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# Reconsidering the Strategic Petroleum Reserve

The Strategic Petroleum Reserve (SPR) was authorized by the Energy Policy and Conservation Act (EPCA) of 1975 (P.L. 94-163). EPCA, passed in the wake of the oil embargo of 1973-1974, set out U.S. energy policy in the areas of production, consumption, and reserve stocks. In 2018, the U.S. position in world markets is significantly different from that of the 1970s and a reconsideration of the size and/or need for the SPR might be warranted.

## What Is the SPR?

EPCA authorized the creation of an up to 1 billion barrel petroleum reserve. While the primary component of the SPR is crude oil, currently about 660 million barrels, stored in Texas and Louisiana, the reserve also includes the Northeast Home Heating Oil Reserve (2 million barrels of ultralow sulfur heating oil) located in Massachusetts, New Jersey, and Connecticut, as well as the Northeast Gasoline Reserve (1 million barrels of gasoline) located in the New York harbor and Boston areas. The first of these product reserves recognized the importance of heating oil in the New England home heating fuel mix, while the second was established in response to the gasoline market disruption in the wake of Hurricane Sandy in 2012.

## Initial Justifications for the SPR

In 1973, the Organization of the Arab Petroleum Exporting Countries (OAPEC) initiated an oil supply embargo against the United States and the Netherlands in response to those nations' support of Israel in the October 1973 war. There was concern that a new era had emerged in which oil supplies would be used as a political weapon. For the United States, domestic oil production had peaked in 1970 and was expected to decline in future years, consumption growth seemed set to continue, and the only significant emergency stocks were commercial inventories held by oil companies.

U.S. gasoline consumers' first exposure to the perceived effects of the OAPEC embargo included gasoline supply shortages, gasoline stations with restricted operating hours, purchase limits, waiting lines, and higher gasoline prices. The institution of federal non-price gasoline rationing schemes, intended to alleviate problems related to the supply shortages, may have exacerbated the shortages. A publicly held supply reserve of crude oil or petroleum products was viewed as a viable way to shield the domestic markets from the disruptive effects of supply manipulation by countries exporting oil to the United States.

The United States historically has possessed a petroleum refining industry of sufficient domestic capacity to meet the needs of domestic demand for petroleum products. In addition, an oil transportation system is available to efficiently move oil and petroleum products around the country. Concern existed in the mid-1970s that if the net

import gap between domestic consumption and domestic production continued to widen, disruptions in oil supply from international markets would result in the closure of part of the refining and/or pipeline networks.

Concern over consumer gasoline disruptions and refinery utilization are somewhat at odds. Minimizing consumer disruption might indicate the need for a petroleum products reserve, while insuring the continuous operation of the oil refining/transportation industries might suggest the need for a crude oil reserve. Language in EPCA allowed the new reserve to include either crude oil or products, or both.

## Evolution of the SPR

Since the 1970s the SPR's role has evolved to include natural disaster protection and economic stabilization. Hurricanes Katrina, Sandy, and Harvey have resulted in drawdowns from the SPR to supply refineries and aid consumers. However, some argue infrastructure damage, to include waterways and ports, roads, and refineries, might be more of an impediment to an orderly market than actual fuel supply issues. The open bidding policies of SPR drawdowns, which allow foreign-based oil trading firms to win the right to purchase SPR oil, may limit the effectiveness of SPR use in short-term natural emergencies. It may be difficult to target SPR supplies to those domestic firms that need access to SPR oil under current bidding rules.

In addition, the Energy Policy and Conservation Act Amendments of 1990 (P.L. 101-383) expanded EPCA authorities to allow the President to authorize SPR drawdowns when market conditions exist such that there is, or is likely to be, economic disruption in the form of higher prices even if no formal emergency is declared. President Obama used this authority to direct the drawdown and sale of 30 million barrels of crude oil from the SPR in 2011 due to the likelihood of higher oil prices resulting from the disruption of Libyan oil supplies. While it is not clear that this type of market intervention is effective, the use of the SPR for price stabilization in place of market forces, although allowed by statute, is a change from the original application of the authority.

## International Obligations

The United States is a member of the International Energy Agency. The 1974 Agreement on an International Energy Program (IEP) specifies member nation emergency response mechanisms. The agreement requires member nations to hold no less than 90 days of the previous year's net imports as emergency stocks. The reserves may be held as crude oil, petroleum products, or as a mixture of the two. The reserves may be owned by the public sector, the private sector, or as a mixture of the two. Oil exporting (net) member countries are exempt from the stock holding

requirements. The IEP also includes drawdown and oil sharing policies in an emergency.

In recent years, as U.S. production of crude oil has increased and consumption growth has slowed, holdings in the SPR have increased beyond the 90-day requirement. The Energy Information Administration (EIA) reports that SPR monthly holding averaged 182 days of net imports in 2017, and if current net import trends continue, the SPR excess balance beyond IEP requirements may grow.

### Do We Still Need the SPR?

An important consideration in assessing the continued need for, or the size of, an SPR is the nature of world oil markets and the position of the United States in those markets today.

At the time of EPCA, the United States had passed its believed peak oil production and it was expected that declining production would occur. Consumption of petroleum products was increasing. As a result of these conditions, net imports and dependence on world oil markets was increasing. Today, in 2018, and looking into the near future, the situation is different. As a result of improved technology and the development of shale oil deposits, U.S. oil production has roughly doubled since 2008, and is projected to continue to increase. Some see the United States in the near term as becoming the world's largest oil producer, and having greater influence on world oil prices. In addition, consumption growth has moderated. The United States has become a leading exporter of petroleum products, and exports of crude oil are also increasing, moderating U.S. dependence on world oil markets.

In the 1970s, organized oil futures markets did not exist and the spot market was largely limited to Rotterdam, the Netherlands. Today, a wide variety of standardized futures and options contracts are traded worldwide by parties interested in both the physical and financial sides of the market. In addition, customized derivative contracts can be traded on over-the-counter markets.

Derivative markets have the ability to smooth out expected oil shortages. For example, if geo-political conditions indicated that oil shortages might develop in the near-term, market participants would likely bid up the price of futures contracts in an attempt to lock-in supplies. As the futures price of oil rose above the spot price, at some point this would cause speculators to buy, or stockpile, oil with the plan of selling the oil when prices rise in the future. These actions would tend to smooth out the effects of anticipated shortages.

Derivative contract adjustments might be less effective at helping in very short term events like hurricanes. For the derivative based adjustment process to be effective, sufficient time must be available for the futures contract to be bid up sufficiently relative to the spot price, as well for oil to accumulate in storage. In addition, market participants must be able to anticipate the potential for emergency conditions in the market. These conditions may not be met in the case of natural disasters like hurricanes.

### Private Inventories Replacing the SPR

At the end of 2017 the SPR held 662.8 million barrels of crude oil. Privately held stocks of crude oil were 421.1 million barrels. In addition, the private sector held 1.282 billion barrels of petroleum products. In theory, private stocks might be sufficient to provide for emergency supply. However, the motivation for private holdings of stocks of oil is likely related to inventory concerns, market supply management, and profitability, not emergency preparedness. In addition, in recent short-term emergencies like hurricanes, the main supply impediment was likely infrastructure damage rather than resource supply shortages. For example, in Hurricane Sandy, the main bottlenecks were likely electricity outages and blocked roadways which made fuel delivery and distribution difficult.

Currently, the United States meets its IEP obligations with publicly held stocks alone. Most other nations count either both public and private stocks, or private stocks alone in meeting their IEP obligations. The United States could opt to follow similar policies, eliminating the need for the SPR, or justifying a smaller publicly held reserve.

While current holdings of oil in the SPR are 662.8 million barrels of crude oil, the actual holdings available for emergency drawdown are less. Legislation adopted since 2015 mandates drawdown and sale of SPR oil to fund a variety of programs over the period FY2018 through FY2027.

As a result of this legislation, 266 million barrels of the 662.8 million barrels in the SPR are obligated, leaving a balance of 396.8 million barrels available to meet SPR responsibilities. It is not possible to precisely estimate how many days of net import coverage this quantity of reserve oil will provide because for calculation purposes, the net import value used is the previous year's net imports, while mandated oil drawdowns extend over 10 years.

### Conclusion

The SPR was authorized in the 1970s in a time that the world oil market was changing in unexpected ways and the U.S. position in that market was perceived as becoming weaker. The SPR was thought to be a tool to mitigate the effects of that weaker position.

In 2018, the oil market and the U.S. role in the market are quite different than that of the 1970s. As a result of these changing conditions, debate on the role, size, and even existence of the SPR might be justified.

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