

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

Statement by

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Mr. Chairman, Senator Domenici, Members of the Committee I appreciate the opportunity to appear before you today to discuss the creation and use of the Strategic Petroleum Reserve (SPR) and inventory policies writ large, and also to comment on the need for a more comprehensive look at energy policy generally, focusing on directives which while designed to accomplish specific objectives, often produce unintended consequences that may ultimately undermine national policy goals.

I currently serve as Senior Fellow and Director of the Energy and National Security Program at the Center for Strategic and International Studies (CSIS), but the comments and views I express here today reflect a professional background that spans over three decades in both government and the private sector dealing with energy policy issues. In addition to having held positions within the White House (Energy Policy and Planning staff) and at the Departments of Interior and Energy (including Director, Office of Energy Producing Nations and Deputy Assistant Secretary for International Resources), I have 25 years of experience in the energy sector – first as Director of Refinery Policy and Crude Oil Planning for TOSCO Corporation (formerly the nation’s largest independent refiner) and more recently as a Senior Vice President for Pennzoil Company.

My remarks this morning are primarily aimed at discussing the objectives and use of the SPR, the timing and consequences of continuing to fill the reserve in a time of tight markets and rising oil prices, and more general observations and comments directed at the notion of policy directives and the role of inventory in a changing market.

The Establishment and Use of the Strategic Petroleum Reserve

The US Strategic Petroleum Reserve (SPR) is the world’s largest stockpile of government-owned crude oil held specifically for the purpose of mitigating the impacts of oil supply disruptions. The SPR was established under provisions of the Energy Policy and Conservation Act (EPCA) adopted in 1975, largely in reaction to the Arab Oil Embargo of 1973, although the concept of a national oil storage system predates EPCA by at least 30 years.

In 1944, Interior Secretary Harold Ickes advocated the stockpiling of emergency supplies of crude oil. Eight years later, the Minerals Policy Commission in the Truman administration recommended the creation of a strategic oil supply. Following the 1956 Suez Crisis, President Eisenhower resurrected the notion of a strategic oil stockpile and a Cabinet Task Force report on Oil Imports Control in 1970 recommended the establishment of similar reserve.

Directives on the use of the reserve as well as definitional guidelines as to what constitutes a “severe supply disruption” and a “national energy supply shortage” are incorporated in the EPCA legislation. Similarly, the circumstances under which the SPR might be used are also outlined in EPCA, and these include responding to a national supply shortage which the President determines “...is or is likely to be of significant scope and duration, and of an emergency nature, may cause major adverse impact on national safety and the national economy...” and is likely to result from an interruption in the supply of petroleum products (domestic or imported), sabotage or an act of God.

The statutory definitions also provide that a severe supply interruption is deemed to exist if the President determines that a severe increase in the *price* of petroleum products has resulted from such emergency situation and such *price increase* is likely to cause a major adverse impact on the national economy (emphasis added).

In addition to specifying the conditions under which a “full drawdown” of the reserve may be contemplated, EPCA also provides for a “partial drawdown” (with volume limitations) when such action “...would assist directly and significantly in preventing or reducing the adverse impact of such shortage.”

Size and Makeup of the Reserve

Prior to the passage of EPCA, a variety of studies were undertaken to determine the optimum size and composition of the strategic reserve. Assuming continued demand growth in the future, the SPR was congressionally authorized to be built up to one billion barrels in volume, with an initial target size of 500 million barrels. For purposes of comparison, gross oil imports in 1974 and 1975 were slightly in excess of 6 million barrels per day, representing some 36% of total US petroleum demand.¹

The language of EPCA contemplated a petroleum reserve to address crude oil *and* refined product shortages, and it also called for the development of an SPR plan. A 1976-77 study, which formed the basis for the SPR plan concluded that the domestic refining industry was indeed robust and capable of processing available crude(s) into a variety of needed refined products. The study further concluded that a centralized, crude oil based storage facility was much less expensive to construct and manage than multiple storage sites handling a variety of products and the recommendation for a crude oil reserve was subsequently adopted.

The reserve as currently constructed houses a variety of co-mingled crudes (30-40 degrees API gravity) in salt caverns located in four storage sites (Bayou Choctaw, West Hackberry, Big Hill and Bryan Mound) along the Texas and Louisiana portions of the Gulf coast. The sulfur content of the various crude accumulations ranges from 0.5 percent (sweet crude) to 2.0 percent (sour). As of February 22, over 698 million barrels of crude oil were held in SPR storage facilities. Approximately 40% of the crude volume is sweet.²

The size of the reserve is frequently described as providing 51-56 days of import protection (total volume in storage divided by average daily imports), but this is an extremely misleading and somewhat useless factoid. At current fill levels (roughly 700 million barrels), the maximum drawdown rate (for the first 90 days) is about 4.4 million barrels per day (b/d) – which at current consumption rates would meet about 5 hours of average daily needs. Drawing down the SPR at its maximum rate would replace roughly a third of US daily oil imports.

In addition to the crude oil facilities, in 2000 President Clinton directed the establishment of a 2 million barrel home heating oil reserve in the northeastern United States. The

reserve currently houses just under 2 million barrels of heating oil in three locations in Connecticut (two sites) and New Jersey.

Operating Discretion and Management of the SPR

As is the case with other legislation, the EPCA provisions allow the president significant and broad discretion in managing the SPR. And not unlike their predecessors, the current administration has chosen to exercise that discretion, particularly with respect to the conditions under which they would contemplate the use of the reserve.

Their criteria, however, seems to be somewhat of a moving target.

In August of 2004, Vice President Cheney (in a campaign appearance) articulated the conditions under the Bush Administration would contemplate using the SPR. That characterization involved the loss of some “5 or 6 millions barrels a day (of supply) out of the 20 million barrels (per day) that we currently consume.” In the Vice President’s words, such a supply loss “would constitute the kind of national crisis that would drive prices so high and probably bring large parts of our economy to halt.” Such a situation, he said, would require using the reserve.³

In his characterization the Vice President invoked both the significant (volumetric) supply loss as well as the criteria of adverse economic impact and high prices. In the absence of any other formal pronouncement by the administration on the use of the reserve, the Vice President’s comments were broadly interpreted as working guidelines.

Roughly one year later (September 2, 2005), in the aftermath of hurricane Katrina, President Bush issued a Finding of a Severe Energy Supply Interruption and directed the Secretary of Energy to draw down and sell crude oil from the SPR in an attempt to compensate for the loss of offshore production from the US Gulf of Mexico. Energy Secretary Bodman immediately authorized the sale of 30 million barrels of crude to US markets. The administration’s action resulted in the actual sale of 11 million barrels of crude and the “time loaning” of an additional 9.8 million barrels.

The disruption caused by Katrina, while substantial and devastating to the families and economy of the region and throughout the country, never approached in volumetric terms the loss criteria earlier articulated by the Vice President. While recognizing that the release of several millions of barrels of short haul oil was clearly an important response to the devastation, the real significance of the Presidential finding was that it triggered a broader release response from the International Energy Agency (IEA), including the movement of refined products.

Which points to the one of the weaknesses of the SPR design.

The devastating impact of Hurricane Katrina was not limited to offshore production facilities alone as it severely affected refining operations in the Gulf Coast as well as power supply to pipelines and distribution facilities along the east coast and elsewhere. The refinery outages negated, in part, the actual benefit of making the SPR crude

available and the bulk of the real assistance came from drawdown of refined product stocks both here and abroad and the waiving of fuel specs in various states. This combined (crude and product shortage) emergency posed a decidedly different challenge than many of the various crude oil disruption events originally contemplated by emergency planners - but clearly represents one which can plausibly reoccur if the Gulf Coast is again assaulted by category 4 storms, inland flooding and power and refining outages.

Current Market Conditions

In 2006, partially as a consequence of increased global supply and reduced demand due to higher oil prices, oil inventories around the world began to increase. In September, global inventories were running some 120 million barrels above the 5 year average. In a marked departure from the previous two years, a mild 2006 hurricane season resulted in no substantial losses to US offshore production. Prospects of a mild winter season, increases in non-OPEC supply, declining demand due to prices and the inventory build caused oil prices to plummet from \$75 per barrel to the high \$50 per barrel range (see Figures 1 and 2 below).

Figure 1. Days supply of OECD commercial oil stocks. U.S. Department of Energy, Energy Information Administration, 2008.

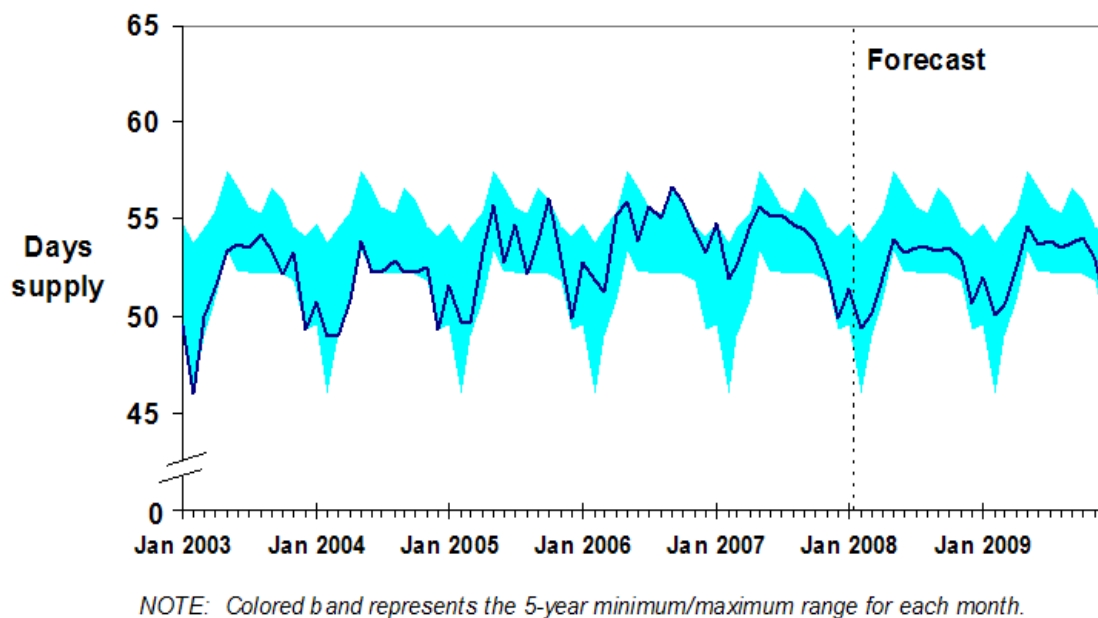
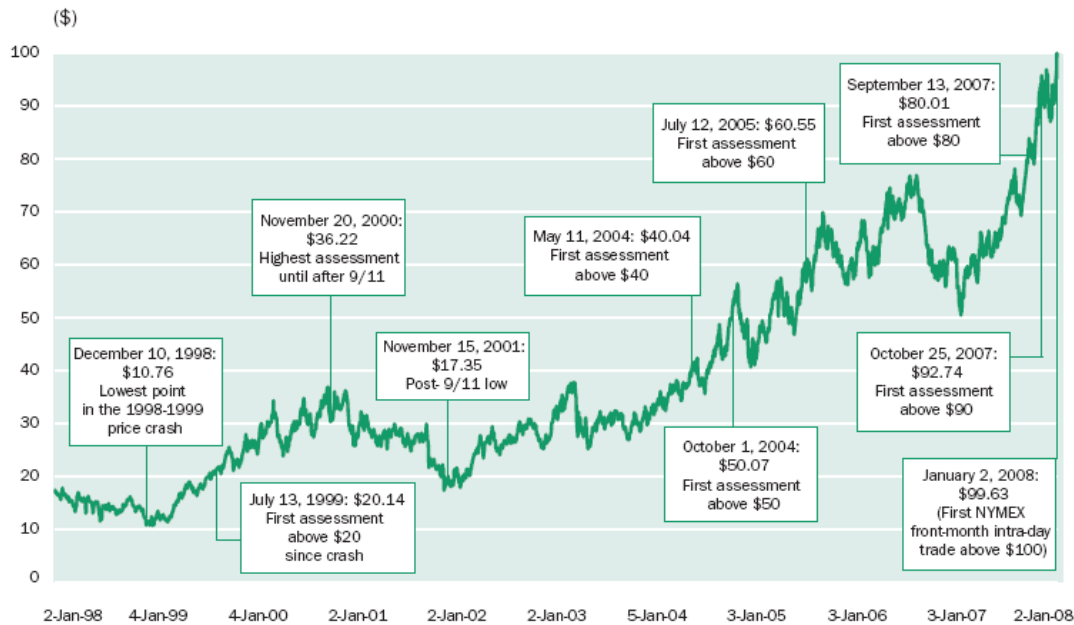
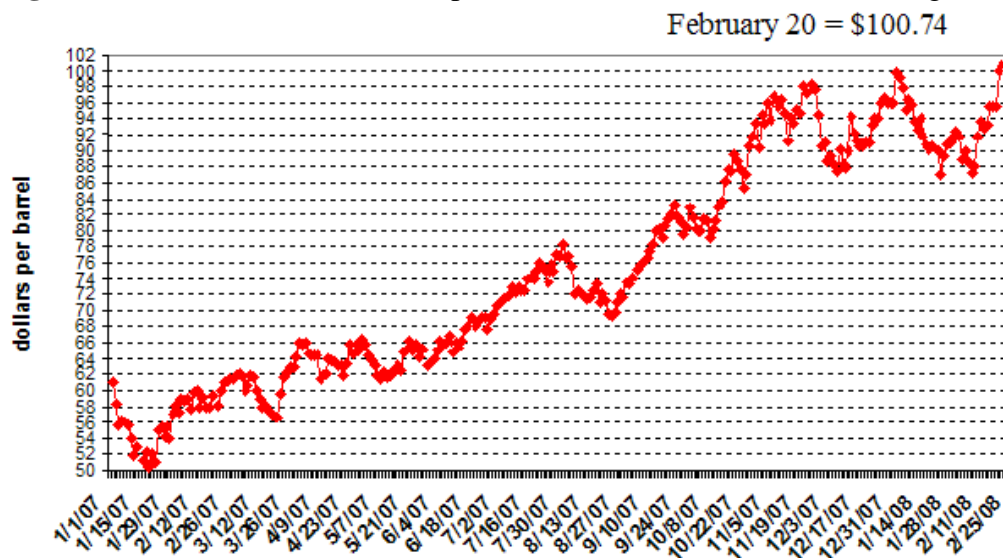


Figure 2. Platts U.S. spot WTI crude oil prices over the last decade. Platts, 2008.



Responding to the precipitous plunge in oil prices and looking ahead to the second quarter (2Q 2007) when demand typically declines, OPEC members began ratcheting down production - forcing consumers to meet energy demand by drawing down inventory worldwide. Between September 2006 and January of 2008, global inventories declined by over 130 million barrels. With limited spare production capacity (mostly in Saudi Arabia), continued demand growth (albeit not as robust as previous years), heightened geopolitical tensions (e.g., Russia, Venezuela, Nigeria, Iran, Pakistan, Iraq, etc.) and the entry of a new class of investors into commodities trade, the NYMEX price for crude oil increased from just over \$50 per barrel in January to the \$100 per barrel marker by year's end (see Figure 3 below).

Figure 3. NYMEX crude oil settle prices. New York Mercantile Exchange, 2008.



Over this period, the strength of the US economy began to decline. And while oil prices were not the singular cause, higher energy prices generally clearly impacted the outcome.

During this period, when asked about price increases, administration spokespersons continued to attribute the movement to market fundamentals, while simultaneously calling on OPEC to increase output. More recently, in response to threats by Venezuelan president Hugo Chavez to suspend crude shipments to the US, the administration has indicated that the SPR would be used to offset any loss of supplies, even though the reduction would fall well below the Cheney standard. No mention, however, was made of suspending the current fill in the event of such a drawdown.

And herein, I believe, lies the dilemma. If the administration truly believes market fundamentals are driving today's prices and they implore OPEC members to put more oil on the market (see statements by both President Bush and Secretary Bodman during their recent Middle East trips), then one should logically be able to conclude they believe the market is undersupplied – i.e., characterized by more buyers than sellers.

Against that backdrop, and given the conditions laid out in EPCA, it might be logical to conclude that one might want to consider putting oil into the market during such a time of tight or short supply rather than taking oil out of the market – as the administration continues to do.

I empathize with Members of Congress who have called for suspending the SPR fill at this moment in time. As indicated earlier, according to DOE statistics, as of last Friday, the SPR currently contains just over 698 million barrels of oil, with plans to acquire an additional 29 million barrels (to reach the present physical capacity of 727 million barrels).

One might well ask why the administration feels compelled to continue to take oil off the market by adding to the reserve at a time when oil prices are at/near record highs. A plausible (but incomplete) explanation might reference the fact that the Energy Policy Act of 2005 (EPAc) directed the Secretary of Energy to expand the SPR to 1 billion barrels and to fill the reserve as quickly as possible, but such a reference would ignore certain critical conditions.

In fact, section 301 (e)(1) of EPAc2005 states that..."the Secretary shall, as expeditiously as practicable, *without incurring excessive cost or appreciably affecting the price of gasoline or heating oil to consumers*, acquire petroleum in quantities sufficient to fill the SPR to the 1 billion barrel capacity authorized under section 154(a) of EPCA..."

The current fill rate (using the royalty in kind program) for crude oil additions to the SPR is running at about 70,000 barrels per day (b/d). Statements made by the administration have consistently made the argument that withdrawing 70,000 b/d of oil from an 86 million b/d day market, in percentage terms, has a negligible impact on prices. I do not dispute that statement in terms of simple arithmetic.

I would note, however, that the impact of the administration's seemingly unwavering determination to not release or imply release of SPR oil absent a major catastrophic shortfall – i.e., along the lines of the Mr. Cheney's suggested criteria of 5 to 6 million b/d – has in today's tight market encouraged and emboldened traders and speculators to talk up prices without fear of reprisal. These investors remain confident that the current administration is unlikely to make SPR oil available to the market under current conditions and that confidence is only bolstered by the fact that the administration continues to withdraw oil from an already tight market.

The administration's insistence on continuing the SPR fill, in my judgment, severely undermined the urgency and impact of recent appeals by both the President and Secretary Bodman to OPEC producers to increase their own output. I would further note that the intention to add roughly 125,000 b/d of light, sweet oil to the reserve this spring (in pursuit of reaching the 727 million barrel storage target) could adversely impact the ability of domestic refiners to maximize gasoline during the upcoming driving season.⁴

Which brings me to my final points – addressing the broader issues of enlightened inventory management and the need for consistent and thoughtful policies to enhance our energy security.

Enlightened Inventory Management

Addressing the broader issue of enlightened inventory management, I would first note that as our fuels system and threats to the reliable and uninterrupted delivery of those fuels change, we need to continually reevaluate how we can best ensure an uninterrupted and secure supply to consumers. A quarter century ago, ensuring adequate and reliable supplies to customers were unchallenged business principles for refiners and distributors. Crude oil supply inventory at the front end of the refinery and products stocks at the back end were constantly adjusted to ensure adequate and reliable delivery.

With the advent of computerization, a more robust delivery system, “just in time” inventory management and Wall Street's emphasis on eliminating the cost of carrying non-productive assets, stock levels invariably began to decline. The reduction of stock levels improved financial performance and served to lower prices. It also depleted the cushion or excess in the system that we used to rely on in times of disruption or short supply. Working group discussions during the preparation of a recent report by the National Petroleum Council looking at refining and inventory issues conveyed the frustration of pipeline and terminal operators that with the expansion in product specs and boutique fuels, tighter delivery schedules and declining storage, tanks were often literally hours away from being emptied (until new deliveries arrived) and hic-cups in the system frequently resulted in temporary outages and/or higher prices.

As we move to a system of increased diversification of fuels and suppliers – including some from agricultural sectors that can be influenced by new risk factors like weather and drought – we will need to continually monitor and revamp our inventory policies and may need to provide additional incentives and assurances to investors to make sure needed infrastructure enhancements actually occur in a time frame that works.

Additionally, in the absence of new refinery construction, as product imports continue to increase, and faced with the prospects of more frequent and high intensity storms in the US Gulf and coastal areas where refineries tend to concentrate – all of which heighten the threat to refined product supply – we should evaluate the need for expanded product inventory in addition to relying on a crude oil reserve.

With specific regard to the management of the SPR, it should be noted that there are many instances where thoughtful decision making has resulted in actions that have preserved the core objective of the program while introducing creativity and flexibility in aligning those objectives with actual events in the market. Such exemplary actions include the suspension of previous fills in order to make more oil available to the market during times of supply uncertainty, Secretary Richardson's use of royalty oil to replace SPR volumes previously sold and rebuilding volumes in a time (1999) of notably low prices, Secretary Bodman's 2006 decision to delay the repayment of loaned oil volumes from the previous fall in order to ensure that refiners had adequate crude supplies to meet processing and product sales requirements and ease price pressure, and periodic swaps of oil to ensure that the crude in storage continues to match refiner needs and processing capabilities.

Unintended Consequences and Conflicting Policy Signals

Before beginning this particular discussion, let me first commend the Members of this committee for their efforts in passing significant pieces of energy legislation in each of the last two Congressional sessions. In particular, I applaud your efforts in promoting improved energy efficiency and the development of supplemental alternative fuels while noting that more could be done to improve domestic supply opportunities.

But, as a cautionary note, let me also emphasize, particularly in this uncertain and volatile market climate, the need for more thoughtful and comprehensive policy directives and specifically the elimination of contradictory signals.

By way of illustration, let me just identify a few examples of this problem. In EPAct2005, Congress provided incentives for the construction/expansion of domestic refining capacity as a way to improve supply deliverability and enhance the reliability of domestic fuels delivery. After an extended period of excess capacity and poor economic performance, higher utilization rates and better margins were finally improving conditions for refiners and additions/expansions were beginning to gain traction. Yet, less than two years later, additional provisions were enacted into law that aim to reduce the need for petroleum based fuels and mandate their volumetric replacement by date certain by employing, in some cases, technologies that don't yet exist at scale or cannot compete without significant subsidies.

While accepting the policy advantages of such diversification, one needs to at least recognize the difficulty this change presents for businesses with shareholder responsibilities and investment projects underway. Faced with the prospect of declining demand for one's products and increasing environmental and construction costs, it is

highly unlikely that many of these announced expansion projects will ultimately go forward as originally envisioned.

Further, in the case of projects which continue to progress – and a great case in point involves Motiva (a joint venture between SaudiAramco and Shell and the largest announced domestic refinery expansion) - the consequences of the adoption of NOPEC-type legislation can be directly contrary to the objectives of the EPAct2005 in terms of promoting security of supply and enhancing refining capability.

As we continue to expound on the benefits of secure energy supplies, driving resource-rich and reliable suppliers to invest elsewhere may ultimately result in redirecting supplies away from the United States to other joint venture operations around the globe.

Similarly, as we contemplate reducing reliance on oil as a way to mitigate the environmental impacts of hydrocarbons use, doubling the size of the SPR make little to no sense at all – and appropriating dollars away from conservation and efficiency programs to accomplish the expansion is both myopic and ill-conceived.

Thank you for the opportunity to appear before you today. I would be pleased answer any questions.

¹ U.S. Energy Information Administration; historical data from the Annual Energy Review on petroleum (crude oil and refined products) imports and consumption.

² U.S. Department of Energy Website, Office of Fossil Energy, Facts and Questions related to the Strategic Petroleum Reserve

³ “US Might Tap SPR if Half Imports Stop – Cheney”, Reuter’s Report, Washington, D.C., August 25, 2004

⁴ “US Government, Senate Democrats on SPR Collision Course,” Reuters report by T. Doggett and C. Baltimore, February 6, 2008