obligations under the IEA's international energy program. In order to authorize a release of SPR oil, the president must find that there is a "severe energy supply interruption" (in response to the Exxon Valdez oil spill, SPR was amended in 1990 to allow for drawdowns in the event of domestic interruption) or find that the drawdown is required by international obligations.

Currently, the SPR holds about 691 million barrels of crude oil at four sites on the U.S. Gulf Coast, with an effective capacity of 700 million barrels.⁶ At the time it was conceived, it was imagined that SPR oil would replace foreign imports to the Gulf Coast. Consequently, the system was designed to move crude oil both from storage to Gulf refineries and from the Gulf Coast to

² In the initial treaty, it was 60 days and was later revised upwards. In some countries, the agreement has treaty status; in the United States, though, it was not ratified by the Senate and has the legal status of an international agreement.

³ For more on the background and history of the International Energy Agency (IEA), see IEA; "History," <http://www.iea.org/aboutus/history/>.

⁴ The full agreement is available online. See IEA, "Agreement on an International Energy Program, as Amended 25 September 2008," <https://www.iea.org/media/ieawebsite/about/iep.pdf>.

⁵ The United States does have a 2 million barrel privately held but government-owned home heating oil reserve in the Northeast, and it has announced plans to create a 1 million barrel privately held but government-owned gasoline reserve. However, the recent FY2015 spending bill prohibits the Department of Energy from creating any crude product reserves without appropriated funds from Congress.

⁶ John Shages, *The Strategic Petroleum Reserve: Policy Challenges in Managing the Nation's Strategic Oil Stock* (Washington, DC: Energy Policy Research Foundation, July 2014), <http://eprinc.org/wp-content/uploads/2014/07/EPRINC-Shages-SPR-July-11-2014.pdf>.

the Midwest and East Coast via three main pipeline distribution systems in the Gulf.⁷ It was also designed to move crude to port facilities, primarily the Louisiana Offshore Oil Port (LOOP), and from there to the East Coast.⁸ The maximum drawdown capacity for these sites is 4.4 million barrels per day for 90 days, declining thereafter.⁹

Drivers of Change

The North American production surge and its impact on midstream infrastructure raise an immediate question about whether those changes limit the ability to move SPR oil resources to market as needed or intended in the event of a disruption. Understanding how SPR oil actually gets to market is critical to grasping the potential logistical problems that increasing oil production creates for the SPR. While the U.S. government owns and controls the oil itself, along with the four sites in which it is stored, the government does not own or control delivery systems to move SPR oil to markets. In the event of a release, the U.S. government puts the oil up for auction. Winning companies are required to make the necessary arrangements to move the oil from the point of local delivery to processing centers. In other words, SPR oil is dependent upon existing commercial infrastructure, including the existing pipeline system and waterborne loading and unloading facilities, to move oil to refineries.

Rising domestic production and new pipeline configurations potentially upend the assumptions on which the SPR logistical distribution system relies. When the SPR was conceived and over the intervening decades, it had been assumed that any disruption resulting in an SPR release would *necessarily* mean that there would be plenty of commercial availability in the U.S. pipeline distribution system. Because of the United States' growing crude oil import dependence, most of the oil flowing through the midstream system in the Gulf Coast would likely be foreign oil. In the event of a foreign supply disruption, Gulf Coast pipelines would be mostly empty, and there would be plenty of room for SPR oil in the system. However, domestic production today is increasing utilization of Gulf Coast infrastructure. The logistical concern is that SPR oil and domestic production would compete for space in the pipeline system and at the LOOP with any SPR release.

The most immediate difficulty, then, is that the infrastructure relied upon to move SPR oil to market is at capacity and might not be able to accommodate SPR oil in the event of a foreign disruption. The second difficulty is that, because of changing volume and location of U.S.

⁷ The Texoma system, the Seaway system, and the Capline system.

⁸ The Louisiana Offshore Oil Port (LOOP) is the United States' deepwater terminal for handling waterborne crude oil imports, located in the Gulf of Mexico about 18 miles off the Louisiana coast. Connected through a series of crude oil pipelines to much of the U.S. refining capacity, the LOOP can import as much as 1.2 million barrels per day. See EIA, "Louisiana State Profile and Energy Estimates," last modified November 20, 2014, <http://www.eia.gov/state/analysis.cfm?sid=LA>.

⁹ Based on current import and consumption levels, the SPR could meet U.S. demand levels for about 94 days. See U.S. Department of Energy, "SPR Quick Facts and FAQs," <http://energy.gov/fe/services/petroleum-reserves/strategic-petroleum-reserve/spr-quick-facts-and-faqs>.

production, the Seaway pipeline, a major pipeline in the SPR delivery system that connects the oil trading hubs in Oklahoma and Texas, was reversed in 2012 to accommodate the surge of crude oil moving from the Midwest to the Gulf Coast. In other words, even if there were space available, it would be of no use in an emergency because it is pumping oil in the wrong direction to effectively distribute SPR oil to the rest of the country in an efficient manner. In short, assuming that SPR oil is released, increasing production of oil in the Midwest and the Gulf Coast—and infrastructure changes to accommodate those production changes, such as the Seaway reversal—may have made it considerably more difficult to move it to market.¹⁰

In the immediate term, policymakers need to assess whether current infrastructure is capable of handling the outflow of SPR oil in the event of a foreign disruption, given current production levels, and what options exist as alternatives to ensure oil can get to market. The Department of Energy (DOE) conducted a test sale of 5 million barrels in March 2014 in order to assess capabilities in light of recent changes to pipeline infrastructure. While there were no immediate and pressing issues getting the oil to market, DOE nonetheless concluded that pipeline capacity is limited in some areas, and during the test sale purchasers had problems getting pipeline capacity for preferred deliveries and had to place oil in temporary storage until pipeline capacity became available. According to DOE officials, the issue is not simply about pipeline capacity but also about marine distribution and storage capacity. They concluded that their test sale “highlighted changes in distribution infrastructure in the Gulf Coast region. Changes in oil markets have implications for commercial infrastructure investment in the region and the entire SPR. The SPR needs to conduct follow-on analyses of potential commercial infrastructure investments and options to ensure future SPR marine distribution capability.”¹¹ The Department of Energy’s Inspector General has also concluded that the actual SPR drawdown rate, which was below the stated rate during the test sale, is at further risk due to maintenance issues in the SPR storage sites.¹²

¹⁰ Logistical constraints are not the only impediment to the SPR realizing its maximum drawdown rate. The DOE’s inspector general recently released a report that found the SPR’s drawdown readiness was compromised due to suspension and deferral of various maintenance and remediation activities. See U.S. Department of Energy, *Office of Inspector General Audit Report: The Strategic Petroleum Reserve’s Drawdown Readiness* (Washington, DC: Department of Energy, July 2014), <http://energy.gov/sites/prod/files/2014/07/f17/DOE-IG-0916.pdf>.

¹¹ U.S. Department of Energy, “Strategic Petroleum Reserve Test Sale 2014: Report to Congress, November 2014,” <http://energy.gov/sites/prod/files/2014/11/f19/2014%20SPR%20Test%20Sale%20Final%20Report.pdf>.

¹² Another recent study also suggested that there is a mismatch between the SPR’s design and its use, resulting in costly maintenance issues. The report suggests that there are two alternatives: investing in the SPR or reducing its capabilities. The report suggests that the second is occurring by default with little policy debate about the SPR’s utility. See Shages, *The Strategic Petroleum Reserve*.

DOE anticipates that \$1.5-2 billion is need to increase the distribution capacity of the SPR by adding dedicated marine loading dock capacity on the Gulf Coast and undertaking a necessary life extension program including surface infrastructure and additional brine-drive caverns.¹³

Modernizing the SPR

While I firmly believe the maintenance of the current SPR capabilities is an important strategic imperative for U.S. energy security, the question of how best to modernize the SPR requires further exploration. The strategic review underway at the U.S. Department of Energy and recommended by the legislation passed by this committee are a prudent and important course of action. Efforts by other committees in Congress to sell portions of the SPR to fund other Congressional priorities should be mindful of the important role that the U.S. SPR plays to ensure overall U.S. and global oil security and wait until the results of this careful review before attempting to sell down portions of the reserve.

A great deal has changed since the global strategic stock system and U.S. SPR were created which further serve make an assessment necessary and important. Oil markets are different and so are the players. First, oil plays a different role in the economy than it did in 1974. Half of all oil consumed today is for transportation (closer to 60 percent in OECD) compared to 35 percent in the 1970s. According to the IEA, this concentration of oil usage in transport “accentuates the potential economic impact of a supply disruption” because of the low price elasticity of transportation fuel and the broad reach of transport fuel costs into others sectors of the economy.¹⁴ Second, oil trade flows are shifting. The production surge in North America, combined with growing oil demand in Asia means oil increasingly travels east instead of west from major production centers. According to IEA analysis, between 2012 and 2018 crude trade flows traveling to OECD economies are expected to drop by 5.2 million barrels per day, compared to an increase of 3.7 million barrels per day heading to Non-OECD countries in the east.¹⁵ Moreover, the trend toward refining crude closer to production centers means that global trade in crude oil is likely to decline in the coming years in favor of greater product trade flows. Finally, OPEC now makes up a smaller share of global oil supply: OPEC produced half the world’s oil in 1974 compared to around 40 percent today.

Such a review should address three critical issues:

1) Nature of future oil supply disruptions and vulnerabilities

¹³ Statement of Christopher Smith Assistant Secretary for Fossil Energy U.S. Department of Energy Before the Subcommittee on Energy and Power Committee on Energy and Commerce U.S. House of Representatives, April 30, 2015. http://energy.gov/sites/prod/files/2015/06/f22/4-30-15_Christopher_Smith%20FT%20HEC.pdf

¹⁴ International Energy Agency, “Energy Supply Security 2014,” https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_PART1.pdf, P.19

¹⁵ International Energy Agency, “Energy Supply Security 2014,” https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_PART1.pdf, P. 18

Undertaking changes in the structure of the SPR requires new consideration of the SPR's purpose in a world in which U.S. consumption is declining and production has been increasing until recently. Since the creation of the IEA there have been a number of major oil supply disruptions and three coordinated strategic stock releases and a number of SPR exchanges. None of the releases were for large, sustained supply disruptions in the Middle East but arguably each provided economic insulation from geopolitical and natural disaster related oil supply disruption. The severity of a supply disruption is often measured in terms of oil supply loss and duration but the economic impact of the disruption depends on other factors such as the overall market conditions at the time, the crude quality, seasonal factors, logistics, and spare production capacity.

2) *Optimal structure and composition of the U.S. SPR as part of broader energy security strategy*

Along with the changing U.S. energy profile, these issues raise the need for a broad policy conversation about the threats facing global oil supply security, the most effective composition (i.e., crude oil or products or a mix of the two), size (i.e., the volume of oil stored), and quality (i.e., the type of crude oil stored) of the U.S. SPR and the overall functioning of the system of global strategic stocks.

3) *Adequacy of global strategic stock system*

The international strategic stock systems plays an important role in protecting the global economy against unforeseen oil supply disruptions. When created, the IEA represented the majority of oil consuming, import-dependent countries. OECD economies were three quarters of the global oil demand in the 1970s, compared to less than 50 percent today. Going forward, emerging market and developing economies' share of global oil demand is expected to grow even further. China has, since 2001, been in the process of creating its own strategic oil stockpiles and a domestic system for deciding upon when and how to release supplies in the event of a disruption. India has also signaled its intent to create oil stockpiles but is less far along. Whether and how these future stockpiles should be coordinated with the OECD strategic stocks system is an important area for policy consideration.

Conclusion

The rapid and unanticipated reversal in U.S. crude oil supply and demand underscores that U.S. policymakers are not omniscient when it comes to predicting shifting energy landscapes. One need not look much farther than the precarious international security environment, shaky political and economic foundation in many of the world's major oil producers, and persistent domestic and international infrastructure vulnerabilities to understand that the world oil supply security is far from guaranteed. It is not possible to rule out another rapid and unanticipated reversal in the U.S. supply-demand balance. A strategic review that takes into account the array

of possible energy supply-demand balances for the United States, changes to the global strategic stock system and oil markets, and evolving expectations and lessons about supply disruption expectations is essential to making the right decision about the future of the SPR.