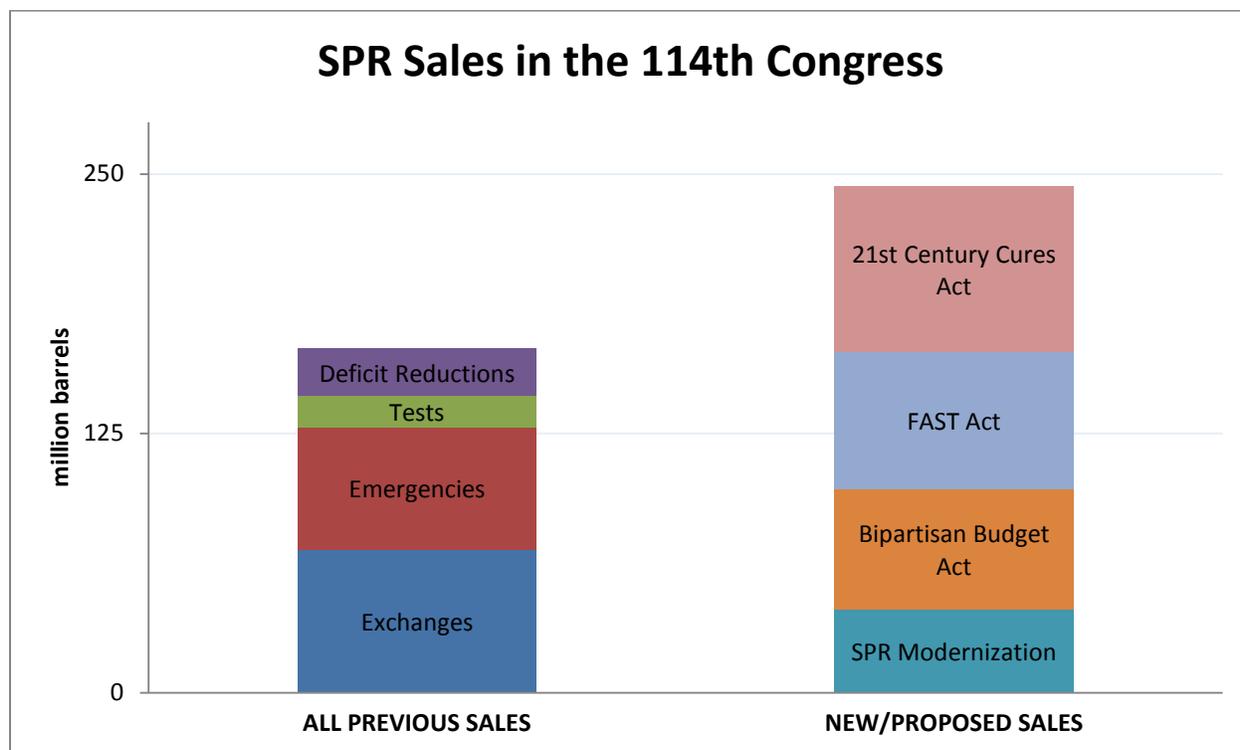


## Depleting the Reserve: The Cumulative Impact of SPR Sales and Other Considerations

Prepared by Majority Staff for Chairman Lisa Murkowski  
U.S. Senate Committee on Energy & Natural Resources  
December 1, 2015

### Introduction

This report outlines various issues that should be considered in discussions related to the sale of oil from the Strategic Petroleum Reserve (SPR), as envisioned by recent legislation in the 114<sup>th</sup> Congress. These measures include the DRIVE Act (101 million barrels, reduced to 66 million barrels in the FAST Act), the Bipartisan Budget Act (58 + 40-50 million barrels), and the 21<sup>st</sup> Century Cures Act (80 million barrels). Taken in the aggregate, these sales of approximately 244 million barrels would “draw down” the emergency stocks, which currently hold 695 million barrels, by 35 percent. Any of the three sales by itself would be the largest in the history of the Reserve.<sup>1</sup>



<sup>1</sup> See Majority Staff, U.S. Senate Committee on Energy & Natural Resources, *A Turbulent World: In Defense of the Strategic Petroleum Reserve* (June 27, 2015): <http://1.usa.gov/1W46bCP>.

## Size of the Reserve

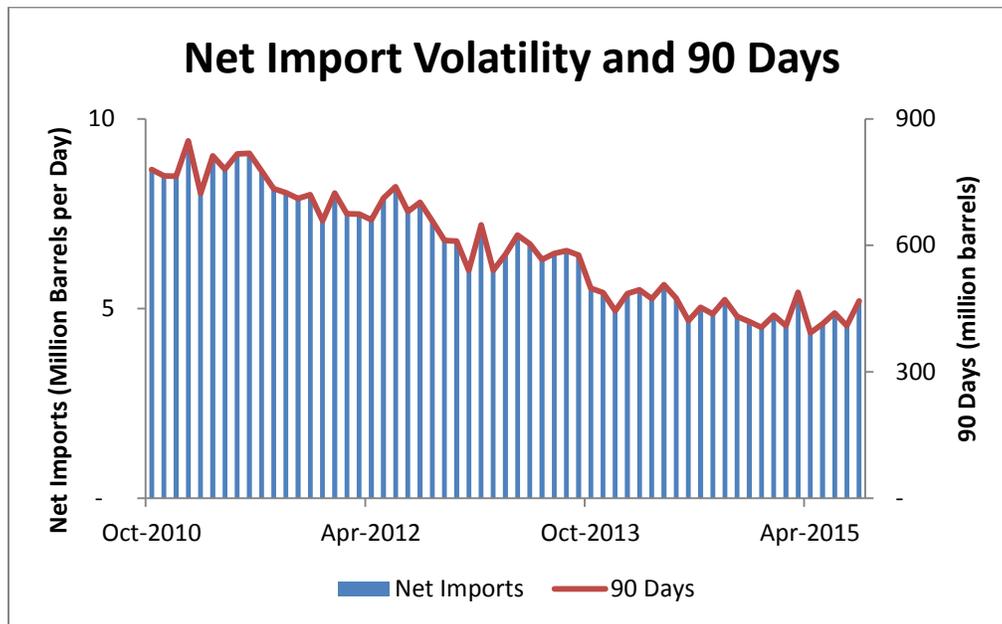
### *Net Import Volatility*

The SPR was created by the Energy Policy Conservation Act of 1975, Section 152 of which outlines the purpose of the Reserve:

“(a) The Congress finds that the storage of substantial quantities of petroleum products [defined to include “crude oil”] will diminish the vulnerability of the United States to the effects of a severe energy supply interruption, and provide limited protection from the short-term consequences of interruptions in supplies of petroleum products.

“(b) It is the policy of the United States to provide for the creation of a Strategic Petroleum Reserve for the storage of up to 1 billion barrels of petroleum products to reduce the impact of disruptions in supplies of petroleum products, to carry out obligations of the United States under the international energy program, and for other purposes as provided for in this Act.”

The level of oil required to be stored in the Reserve is a function of the nation’s net petroleum imports. The United States is obligated by the International Energy Agency to store a minimum of 90 days of net imports. As imports fluctuate, so does the volume of oil required to meet the obligation.<sup>2</sup> Just five years ago, net imports were virtually double their current level and the SPR did not fulfill the IEA obligation.



Source: EIA

<sup>2</sup> The IEA allows for commercial stocks to count towards the requirement. For the purposes of this analysis, only government-owned stocks are considered. The SPR is unique in the IEA universe as a government-owned, government-operated reserve of incomparable size.

### Recent History of Expansion

Just ten years ago, with war raging in Iraq and Afghanistan, the Department of Energy was preparing to increase the size of the SPR by building an additional site. Currently, there are four sites:

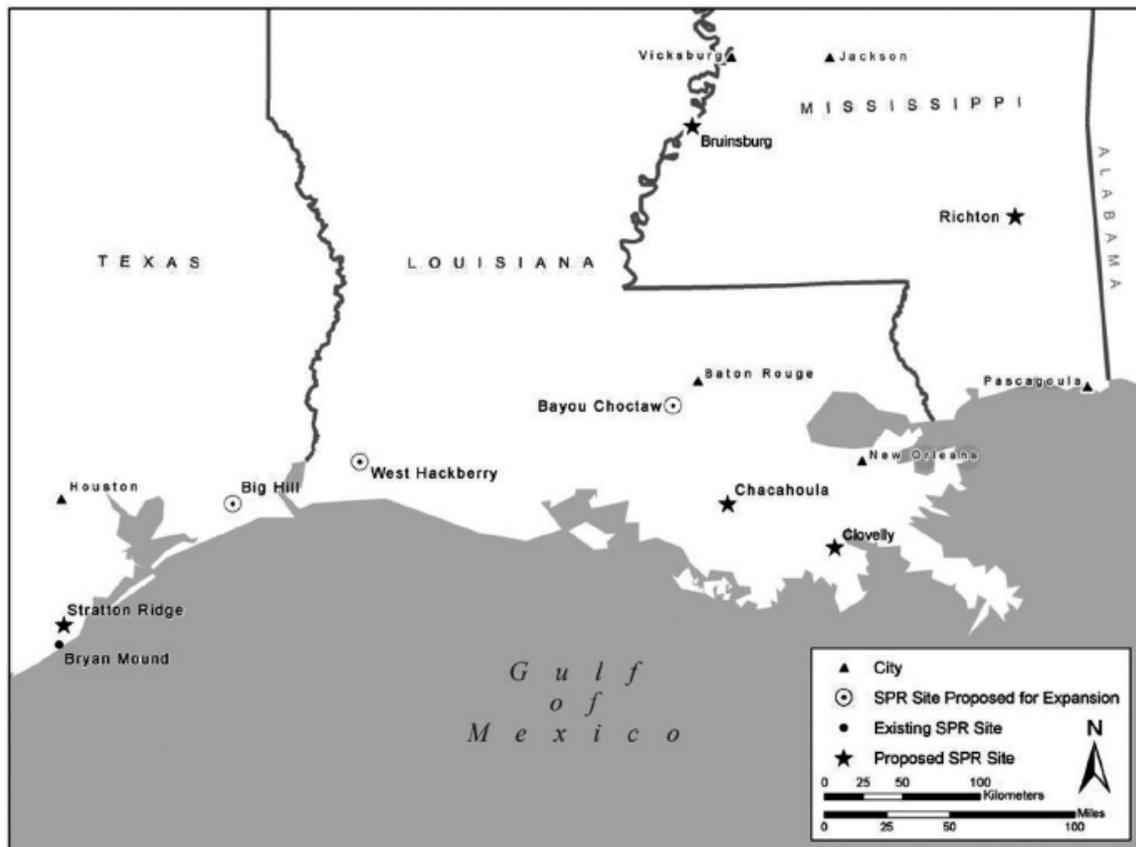
- Bayou Choctaw and West Hackberry, Louisiana
- Big Hill and Bryan Mound, Texas

The agency drafted an Environmental Impact Statement in 2006 and considered the following sites for expansion:

- Richton and Bruinsburg, Mississippi
- Stratton Ridge, Texas
- Clovelly and Chacahoula, Louisiana

In Fiscal Year 2011, funding for expansion was terminated. The project is a reminder of how quickly oil market conditions can change.

Figure S.3.3-1: Existing and Proposed New SPR Facility Locations



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Source: Department of Energy

## **Integrity of the Reserve**

### *Repeated Drawdowns*

The legislation either enacted or currently under consideration by the 114<sup>th</sup> Congress would entail repeated sales of oil from the SPR over the next decade. The Reserve has never before seen such continuous activity. Whenever oil is sold, it must be pumped out of salt caverns below the surface of the earth. Salt caverns are ideal for long-term storage.

According to John Shages, former Deputy Assistant Secretary for Petroleum Reserves at the Department of Energy, repeated drawdowns of this type may affect the integrity of the Reserve itself:

“The reality of SPR use has been very different from what the original designers had envisioned. The Reserve has never drawn down oil as a rate of more than 30 million barrels in a month or for any given event...While removing one million barrels of oil from a cavern may seem inconsequential, repeating the process can have serious consequences for the shape of a cavern. This is because the dissolution of salt during a drawdown always begins at the bottom of the cavern and if the cavern is only partially emptied the shape of the cavern will become distorted with a bulge at the bottom, similar to the shape of a thermometer. Gravity then puts stress on the overhanging salt formation, and massive falls can occur. These falls often damage hanging steel tubulars, which are expensive and time consuming to replace. Cavern integrity may also be compromised by geologic activity. The Weeks Island site was decommissioned in 1997 due to water intrusion into the mine, and in 2013 the program decommissioned cavern 20 at Bayou Choctaw due to concerns that the cavern was too close to the edge of salt. Compounding the complexity of cavern maintenance, each time major work is conducted caverns must be depressurized. There is evidence that depressurizing caverns for even short periods allows the rate of shrinkage to increase rapidly, possibly creating new problems.”<sup>3</sup>

Conducting such drawdowns on a regular basis for the purpose of raising revenue may affect the ability of the Reserve to achieve its true purpose, of providing for energy security, in the event of an actual emergency.

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<sup>3</sup> See *The Strategic Petroleum Reserve: Policy Challenges in Managing the Nation's Strategic Oil Stock* (July 11, 2014): <http://eprinc.org/wp-content/uploads/2014/07/EPRINC-Shages-SPR-July-11-2014.pdf>, p. 6.

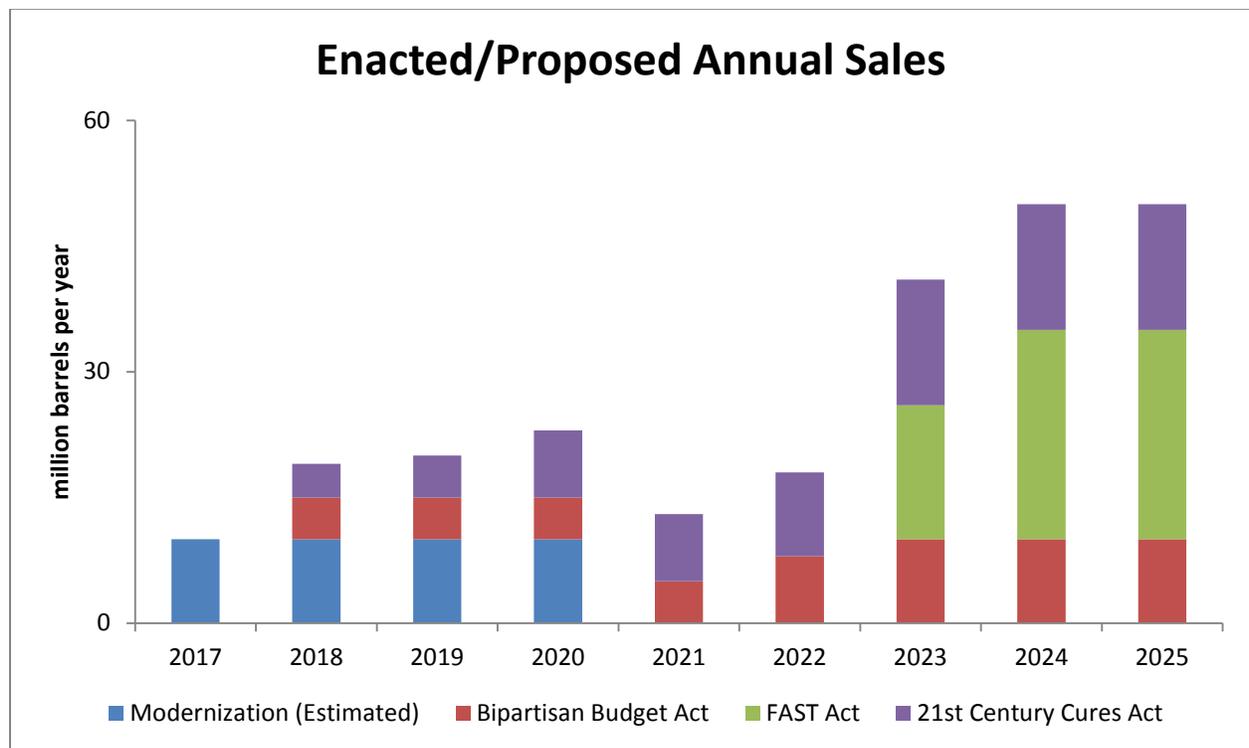
### Cavern Size

The SPR is currently comprised of 62 salt caverns at the four main sites on the Gulf Coast, according to the Department of Energy (as of August 2015):

- Bryan Mound: 245 million barrels in 20 caverns
- Big Hill: 162.3 million barrels in 14 caverns
- West Hackberry: 213.2 million barrels in 22 caverns
- Bayou Choctaw: 73.6 million barrels in 7 caverns

These caverns hold 695 million barrels in total, suggesting each cavern holds – on average – about 10-12 million barrels.

The legislation enacted or under consideration by the 114<sup>th</sup> Congress would require approximately 10-50 million barrels per year in sales, increasing over the course of the decade. These volumes are so large that it is possible that multiple caverns or even an entire site could be depleted and decommissioned, which may affect the ability of the Reserve to respond to future emergencies.



## **Global Leadership**

The United States is the only member of the IEA that imposes a general prohibition on exporting crude oil.<sup>4</sup> The “ban,” as it is generally referred to, prevents American crude oil from escaping the domestic North American market. Sales from the SPR may not, generally, be exported, resulting in even further saturated supplies in the United States. Lifting the ban is an opportunity for our nation to display global leadership on energy issues and enhance energy security and improve economy at the same time.

In addition, the International Energy Agency was created in the 1970s, the same era in which the export ban was imposed. Four decades later, the IEA is modernizing its membership. Mexico, for instance, has requested to join the IEA. India and China are also interested in strategic stockpiles. By downsizing the SPR so dramatically, the United States may send a negative signal to international partners.

Section 161(h) of the Energy Policy and Conservation Act, which created the SPR, provides emergency anticipatory release authority to the President. This authority is capped at 30 million barrels and may only be exercised if doing so would not reduce the total volume in the SPR below 500 million barrels. Essentially, Section 161(h) imposes a floor of 530 million barrels, below which this authority may not be used.

Finally, with the passage into law of the Bipartisan Budget Act, there is only a limited amount of oil that could be sold without colliding with the IEA obligation.

## **Conclusion**

The recent series of proposed and enacted drawdowns constitute a fundamental transformation in the purpose and function of the Strategic Petroleum Reserve. Through most of its history, the theme of the SPR was expansion and preparation for emergencies. In the present discussion, that theme has shifted to depletion and revenue-raising. The SPR was not designed to draw down so much oil so frequently over such a long period of time. All of these issues – the size of the Reserve, the integrity of the Reserve, and our global standing – should be considered in any discussion related to modernization of SPR.

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<sup>4</sup> See Republican Staff, U.S. Senate Committee on Energy & Natural Resources, *A Ban for One: The Outdated Prohibition on U.S. Oil Exports in Global Context* (June 26, 2014): <http://1.usa.gov/1iNfofu>.