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BEFORE THE
U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON ENERGY AND COMMERCE
SUBCOMMITTEE ON ENERGY

JULY 24, 2018

Good morning, Chairman Upton, Vice-Chairman Olson, Ranking Member Rush and distinguished Members of this Committee. My name is Kevin Book, and I lead the research team at ClearView Energy Partners, LLC, an independent firm that analyzes macro energy issues for institutional investors and corporate strategists. Thank you for inviting me to contribute to your discussion regarding the modernization of the Strategic Petroleum Reserve (SPR).

I was asked to offer my comments regarding a discussion draft of legislation that would authorize the Secretary of Energy to carry out a program to lease underutilized SPR facilities. This written testimony presents my comments regarding that text. I have also included several observations regarding the SPR itself intended to reiterate and strengthen points I have suggested during prior appearances before other Committees.[1]

Let me begin by offering my admiration for the foresight the U.S. Congress showed in creating the SPR with the passage of the *1975 Energy Policy and Conservation Act* (EPCA). In my view, the SPR remains one of the greatest energy security achievements in modern history. Not only does it continue to insure the U.S. economy against petroleum supply disruptions, but its vast scale also has potential to extend that insurance to U.S. allies and, indeed, to the global economy.

I would suggest that the SPR's importance for U.S. energy security has not diminished, even in the wake of last week's astonishing estimate by the Energy Information Administration (EIA) that U.S. crude oil production averaged 11 MM bbl/d during the week ending July 13, an all-time peak. The U.S. oil surge is good news, in my opinion, but those barrels already have customers. As a government-controlled stockpile, the SPR can provide additional, extra-market supply in emergencies.

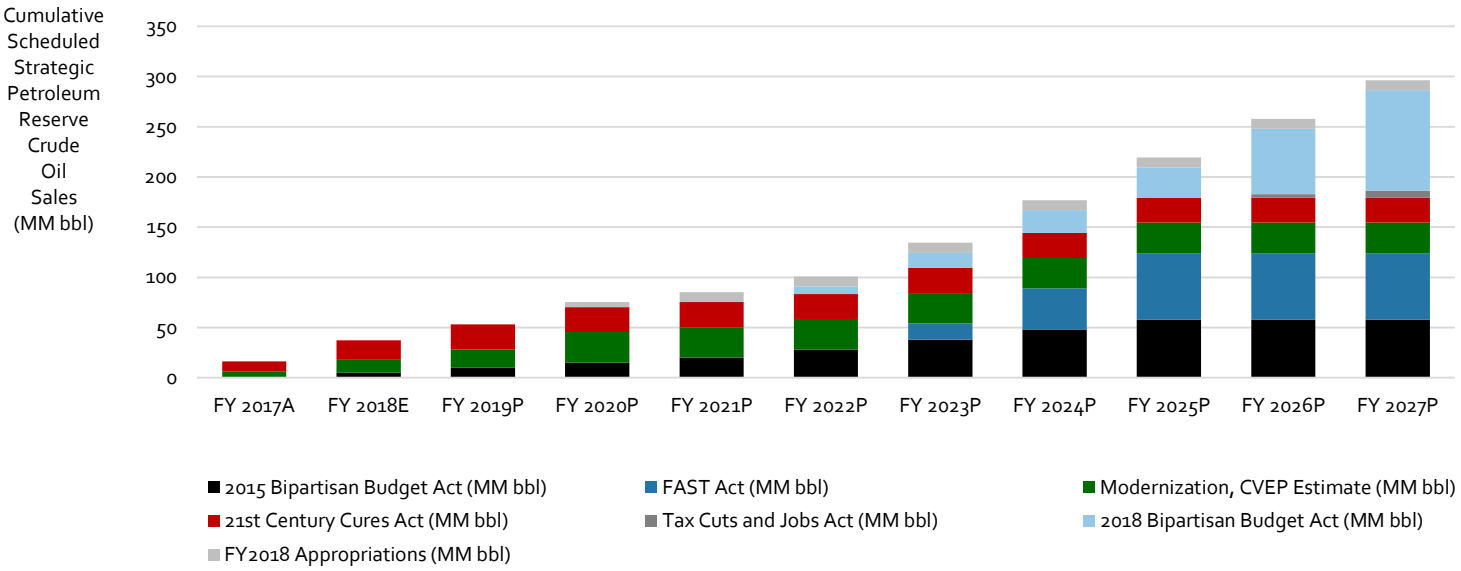
To serve this role, however, the Reserve must remain in working order. The Department of Energy (DOE) issued a *Long Term Strategic Review* of the SPR in August 2016 that identified "challenges related to the condition of physical assets and operational reliability." The review also outlined a modernization program to be paid for with up to $2 B in proceeds from non-emergency crude sales pursuant to Section 404 of the *2015 Bipartisan Budget Act.*

The DOE has thus far conducted two such sales totaling ~13.4 MM bbl, raising ~$725 MM for the dedicated Energy Security and Infrastructure Modernization (ESIM) Fund created by Section 404. The version of the *FY 2019 Energy and Water, Legislative Branch, and Military Construction and Veterans Affairs Appropriations Act* that passed the Senate on June 25 would raise another $350 MM (~4.67 MM bbl at a sale price of $75/bbl).

Figure 1 (next page) tabulates these sales and several others mandated by six recent laws: the *2015 Bipartisan Budget Act,* the *2015 Fixing America's Surface Transportation Act* (FAST), the *2016 21st Century Cures Act,* the *2017 Tax Cuts and Jobs Act,* the *2018 Bipartisan Budget Act* and the *2018 Consolidated Appropriations Act*. My understanding is that proceeds from non-modernization sales go to the Treasury Department's General Fund rather than the ESIM Fund or the SPR Petroleum Account.

[1] See also October 6, 2015 testimony before U.S. Senate Committee on Energy and Natural Resources; June 9, 2011 testimony before U.S. Senate Committee on Energy and Natural Resources; May 12, 2009 testimony before the U.S. Senate Committee on Energy and Natural Resources; and April 4, 2008 testimony before the (former) U.S. House of Representatives Select Committee on Energy Independence and Global Warming.

Figure 1 – Congressionally Mandated Sales Imply ~300+ MM bbl of Spare Storage Capacity at 713.5 MM bbl Nameplate in FY 2028



Fiscal Year (October 1 to September 30)	2015 *Bipartisan Budget Act* (MM bbl)	*FAST Act* (MM bbl)	Modernization Sales (MM bbl) [1]	Scheduled Sales Under the *21st Century Cures Act of 2016* (MM bbl)	Scheduled Sales Under the *2017 Tax Cuts and Jobs Act* (MM bbl) [2]	Scheduled Sales Under the *2018 Bipartisan Budget Act* (MM bbl) [3]	Scheduled Sales Under FY2018 Appropriations (MM bbl) [4]	Total Per Fiscal Year (MM bbl)	Starting Volume (MM bbl) [5]	Implied Days of Net Import Cover Based on TTM Net Imports Through 4/2017 [6]
2016	--	--	--	--				--	695.1	210.9
2017	--	--	-6.4	-10				-16.4	695.1	210.9
2018	-5	--	-7	-9				-21	669.0	203.0
2019	-5	--	-4.7	-6				-15.7	657.0	199.3
2020	-5	--	-12.3	--			-5	-22.3	641.3	194.6
2021	-5	--	--	--			-5	-10	619.0	187.8
2022	-8	--	--	--		-7.5		-15.5	609.0	184.8
2023	-10	-16	--	--		-7.5		-33.5	593.5	180.1
2024	-10	-25	--	--		-7.5		-42.5	560.0	169.9
2025	-10	-25	--	--		-7.5		-42.5	517.5	157.0
2026	--	--	--	--	-3.5	-35		-38.5	475.0	144.1
2027					-3.5	-35		-38.5	436.5	132.4
2028+									398.0	120.7
All Years	**-58**	**-66**	**-30.4**	**-25**	**-7**	**-100**	**-10**	**-296.4**		

Notes:

[1] Based on $2 B of total modernization spending. Incorporates pending $350 MM modernization sale in FY2019 at $75/bbl and the balance of the $2 B at $75/bbl in FY2020. Section 404 of the *2015 Bipartisan Budget Act* does not require all $2B in sales, so this represents an upper-bound assumption. President Trump's FY 2018 *Budget Request to Congress* proposed to reduce overall modernization spending to $1B. The President's FY 2019 *Budget Request* indicated that the $1.2 B Marine Terminal Distribution Capability Enhancements program outlined in the *Long-Term Strategic Review* had been deferred and would be re-evaluated pending final policy guidance.

[2] Ratably applied to FY 2026 and 2027.

[3] First 30 MM bbl ratably applied to FY 2022-2025.

[4] Ratably applied to FY 2020 and 2021.

[5] FY 2016-2018 values reflect actual levels in October of prior calendar year. FY 2019 excludes pending repurchases from emergency sales and uses April 2018 SPR volumes, less the 7 MM bbl in the March 2018 modernization sale.

[6] Based on TTM average net crude and products imports of 3.296 MM bbl/d through April 2018.

Source: ClearView Energy Partners, LLC, using DOE, EIA and Library of Congress data

As Figure 1 shows, if current statutory requirements remain unchanged, scheduled modernization and non-emergency sales could reduce SPR crude volumes to ~398 MM bbl at the start of U.S. Government FY 2028. This would represent a ~296.4 MM bbl decline from the Reserve's ~695.1 MM bbl size at the start of FY 2017, based on the assumptions outlined in Figure 1. Accordingly, it seems prudent to ask whether, and how, the resulting surplus capacity might be put to productive use.

Key Elements of the Discussion Draft

By my reading, the discussion draft would make three principal changes to the existing text of EPCA. First, it would expand the universe of potential lessees of unused SPR capacity. Section 168(a) of EPCA currently gives the Secretary of Energy authority to store petroleum for foreign governments in "underutilized" SPR facilities:

> *Notwithstanding any other provisions of this title, the Secretary, by lease or otherwise, for any term and under such other conditions as the Secretary considers necessary or appropriate, may store in underutilized Strategic Petroleum Reserve facilities petroleum product owned by a foreign government or its representative. Petroleum products stored under this section are not part of the Strategic Petroleum Reserve and may be exported without license from the United States.*

The discussion draft would modify Section 168(a) by making private-sector entities eligible to store petroleum products in underutilized SPR facilities, as well. It also would redefine eligible infrastructure for leasing to include "storage facilities and related facilities":

> *Notwithstanding any other provision of this title, the Secretary may establish and carry out a program to lease underutilized Strategic Petroleum Reserve storage facilities and related facilities to the private sector, or a foreign government or its representative. Petroleum products stored under this section are not part of the Strategic Petroleum Reserve.*

Second, the draft would impose new national security requirements on storage for foreign governments by replacing the original text of Section 168(d) with the following:

> *The Secretary shall ensure that leasing of facilities under the program established under subsection (a) to a foreign government or its representative will not impair national security.*

Third, the draft would reallocate proceeds generated by leasing activities. The text in EPCA that is currently designated as Section 168(d) of EPCA reserves leasing revenues for the purpose of purchasing petroleum products:

> *Funds collected through the leasing of Strategic Petroleum Reserve facilities authorized by subsection (a) after September 30, 2007, shall be used by the Secretary of Energy without further appropriation for the purchase of petroleum products for the Strategic Petroleum Reserve.*

A new section 168(e) in the draft would allocate proceeds to the Treasury Department's General Fund and use them to offset costs associated with withdrawals on behalf of lessees:

> *(e) DEPOSITS OF AMOUNTS RECEIVED. –*
> *(1) IN GENERAL. – Except as provided in paragraph (2), amounts received through the leasing of facilities under the program established under subsection (a) shall be deposited in the general fund of the Treasury during the fiscal year in which such amounts are received.*
> *(2) COSTS. – The Secretary may use for costs described in subsection (b), without further appropriation, amounts received through the leasing of facilities under the program established under subsection (a).*

The "subsection (b)" cost recovery provisions referenced in the excerpt above seem essentially unchanged from EPCA today:

> *Any lease entered into under the program established under subsection (a) shall contain provisions providing for fees to fully compensate the United States for all related costs of storage and removals of petroleum products (including the proportionate cost of replacement facilities necessitated as a result of any withdrawals) incurred by the United States as a result of such lease.*

In addition to those three changes, the discussion draft would create a new EPCA provision. Section 170 would establish within 180 days a pilot leasing program for "capacity for storage of up to 200,000,000 barrels of petroleum products at Strategic Petroleum Reserve storage facilities" and "related facilities." Notably, the pilot would include a requirement to

> *[…] identify and implement any changes to facilities or facility operations necessary to so lease such facilities, including any such changes necessary to ensure the long-term structural viability and use of the facilities for purposes of this part and part C;*

Comments Regarding the Discussion Draft

My comments generally fall into three categories: (1) feasibility; (2) competitiveness; and (3) strategic goals.

Regarding feasibility: in conjunction with the leasing program envisioned by the discussion draft, DOE might wish to evaluate the viability of underutilized SPR capacity and the potential cost associated with restoring, rehabilitating or improving that capacity to support the requirements of commercial lessees. Notably, the DOE's *Long-Term Strategic Review* described "single-cycle drawdown" caverns characterized by "irregular cavern shapes, shallow depths, and spacing between caverns" with "geo-mechanical and structural challenges that make them unsuitable for conducting multiple drawdowns." The *Review* stated that ~142.1 MM bbl of design storage capacity had only one drawdown left at the time, and that ~129.7 MM bbl of that total consisted of single-cycle drawdown caverns (Bayou Choctaw 101, which could be rehabilitated, accounted for the remaining 12.4 MM bbl).

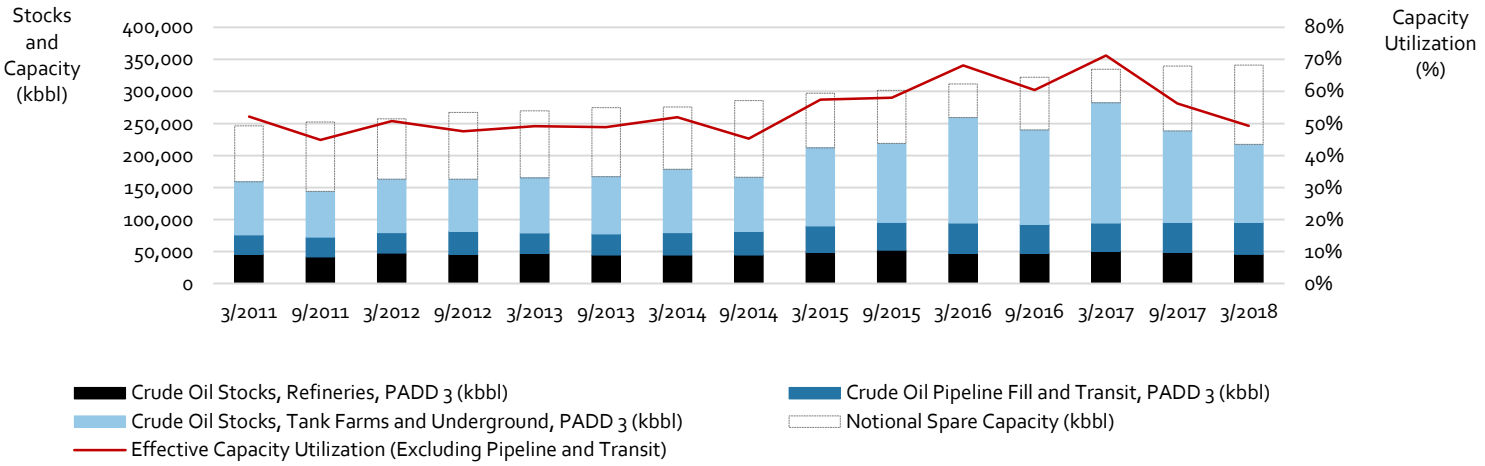
Likewise, DOE might also wish to evaluate the availability of takeaway capacity from leased storage sites, particularly in the absence of incremental SPR marine distribution capacity buildout. The *Review* detailed challenges associated with pipeline reversals and growing domestic production that had impaired outflows from Bayou Choctaw:

> *The surplus of crude in the Capline System and the reversal of the Ho-Ho pipeline make it difficult for Bayou Choctaw SPR crude to make its way into the market without disrupting existing commercial flows of domestic crude. Additionally, there is virtually no capacity to provide incremental barrels of SPR crude by marine vessel at the St. James terminal without disrupting Shell's commercial business.*

It also may bear noting that, per my estimate in Figure 1, the full 200 MM bbl of capacity seems unlikely to be available for leasing before the start of U.S. Government FY 2025 (i.e., October 1, 2024).

Regarding competitiveness, it may be useful for DOE to evaluate the market impacts associated with introducing up to 200 MM bbl of crude storage into PADD 3 (the Gulf Coast region). The EIA's semi-annual assays of PADD 3 storage show recent capacity utilization declines, exclusive of pipeline fill (Figure 2).

Figure 2 – EIA Semi-Annual Assays of PADD 3 Commercial Storage, 3/2011 – 3/2018



Note: Capacity utilization and notional spare capacity based on working storage, not shell (i.e., unusable) storage.

Source: ClearView Energy Partners, LLC, using EIA data

Production growth generally increases storage requirements, but SPR leasing seems likely to come with several uncertainties. On one hand, it could be undesirable if additional, low-cost, government-run SPR storage were to "crowd out" existing, privately operated facilities. On the other hand, even though salt cavern storage tends to be significantly cheaper than tank storage and floating storage in leased tankers, drawdown constraints and takeaway bottlenecks could limit commercial demand relative to demand for more readily accessible tank farms and ships.

Ultimately, SPR storage may prove better suited for lessees with long-term storage needs, such as foreign governments that must comply with International Energy Agency (IEA) obligations to hold 90 days of net import cover. According to IEA data through April 2018, nine of the 30 Member countries currently rely to some degree on publicly controlled inventories stored abroad (Figure 3).

Figure 3 – IEA Member Countries: Strategic Stocks Held Overseas and Implied 90-Day Compliance Volumes

International Energy Agency Member	Share of Oil Held in Public Stocks (%) [1]	Share of Industry Oil Stocks Held Abroad, As of 4/2018 (%) [1]	Share of Public Oil Stocks Held Abroad, As of 4/2018 (%)	2018P Net Imports (kbbl/d) [2]	90 Days' Net Import Cover (MM bbl)
Canada [3]	--	--	--	--	--
Mexico [3]	--	--	--	--	--
United States	42%	0%	0%	3,296.0 [4]	237.1
Australia	0%	0%	--	541.2	48.7
Japan	60%	0%	0%	4,338.5	390.5
Korea	51%	0%	0%	2,243.5	201.9
New Zealand	28%	0%	100%	141.2	12.7
Austria	83%	41%	0%	225.3	20.3
Belgium	56%	18%	60%	286.7	25.8
Czech Republic	73%	29%	0%	195.8	17.6
Denmark	38%	2%	11%	7.9	0.7
Estonia	55%	0%	47%	17.5	1.6
Finland	49%	2%	0%	178.7	16.1
France	73%	0%	1%	1,568.5	141.2
Germany	73%	14%	4%	2,179.0	196.1
Greece	0%	0%	--	273.7	24.6
Hungary	61%	0%	0%	109.1	9.8
Ireland	83%	0%	41%	132.2	11.9
Italy	8%	13%	0%	977.3	88.0
Luxembourg	0%	93%	--	57.4	5.2
The Netherlands	25%	0%	55%	888.6	80.0
Norway [3]	--	--	--	--	--
Poland	27%	0%	0%	546.5	49.2
Portugal	37%	4%	21%	218.1	19.6
Slovak Republic	64%	0%	0%	67.3	6.1
Spain	41%	4%	0%	1,147.4	103.3
Sweden	0%	9%	--	286.7	25.8
Switzerland	0%	5%	--	249.4	22.4
Turkey	0%	0%	--	702.0	63.2
United Kingdom	0%	34%	--	438.9	39.5

Notes:

[1] Based on IEA data for April 2018, accessed on July 21, 2018: http://www.iea.org/netimports/.

[2] Using IEA projections for 2018 (i.e., not actual data) in every case except the U.S., which uses Energy Information Administration (EIA) data for April 2018.

[3] Canada, Mexico and Norway are net exporters and, therefore, have no net import cover obligations.

[4] Uses EIA accessed on July 21, 2018 via the FRED Excel plug-in; reflects trailing, twelve-month (TTM) average through April 2018.

Source: ClearView Energy Partners, LLC, using EIA and IEA data

The Government Accountability Office (GAO) noted in its May 30 report, *DOE Needs to Strengthen Its Approach to Planning the Future of the Emergency Stockpile,* that the U.S. could potentially sell "tickets" (contingent contracts) to other IEA members:

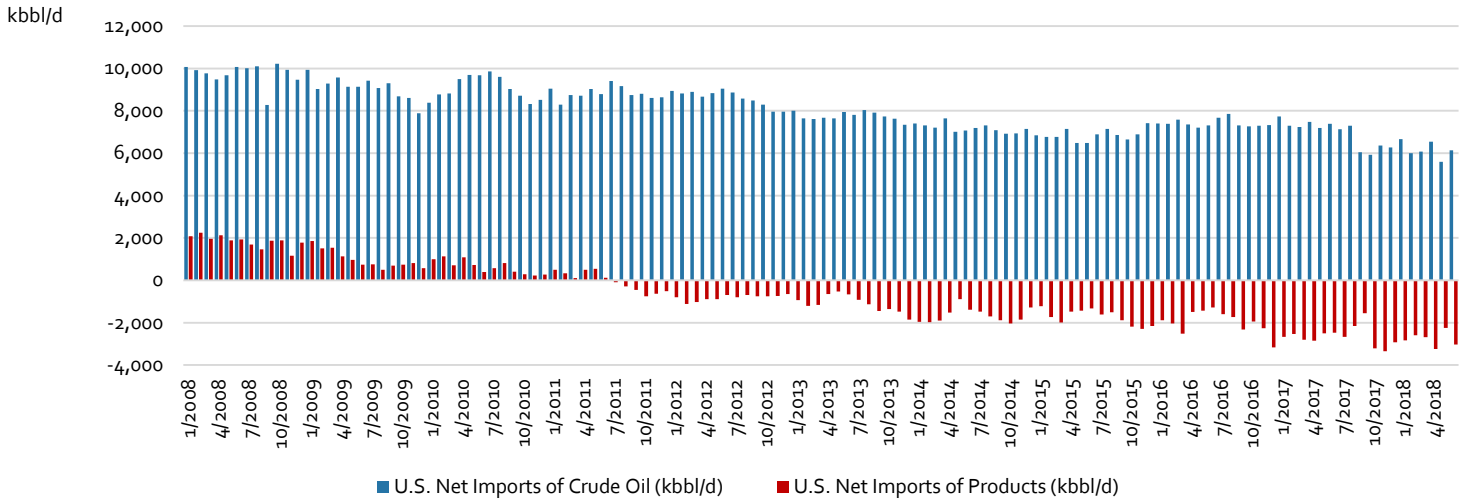
> *Second, if Congress determines that the SPR holds oil in excess of that needed domestically, DOE could explore selling contracts or tickets for the excess oil rather than selling the oil outright. Australian and New Zealand officials told us that if DOE were to sell tickets for SPR oil, tickets would help these countries meet their IEA 90- day reserve obligations.*

In a similar vein, DOE could potentially explore hybrid products within its pilot program, such as the option for commercial customers to purchase SPR crude and pay lease fees to store it in place rather than taking delivery. This sort of virtual transfer could reduce, or at least delay, wear and maintenance requirements associated with drawdowns.

Regarding strategic goals: at a storage cost of $0.10/bbl/month, 200 MM bbl of capacity would generate annual revenues of $240 MM/Y, or a little more than two-thirds of the modernization budget in the latest iteration of the FY 2019 energy and water appropriations bill. Even so, the discussion draft as currently written would primarily deposit leasing proceeds into the General Fund rather than paying for SPR modernization and improvements, such as marine delivery expansions that could augment SPR utility in emergencies use while also making commercial storage more attractive.

Accordingly, it may be worth exploring whether the pilot leasing program could be designed to allocate a greater share of proceeds towards SPR modernization. The SPR still matters, even though the U.S. has dramatically reduced its net petroleum imports, not least because U.S. refiners still import significant crude volumes at prices that reflect global supply-demand balances (Figure 4).

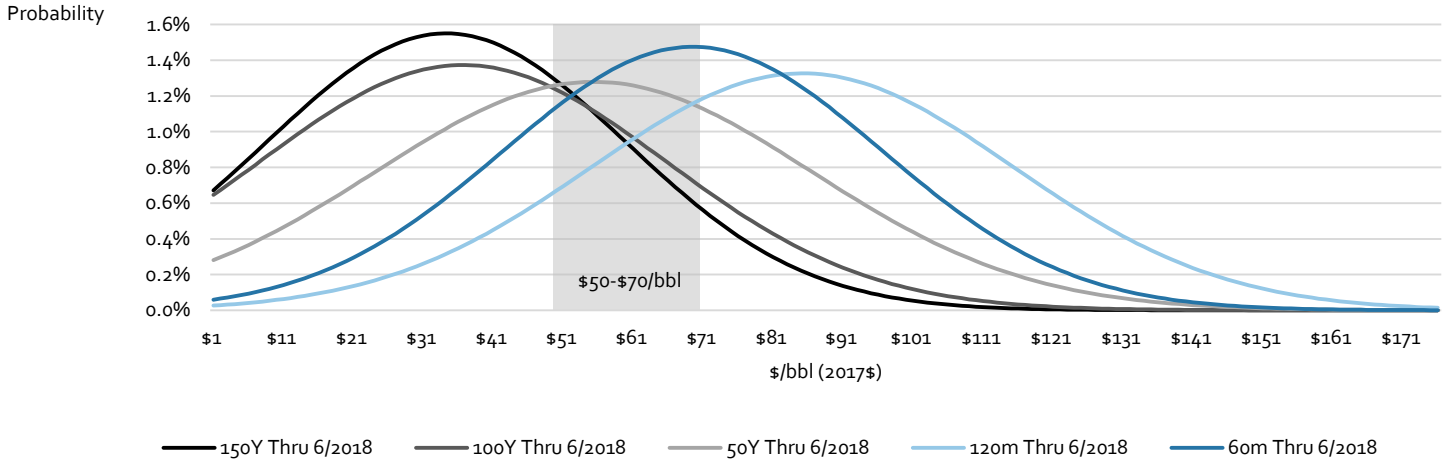
Figure 4 – U.S. Net Petroleum Imports Have Declined Substantially, but the Country Still Imports Significant Crude Volumes



Source: ClearView Energy Partners, LLC, using EIA data

Despite several recent years of relative calm, oil prices remain high relative to historical norms. Global real crude oil prices averaged higher during the five and ten years through June than they did over 50- 100- and 150-year intervals (Figure 5).

Figure 5 – Historical Mean Global Prices of Crude Oil and Implied Probabilities of Real Global Prices Above $70/bbl

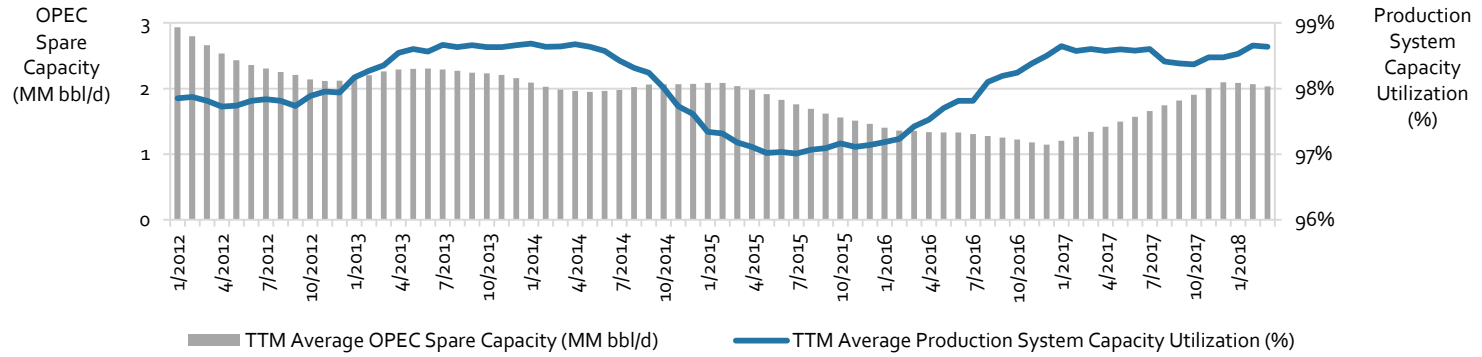


Period	Mean Real Price ($/bbl, 2017$)	Standard Deviation, Assuming Normally Distributed Prices ($/bbl, 2017$)	Cumulative Probability of a Price At or Above $70/bbl
150Y Thru 6/2018	$34.26	$25.73	8.2%
100Y Thru 6/2018	$36.66	$29.04	12.5%
50Y Thru 6/2018	$55.33	$31.18	31.9%
120m Thru 6/2018	$85.20	$30.07	69.3%
60m Thru 6/2018	$69.51	$27.04	49.3%

Source: ClearView Energy Partners, LLC, using BEA, BP and EIA data

At the same time, even as U.S. crude production surges towards 12 MM bbl/d – and, potentially, net exports within a decade – robust global consumption growth has driven production system capacity utilization (consumption divided by production plus OPEC spare capacity) back up to relatively high levels (Figure 6).

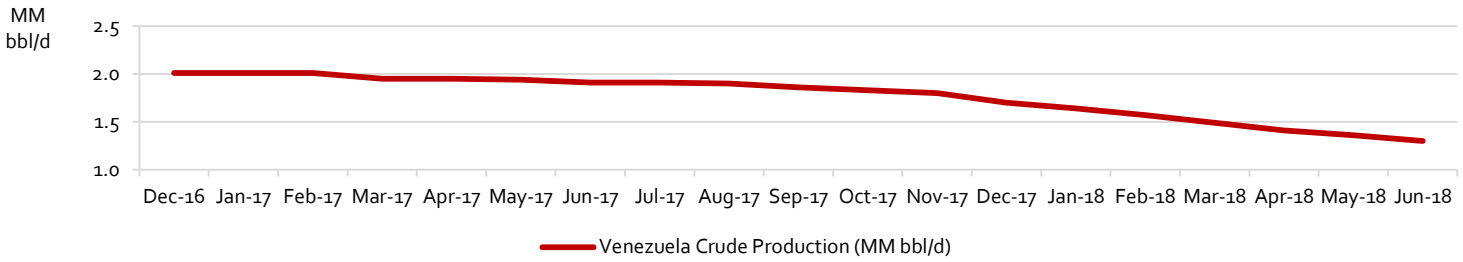
Figure 6 – High Global Crude Production System Capacity Utilization, Low (and Falling) OPEC Spare Capacity



Source: ClearView Energy Partners, LLC, using EIA data

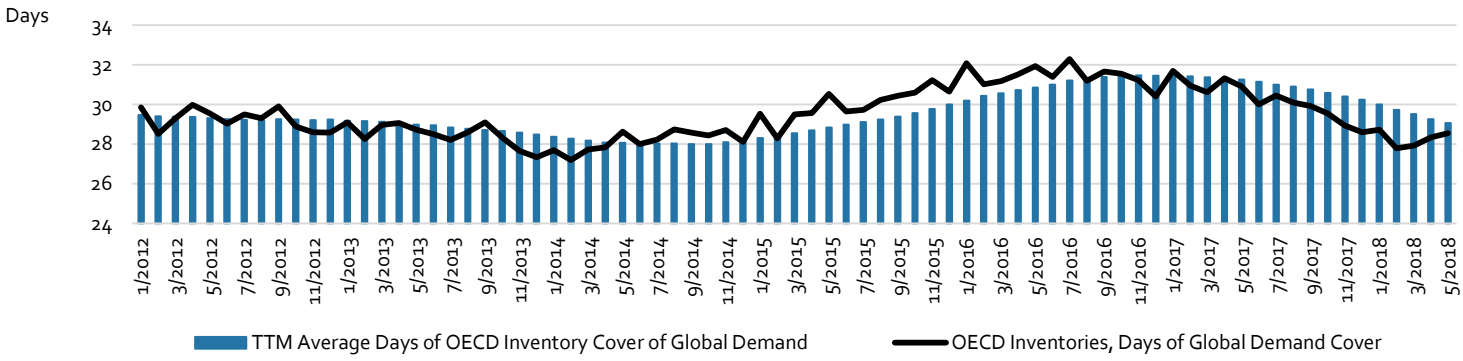
Meanwhile, concerted efforts by OPEC and cooperating countries since the start of 2017 – with a big assist from the collapse of Venezuelan production (Figure 7) – have substantially reduced OECD petroleum inventories (Figure 8).

Figure 7 – Venezuela's Production Fell to ~1.3 MM bbl/d in June 2018, With a TTM Average Downtrend of ~60 kbbl/d/month



Source: ClearView Energy Partners, LLC, using Platts OPEC Survey *data*

Figure 8 – OECD Inventory Demand Cover Has Dropped Significantly

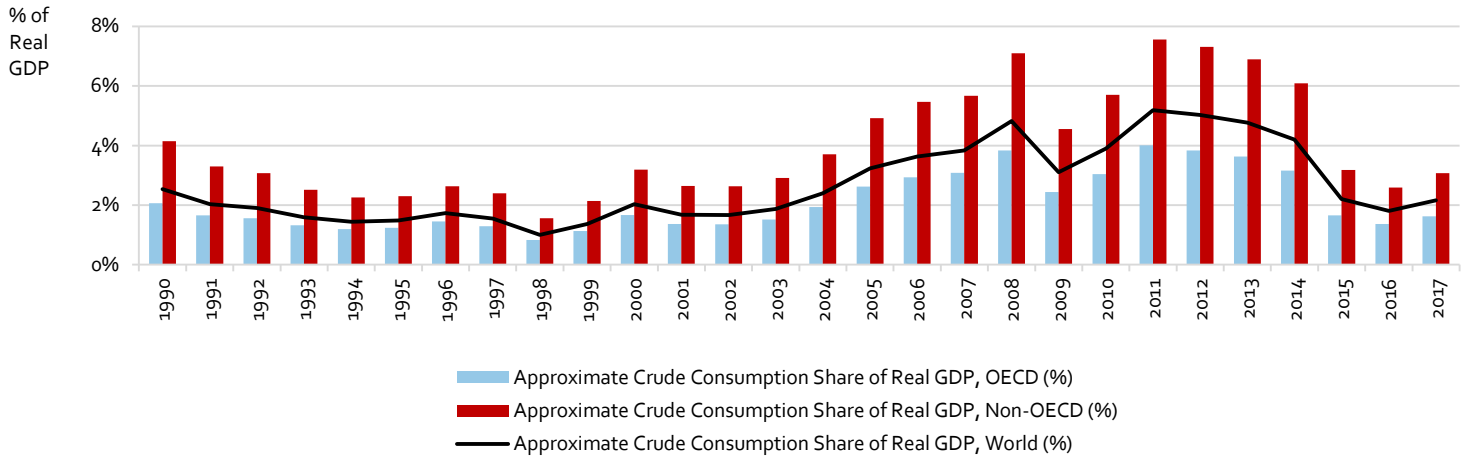


Source: ClearView Energy Partners, LLC, using EIA data

This combination of high upstream capacity utilization and thinning inventories exposes consumers to (painfully) balancing global markets through demand destruction in the event of a shortfall.

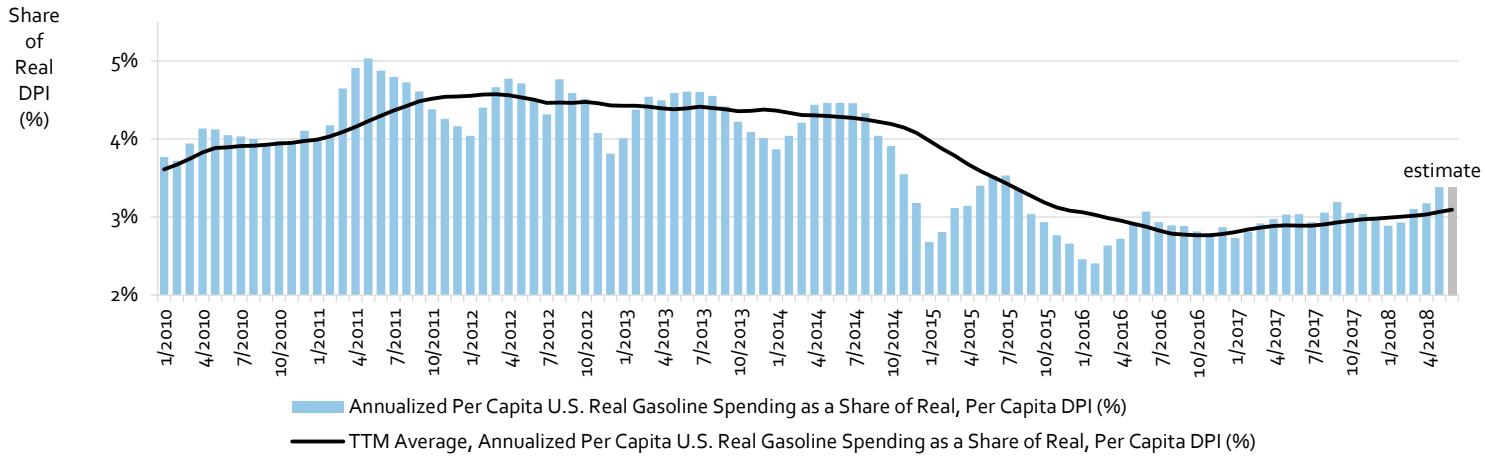
Given its potential to disrupt and undercut private investments, an SPR draw seems unwarranted in anything less than a severe and potentially sustained supply interruption. That said, the strategic goals of insuring against worldwide economic fallout (Figure 9) and sheltering U.S. consumers (Figure 10) seem likely to require a robust and well-functioning Reserve capable of delivering its full ~4.5 MM bbl/d design capacity. In that spirit, a pilot storage leasing program that helps to preserve and/or expand SPR capabilities could potentially benefit U.S. producers and refiners in need of additional storage at the same time that it enhances petroleum supply insurance for U.S. consumers.

Figure 9 – Global Prices Have Global Implications: Approximate Crude Consumption Shares of Real GDP, 1990-2017



Source: ClearView Energy Partners, LLC, using BEA, BP, EIA and World Bank data

Figure 10 – Even With Surging Crude Production, the U.S. Remains a Nation of Light-Duty Vehicle Drivers



Source: ClearView Energy Partners, LLC, using BEA, EIA and FHWA data

Mr. Chairman, this concludes my prepared testimony. I will look forward to answering any questions you or your colleagues may have at the appropriate time.