U.S. Oil Imports: Context and Considerations

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Summary

Despite long standing concern by policy makers, U.S. oil imports have generally increased for decades. Two periods stand out as exceptions: the early 1980s and the last five years. Both periods were characterized by high oil prices, economic volatility, and attention to energy policy. U.S. oil imports fell each year between 2005 and 2010 to reach just under 50% of U.S. liquid fuel consumption, its lowest level since 1997. The economic downturn and higher oil prices were a drag on oil consumption, while price-driven private investment and policy helped increase domestic supply of oil and oil alternatives.

Among the sources of net U.S imports, about a quarter of net imports come from Canada and another half come from countries that are members of the Organization of the Petroleum Exporting Countries (OPEC). Almost 20% of imports come from the Persian Gulf (from OPEC countries in the region). Global oil supply disruptions can shift import trends and raise prices for oil produced at home and imported. This is true even if the disruption occurs in countries that are not normally sources of U.S. imports. Even anticipation of disruption risks can have similar impacts.

Reliance on oil imports is of particular concern to policy makers when oil prices increase. Increased fuel costs for households and businesses can reduce spending on other goods and services that might be domestically produced, send more wealth abroad, and cause economic dislocations, such as greater unemployment. Economic forecasters estimate a sustained $10 increase in the per barrel price of oil can reduce U.S. economic growth by 0.2% in part due to how much U.S. consumption is met by imports. However, even in a scenario where the U.S. produced as much oil as it consumed, an increase in international oil prices would still raise oil costs for households and businesses and cause economic dislocations, but wealth associated with the increase may remain in the country.

Oil import volumes are expected to remain roughly flat over the next two decades. There is a growing consensus that U.S. imports passed their high-watermark in 2005. Such forecasts are predicated on expectations that current laws supporting fuel efficiency and domestic supply are not reversed and that oil prices continue to rise. While volumes may remain flat, rising prices could still increase the cost of oil imports.

There is congressional interest in further reducing the potential risks posed by import dependence. Policy options generally fall into four categories:

- Direct trade policy regarding oil imports,
- Long-term measures aimed at reducing the need for imports through greater domestic supply (conventional and alternative) and greater fuel efficiency to reduce demand,
- Short term energy policy tools like the release of oil stored in the Strategic Petroleum Reserve (SPR), and
- Foreign policy measures aimed at making foreign sources of oil more secure (not covered in this report).

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Introduction

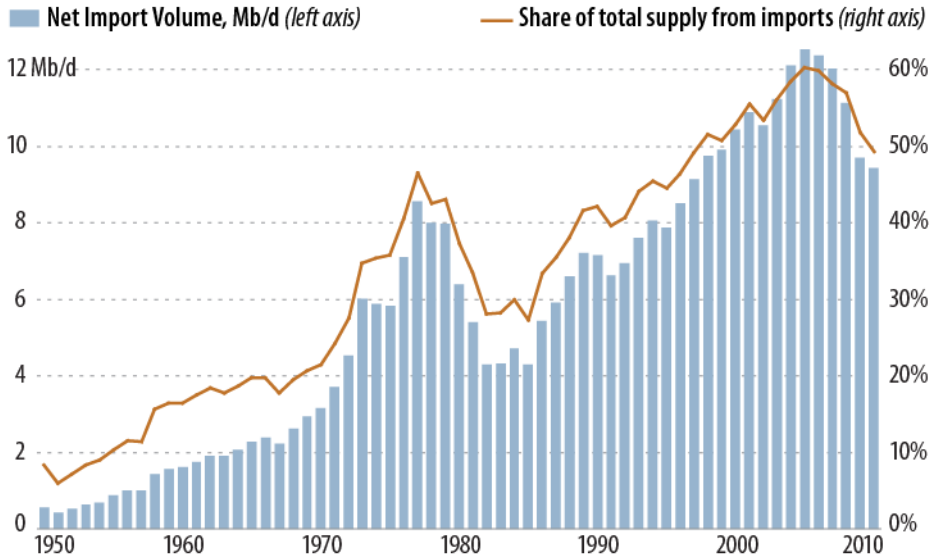
Oil is a critical resource for the U.S. economy. It meets nearly 40% of total U.S. energy requirements, including 94% of the energy used in transportation and 41% of the energy used by the industrial sector. Unlike other forms of energy such as coal and natural gas, which are largely supplied from domestic sources, half of U.S. oil consumption is currently supplied from foreign sources.

The United States has been concerned about dependence on foreign oil since it became a net oil importer in the late 1940s. Those concerns grew with import levels, especially in periods of high or rising oil prices. Imports have generally increased over the last six decades, except for a period following the oil spikes of the 1970s and again in the last five years. See **Figure 1**. Oil import volumes peaked in 2005 and then declined through 2010 as a result of economic and policy-driven changes in domestic supply and demand. However, oil import costs have increased due to rising prices, which more than offset the savings from lower import volumes.

Interest in oil imports has climbed again in recent months as oil prices rebounded to over $100 per barrel. President Obama highlighted the Administration's concerns around recent energy developments in a speech on March 30, 2011, proposing policies to cut oil imports by one-third. Congress has also voiced concern and introduced proposals that aim to reduce the risks posed by reliance on oil imports. This report first explains recent oil import trends. It then discusses long- and short-term policy considerations.

Figure 1. Net Oil Imports

In millions of barrels a day (Mb/d) and as share of total U.S. oil supplied



Data Source: Energy Information Administration, U.S. Department of Energy, *Short-Term Energy Outlook (STEO)*, March 8, 2011, http://www.eia.doe.gov/emeu/steo/pub/contents.html. Also Energy Information Administration U.S. Department of Energy, *Annual Energy Review (AER)*, August 19, 2010, http://www.eia.doe.gov/emeu/aer/contents.html.

U.S. Oil Imports

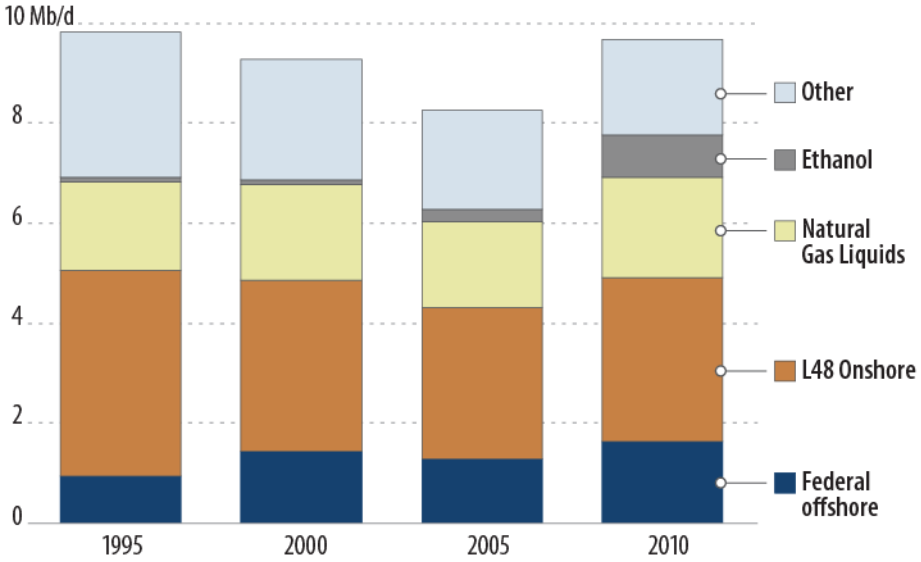
Oil Import Fell Between 2005 and 2010

U.S. net oil imports, including crude oil, refined petroleum products, and other liquid fuels,[1] fell each year between 2005 and 2010, from 12.4 million barrels a day (Mb/d) in 2005 to 9.4 Mb/d in 2010.[2] Only 49% of U.S. oil consumption in 2010, which totaled 19.2 Mb/d, was met with imported oil, down from 60% in 2005. Net imports are at their lowest level since 1997, both in terms of volumes of oil imported and percentage of consumption, see **Figure 1**. This decline has resulted from lower consumption and increased domestic oil production.

Total U.S. consumption of oil fell from 2005 to 2009. Despite a small increase in 2010, it remained about 1.7 Mb/d below 2005 levels. The decline is due largely to the recession, which started in December 2007, as well as greater efficiency in reaction to several years of high oil prices.

Figure 2. Domestic Oil and Other Liquid Fuels Supply

In millions of barrels a day (Mb/d)



Data Source: EIA, *STEO*.

Notes: Other includes production from Alaska, refinery processing gain, renewable fuels and biofuels and oxygenates excluding fuel ethanol. L48 refers to the contiguous 48 states.

[1] As is convention in oil market analysis, this report will reference the term "oil" to include crude oil, refined petroleum products, and other liquid fuels, including substitutes such as natural gas liquids and biofuels. Natural gas liquids (NGLs) are liquid fuels that can be extracted from natural gas. Note, NGLs are different from liquefied natural gas (LNG), which is a means of transporting natural gas. "Net" oil imports means total oil imports less oil exports.

[2] Energy Information Administration (EIA), U.S. Department of Energy, Short-Term Energy Outlook (STEO), March 8, 2011. Unless otherwise noted, all data in this report comes from EIA's STEO, the *Annual Energy Outlook* (AEO), *Petroleum & Other Liquids*, or *International Energy Statistics*. www.eia.doe.gov.

Meanwhile, higher prices also helped support greater domestic production. Production had been falling steadily since 1985 to 8.3 Mb/d in 2005. Since then, increased supplies from ethanol, offshore oil production, onshore production in the lower 48 states, and natural gas liquids raised domestic output by 1.5 Mb/d. The decline in consumption and increase in domestic supply led to net imports falling by 3.1 Mb/d or 25% between 2005 and 2010. See **Figure 2**.

Net Versus Gross: Total U.S. Imports and Exports

Net imports are gross imports minus exports. In 2010, U.S. gross oil imports were about 11.8 Mb/d, down from a peak of 13.7 Mb/d in 2005. Meanwhile, exports of oil increased from 1.2 Mb/d to 2.3 Mb/d, nearly all of which is in the form of refined petroleum products. Exports to Mexico, Europe, and Asia have grown. These shifts reflect the domestic balance of supply and demand discussed above—consumption fell and production increased. See details about the differences between volume and sources of net and gross imports in **Appendix A** and **Appendix B**. Note, both net and gross measures are relevant to energy security concerns. Net measures can be more relevant to economic concerns around oil imports and are the focus of this report.

U.S. imports are primarily crude oil, while exports are almost entirely refined petroleum products (see **Table 1**). Traditionally, much of U.S. oil exports are heavier products from refineries, such as petroleum coke, for which there is limited demand in the United States, or products that do not meet U.S environmental standards.[3] Although the United States is a net oil importer, it does have significant refining capacity which has allowed it to export some finished refined products. Moderating demand at home and rising demand abroad led to U.S. exports of distillate since 2008 and of finished motor gasoline in 2010. Market conditions—the particular needs (and ability to pay) of specific buyers and sellers in different parts of the world at a given time—can drive the export of some petroleum product cargos even when the United States generally imports oil.

Unlike many nations around the world in which oil production, refining, trade, and marketing are dominated by government-owned national oil companies, these functions are carried out by numerous privately owned companies in the United States. The size and characteristics of U.S. imports and their variation over time result from myriad decisions by a multitude of individual U.S. oil companies in response to domestic and global market opportunities and demands. Although these companies operate under U.S. national policies, and their decisions are affected by these policies, there is no centralized control of oil imports and exports in the United States.

Of the petroleum products that the United States exports, half goes to other countries in the Western Hemisphere. In 2010, nearly 20% of exports went to Mexico and nearly 10% to Canada (both send substantially more oil to the United States than they import from the United States). Brazil, Chile, Panama, and Ecuador each received 3%-5% of exports. About 1% went to Venezuela.

[3] CRS Report R40120, *U.S. Oil Exports*, by Robert Bamberger.

Table 1. Petroleum Trade Balance by Liquid Fuel Type

In million barrels a day

	2005	2006	2007	2008	2009	2010		
	Balance	Balance	Balance	Balance	Balance	Imports	Exports	Balance
Total	**(12.5)**	**(12.4)**	**(12.0)**	**(11.1)**	**(9.7)**	**(11.8)**	**2.3**	**(9.4)**
Unfinished liquid fuels	(11.5)	(11.7)	(11.6)	(11.5)	(10.4)	(10.7)	0.3	(10.4)
Crude Oil	(10.1)	(10.1)	(10.0)	(9.8)	(9.0)	(9.2)	0.0	(9.1)
Other unfinished	(1.4)	(1.6)	(1.6)	(1.7)	(1.4)	(1.5)	0.2	(1.3)
Finished Refined Products	(1.1)	(0.7)	(0.4)	0.3	0.7	(1.1)	2.0	1.0
Gasoline	(0.5)	(0.3)	(0.3)	(0.1)	(0.0)	(0.1)	0.3	0.2
Distillate	(0.2)	(0.2)	(0.0)	0.3	0.4	(0.2)	0.7	0.4
Residual Fuel Oil	(0.3)	(0.1)	(0.0)	0.0	0.1	(0.4)	0.4	0.0
Petrochemical Feedstock	(0.3)	(0.3)	(0.2)	(0.2)	(0.1)	(0.1)	0.0	(0.1)
Petroleum Coke	0.3	0.3	0.3	0.4	0.4	(0.0)	0.4	0.4

Source: EIA, *Petroleum and Other Liquids: Imports/Exports & Movements*, http://www.eia.doe.gov/petroleum/data.cfm.

Notes: 2005-2009 figures are exports minus imports. Parenthesis indicate a negative balance (more imports than exports). 2010 figures show imports, exports, and balance. "Other unfinished" includes non-crude unfinished liquid fuels, such as NGLs, gasoline blending components, and heavy gas oils.

Sources of Oil Imports

Most U.S. oil imports come from Canada, Mexico, and members of the Organization of the Petroleum Exporting Countries (OPEC).[4] In 2010, about 25% of U.S. consumption (50% of net imports) was supplied by OPEC countries: 9% from Persian Gulf OPEC members, the rest from Latin American and Africa members of the cartel.[5] Net imports from Canada and Mexico met another 16% of U.S. consumption (33% of net imports); see **Figure 3**. A list of the top 10 sources of U.S. net oil imports is available in **Appendix A**. The largest volume of imports from any single country came from Canada —2.3 Mb/d, more than twice the amount of the next largest source (Saudi Arabia, on a net basis).

Oil trading patterns can shift due to market conditions, but much of the oil that companies import to the United States comes from the same countries month to month. While many kinds of crude oil are interchangeable to some degree—which reinforces the globally integrated nature of the oil market—each has unique characteristics. Refineries optimize their operations for particular kinds of crude.[6] Proximity, infrastructure, and trading relationships may also contribute to normal trade patterns and determine which crude oils are consumed in certain countries.

[4] OPEC is a cartel of major oil exporting countries that attempts to adjust global oil supply to manage oil prices.

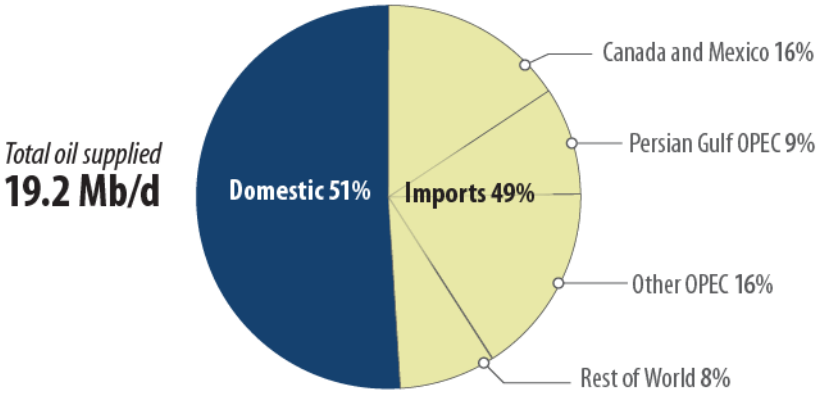
[5] Note, the United States does not import any oil from Iran.

[6] For more on refining, see CRS Report R41478, *The U.S. Oil Refining Industry: Background in Changing Markets and Fuel Policies*, by Anthony Andrews, Robert Pirog, and Molly F. Sherlock.

Over the last several years, imports of oil from many countries fell with the general trend of falling imports. The decline in imports from some specific countries was exacerbated by their declining output. For example, declining oil output from Mexico, the United Kingdom, and Norway contributed to lower imports from those countries.[7] In addition, imports from OPEC also fell in part because OPEC countries intentionally curtailed their output in 2008-2009 to stem the decline in oil prices; see **Figure 4**.[8]

Figure 3. Net Imports as a Share of Total Oil Supplied: Key Foreign Sources

Share of oil supplied in 2010



Data Source: EIA, *STEO*, and EIA, "U.S. Net Imports by Country," Feb 2, 2011, http://www.eia.doe.gov/dnav/pet/pet_move_neti_a_EP00_IMN_mbblpd_m.htm.

Notes: "Persian Gulf OPEC" members includes Saudi Arabia, Kuwait, United Arab Emirates, Iraq and Qatar (the United States does not import oil from Iran). "Other OPEC" includes Angola, Nigeria, Algeria, Libya, Venezuela, and Ecuador. For more detail, see **Appendix A**.

Imports from Canada are a notable exception to the general downward trend. Imports from Canada have increased by roughly 0.3 Mb/d since 2005 due to rising production of oil sands and because oil pipelines tie Canadian exports to U.S. markets.[9] Imports have also increased from Colombia, Brazil, and Azerbaijan—all countries that experienced significant increases in national oil production. Trade with Colombia and Brazil benefits from proximity of the U.S. market to Latin America.

Supply Disruptions Can Shift Imports and Raise Prices

Shifting trade flows arising from abrupt supply disruptions are a source of particular concern for the oil industry and policy makers. Sudden shifts in supply can require rapid adjustment by industry and raise global oil prices. When strikes reduced oil output from Venezuela, traditionally a large supplier of oil to the United States, from 3.3 Mb/d in November 2002 to 0.7 Mb/d in January 2003, U.S. imports from Venezuela fell by more than 1 Mb/d. Other examples include

[7] Mexican output fell sharply due to depletion at the giant Cantarell field. Efforts to offset the decline from other sources have been hampered by difficulties at the Mexican national oil company and restrictions on foreign investment.

[8] OPEC cut supply after oil prices started falling in the second half of 2008.

[9] For more on recent issues around infrastructure for oil imports from Canada, see CRS Report R41668, *Keystone XL Pipeline Project: Key Issues*, by Paul W. Parfomak et al.

when periodic militant attacks shut down oil production facilities in Nigeria and when summer/fall hurricanes shut down Mexico's offshore production; both are major sources of U.S. imports. Such events may lead refiners to draw on oil inventories and/or bid for supply from elsewhere in the world.

Domestic supply disruptions can also shift trade flows. After hurricanes Katrina and Rita shut in oil production in the U.S. Gulf of Mexico, U.S. imports increased by around 0.7 Mb/d between July and October 2005. The increase was in refined products; hurricanes shut down more refining capacity than crude oil production. Crude imports fell.

Supply disruption in countries that are not traditionally major sources of U.S. imports may still have significant implications for the United States because they raise the price of oil worldwide. The oil market is globally integrated, refiners can shift the crude they use, and refined products are interchangeable commodities; so a disruption anywhere can affect oil prices everywhere. For instance, the United States imported only around 0.1 Mb/d of oil from Libya in 2010. (For context, the U.S. consumed about 19.2 Mb/d in 2010.) Most of Libya's crude supply went to Europe. But when unrest shut down Libya's exports in February 2011, global prices rose, including prices for oil imported into the United States from elsewhere and oil produced domestically. Global supply was reduced and European refiners had to look to other oil sources, bidding up those oil prices to secure substitute supplies.[10] The price of oil may rise until it makes up for the amount of supply no longer available due to the disruption. This can occur by price rising enough that some consumers no longer demand oil and/or suppliers bring additional production to market.[11] Many oil producers and consumers are inelastic to price changes when considering how much to supply or consume, especially in the short run, so seemingly small disruptions can lead to more significant percent changes in the price of oil.

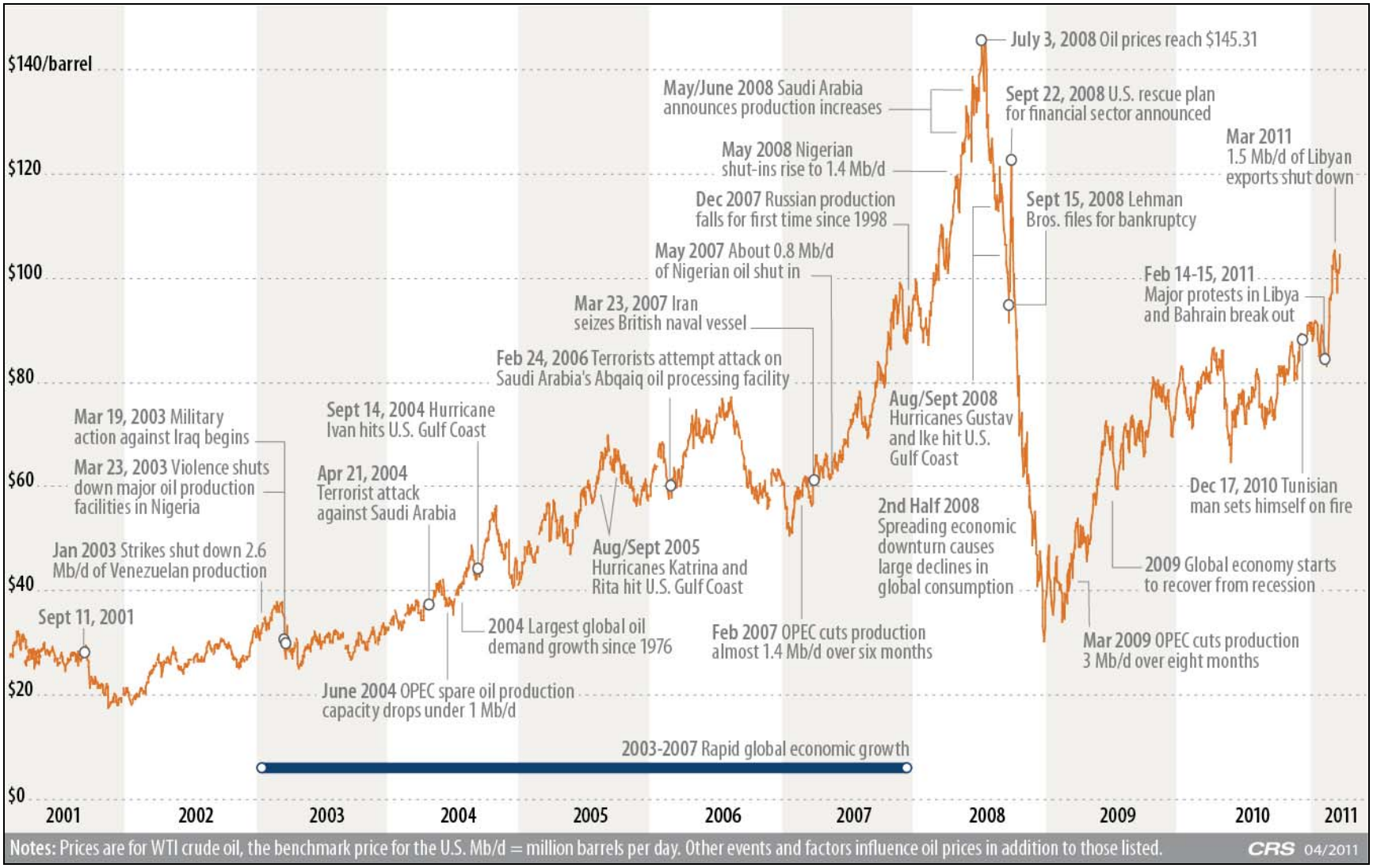
Even anticipation of disruptions can contribute to higher oil prices. Buyers and sellers of oil make risk-weighted decisions now about future commercial and financial needs. Anticipated disruption risks affect the price at which they are willing to buy and sell oil. Arguably, a significant portion of the increase in oil prices from unrest in Libya, Egypt, Bahrain, and elsewhere is attributable to concerns that unrest could spread to other oil exporters in the Middle East and North Africa. For more on this, see CRS Report R41683, *Middle East and North Africa Unrest: Implications for Oil and Natural Gas Markets*, by Michael Ratner and Neelesh Nerurkar.

Disruptions to oil production reduced supply, slowed supply growth in recent years, and created concerns about future supply. This combined with rising oil demand, resulting from rapid economic growth in several countries, as well as other financial, geologic, commercial, and political factors, contributed to the rise in oil prices during the 2000s. Some selected events that played a role in recent price developments are presented in **Figure 4**.

[10] Note that because many European refineries were undergoing annual maintenance at the time, it delayed the full extent of the immediate physical impact of Libya shut-in exports. But they can still bid up crude prices as they look to secure supply now for use later in the year.

[11] It takes months or years to develop an oil field. Short term options are mostly limited to OPEC, which holds spare oil production capacity, or inventories held by companies or governments, which is discussed in greater detail below.

Figure 4. Selected Events That Affected the Price of Oil



Source: CRS. Includes data from EIA oil price databases (http://www.eia.doe.gov/dnav/pet/pet_pri_spt_s1_d.htm) and Annual Oil Market Chronology (http://www.eia.doe.gov/emeu/cabs/AOMC/Overview.html), and IMF World Economic Outlook databases (http://www.imf.org/external/ns/cs.aspx?id=28).

Oil Imports and the Trade Deficit

The aggregate national cost of oil imports is a function of the volume of oil imported and the price of that oil. The United States spent about $265 billion on net oil imports in 2010. Import volumes and resulting costs fell with the economic downturn. Lower oil prices also helped push down oil import costs in 2009. Import costs increased again with higher oil prices in 2010, as seen in **Table 2**. Some estimates suggest import costs could be $100 billion dollars higher in 2011 as prices have risen from 2010 levels.[12] This would surpass the previous peak cost of $386 billion reached in 2008, the year with the highest average annual oil price in history to date: $99.67 per barrel for WTI.

Table 2. Energy in the Trade Balance

In millions of dollars

	Imports		Exports		Trade Balance	
	2009	**2010**	**2009**	**2010**	**2009**	**2010**
Total oil	253,689	335,881	49,176	70,764	(204,513)	(265,117)
Crude Oil	188,712	252,064	972	1,328	(187,740)	(250,736)
Other Oil	64,977	83,817	48,204	69,436	(16,773)	(14,381)
Natural Gas	16,056	16,109	3,286	4,488	(12,770)	(11,621)
Electricity	2,075	2,071	562	648	(1,513)	(1,423)
Nuclear fuel	5,363	5,641	2,283	1,896	(3,080)	(3,745)
Coal	2,160	2,136	6,521	10,463	4,361	8,327
Total Energy	**279,343**	**361,838**	**61,828**	**88,259**	**(217,515)**	**(273,579)**
Total Goods and Services	**1,945,705**	**2,329,894**	**1,570,797**	**1,834,166**	**(374,908)**	**(495,728)**
Energy Share	*14%*	*16%*	*4%*	*5%*	*58%*	*55%*
Oil Share	*13%*	*14%*	*3%*	*4%*	*55%*	*53%*

Source: U.S. Census Bureau, "U.S. International Trade in Goods and Services Report," March 10, 2011, http://www.census.gov/foreign-trade/data/index.html. Figures on a balance of payments basis.

Despite net oil import volume falling since 2005, net import costs have generally increased. The increase in oil prices has more than offset the decline in import volumes. While 25% fewer barrels were imported in 2010 versus 2005, the price U.S. oil refiners paid to import barrels of crude averaged 55% higher (natural gas liquids prices made similar increases).[13] This price increase has caused oil imports to constitute a larger share of the trade deficit, see **Figure 5**.

Being a net importer of a particular good is not necessarily negative for an economy; the United States imports many products because they would be more costly to consumers, businesses, or taxpayers were they produced domestically. But import dependence for a good can also have

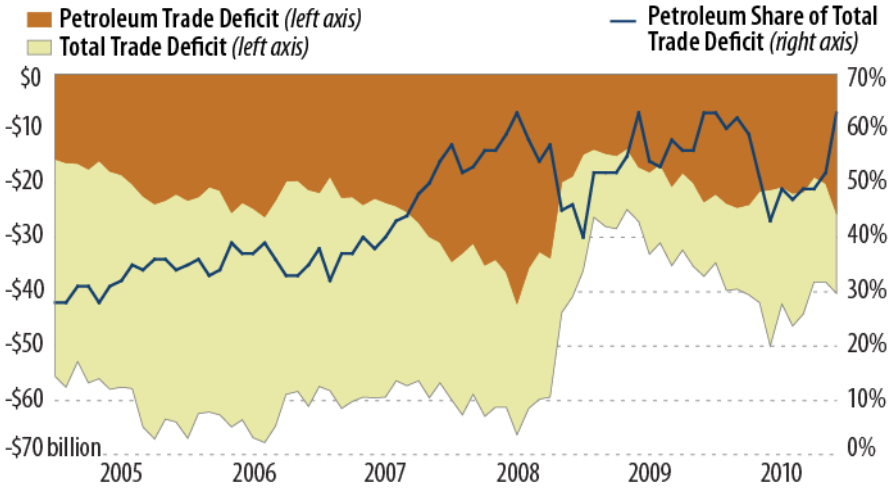
[12] CRS Report RS22204, *U.S. Trade Deficit and the Impact of Changing Oil Prices*, by James K. Jackson

[13] U.S. refiners' acquisition cost (RAC) for imported oil was $75.88 per barrel in 2010 versus $48.86 per barrel in 2005. The acquisition cost for domestic crude grew by nearly as much. See http://www.eia.doe.gov/dnav/pet/pet_pri_rac2_dcu_nus_a.htm.

negative impacts, particularly if it contributes to long-term trade deficits. Trade deficits are ultimately financed by borrowing from abroad, which generates financial obligations for future repayment. Positive and negative impacts of trade deficits are explained in CRS Report RL31032, *The U.S. Trade Deficit: Causes, Consequences, and Policy Options*, by Craig K. Elwell.

Figure 5. Petroleum in the Monthly Trade Deficit

Billions of U.S. dollars (left axis) and petroleum deficit as a share of total trade deficit (right axis)



Data source: U.S. Census Bureau, "U.S. International Trade in Goods and Services Report," March 10, 2011, http://www.census.gov/foreign-trade/data/index.html. Figures on a balance of payments basis.

Greater national oil import dependence can also amplify the negative economic impacts of oil price increases. An increase in the price of crude oil can quickly translate to higher prices for refined oil products like gasoline. Rising oil product prices strain the budgets of households or businesses, reducing their savings and/or spending on other goods and services, some of which would have been produced domestically. For imported oil, that wealth is sent abroad, and only a portion of it is returned via now wealthier oil exporting countries buying more U.S. products. Even with oil from domestic sources, an oil price increase redistributes wealth within the economy. This may cause temporary dislocation as businesses and workers adjust to the change. The impact can be exacerbated when the price change is faster as it makes the dislocations more abrupt.

These and other economic impacts of rising oil prices and import costs are varied and complex. Economic analysts estimates that the impact of a sustained $10 per barrel increase in the price of oil could result in about 0.2% lower economic growth and 120,000 fewer jobs in the first year after the increase.[14] Rapidly rising oil prices likely contributed to the U.S. economic recession in 2007-2008.[15] Some suggest that every major oil price increase since the 1970s has been associated with a recession.[16]

[14] Nigel Gault, "Oil Prices and the U.S. Economy: Some Rules of Thumb," *IHS Global Insight Inc.*, February 24, 2011. Estimates from other forecasters of the Gross Domestic Product (GDP) impact of a $10 per barrel increase are similar, including those from the Federal Reserve according to reports (Robin Harding, "Oil Surge Puts Fragile US Recovery at Risk," *Financial Times*, February 24, 2011).

[15] James Hamilton, *Causes and Consequences of the Oil Shock of 2007-08*, Brookings Institute, Brookings Papers on Economic Activity, March 23, 2009, p. 40,
(continued...)

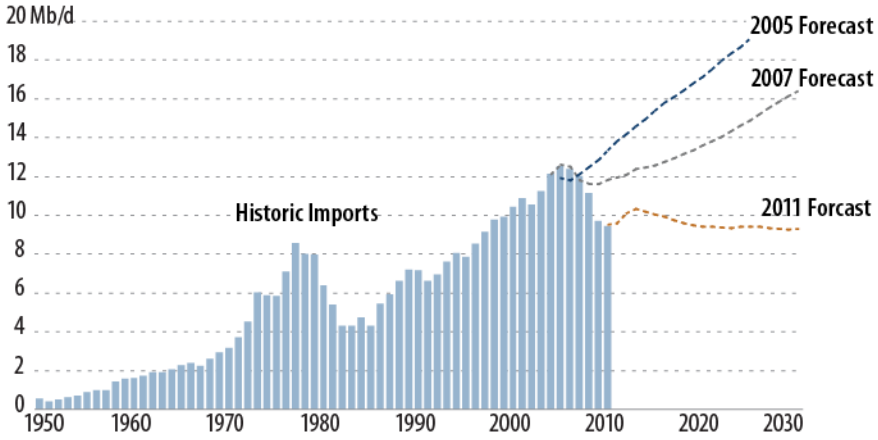
If the United States were not a net importer of oil—if it produced as much oil as it consumed—rising oil prices would not increase the import bill, but would still negatively impact the budgets of many U.S. households and businesses. Wealth would be redistributed from oil consumers to oil producers within the economy. Oil prices paid by U.S. consumers for petroleum products would still be affected by international events as long as oil trade was permitted. Other impacts of higher oil prices, like inflation and unemployment, may continue to be economic concerns.

Looking Forward: Import Dependence Passed Peak?

A consensus is generally emerging among energy analysts that U.S. oil imports may be past their peak, reached in 2005, and are likely to remain roughly flat over the next 20 years.[17] This conclusion has been reached as the forces that pushed imports down in recent years have become evident. While some of these recent forces are temporary—for example, those related specifically to the recession—some are expected to persist: high oil prices, rising efficiency, and greater domestic production of natural gas liquids, biofuels, and crude oil. See the evolution over time of EIA projections of future oil imports in **Figure 6**.

Figure 6. Lower Expectations for Future Oil Imports

In millions of barrels a day



Data source: EIA, *AEOs* from 2005, 2007, and 2011. http://www.eia.doe.gov/forecasts/aeo/index.cfm.

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http://www.brookings.edu/economics/bpea/~/media/Files/Programs/ES/BPEA/2009_spring_bpea_papers/2009_spring_bpea_hamilton.pdf.

[16] Richard Newell, *What's the Big Deal About Oil? How We Can Get Oil Policy Right.*, Resources for the Future, 2006, p. 8, http://www.rff.org/rff/News/Features/upload/25007_1.pdf.

[17] Forecasters from a range of institutions have come to this conclusion, including EIA (*2011 Annual Energy Outlook*, Table 11, http://www.eia.gov/forecasts/aeo/tables_ref.cfm), IEA (*World Energy Outlook 2010* p. 134), OPEC (World Oil Outlook, Chapter 8, http://www.opec.org/opec_web/en/publications/340.htm), and BP (Energy Outlook 2030, p. 72, www.bp.com/energyoutlook2030).

Policy Considerations

Oil import dependence has been a policy concern since the United States became a net oil importer in the late 1940s. Nonetheless, imports generally increased since then, except during the early 1980s and in the late 2000s, as shown in **Figure 1**. Both periods of falling imports resulted from economic and policy reactions to high oil prices. These in turn increased domestic liquid fuels production and reduced demand, bringing down imports.[18] After oil prices collapsed in 1985, economic drivers waned, policy initiatives were rolled back, and imports climbed once more. Today, forecasters expect that some of these drivers are more durable—largely because prices are expected to remain high— and that imports may be past their peak levels. But there remains policy interest in reducing oil imports further. Such concerns were underscored by recent unrest in the Middle East and North Africa, giving rise to calls for a range of policies to reduce import related risks.

Policy responses to address risks posed by oil imports tend to fall into one of four categories:

- *Trade policy*: Policies that directly address the import of oil, such as tariffs, quotas, or sanctions.
- *Reduce the need for imports*: Most legislative initiatives to reduce oil imports are indirect — they target raising domestic production of oil and oil alternatives or reduction of oil demand. They work through creating new incentives and greater policy intervention, or by removing existing policy hurdles to private investment.
- *Short-term policy*: Amending rules around the government's Strategic Petroleum Reserve can affect how well prepared the United States is to address oil supply disruptions.
- *Foreign policy*: U.S. diplomatic and military measures can affect the stability of foreign oil sources, though such policies fall beyond the scope of this report.[19]

Direct Policies on Oil Imports

Shortly after the United States became a net oil importer, President Truman appointed the Paley Commission to examine the security of supply for oil and other basic materials. It supported policies for greater domestic production, particularly from oil shale, and efficiency, but also advised against raising trade barriers to imports.[20] Imports continued to rise despite persistent concerns around import dependence. Under powers granted in the Trade Agreements Extension Act of 1958, President Eisenhower imposed quotas that limited imports east of the Rockies to a certain percentage of total consumption.[21] The quota program broke down by 1969 due to rising

[18] A dramatic increase in oil prices during the 1970s, substitution of oil with other fuels in non-transport sectors, conservation efforts, and greater domestic supply.

[19] CRS has produced a number of reports on U.S. interests in major oil producing countries which can be found at CRS.gov under the search terms "oil and foreign policy."

[20] The President's Materials Policy Commission, *Resources For Freedom*, July 2, 1952, p. 108.

[21] Mandatory Oil Import Program (MOIP), started in 1959, put a cap on how much foreign oil a refiner could import. Refiners were issued import allowance tickets that they could trade depending on their purchases of foreign oil. The program was managed to try to sustain domestic oil prices above $3/bbl.

oil prices and quota loopholes. President Nixon replaced the program with import fee in 1974, set at only a few cents per barrel.[22]

Current tariffs on oil imports range from 5.25¢ to 52.5¢ per barrel depending on the type of petroleum.[23] See various rates in **Appendix C**. Oil and petroleum products from certain countries are subject to duty free treatment under several trade agreements and preferential trade programs enacted by Congress. The North American Free Trade Agreement (NAFTA), the Generalized System of Trade Preferences (GSP), and the African Growth and Opportunities Act (AGOA) account for most of the foregone revenue from waived tariff.[24] At 2010 import levels, these and other waiver programs accounted for about $180 million dollars in foregone revenue in 2010, down from $215 million in 2005 when import volumes were higher.[25]

In the past, an increase in the tariff on oil has been considered as a means to provide an advantage to domestic oil producers and reduce imports. Because tariffs on refined oil products are already at the highest levels permitted by U.S. agreements with the World Trade Organization (WTO), any increase may be limited to crude oil tariffs.[26] The United States has not made any tariff commitments bounding duties on crude oil.[27] But like crude oil, refined products are globally traded. There is a risk that an increase in the tariff on crude oil alone may create a disadvantage for domestic refiners vis-à-vis their foreign competition. Such a tariff could shift imports in the form of crude oil to imports in the form of oil products refined abroad. On the other hand, the availability of foreign refined products imports may also limit how much of an increase in a crude oil tariff could be passed on to domestic consumers.

Restrictions On Oil Exports

The wisdom of allowing exports of oil and petroleum products is sometimes questioned. Export of Alaskan crude oil had been prohibited by the Trans-Alaskan Pipeline Authorization Act of 1973. Congress removed the restriction in 1995. In general, because the market for oil is global, a prohibition on U.S. oil exports is unlikely to contribute to lower prices for U.S consumers. Such a

[22] CRS Report RL30085, *Depressed Crude Oil Prices: Some Policy Options for Domestic Producers*, by Robert Bamberger, et al.

[23] Except for petroleum-based lubricants, which have a tariff of 84¢/bbl.

[24] NAFTA is the free trade agreement between the United States, Mexico, and Canada. GSP is a U.S. program designed to promote economic growth in developing countries and includes about 131 beneficiary nations and territories. Originally created by the Trade Act of 1974, the GSP's authorization expired at the end of 2010. S. 308 has been introduced in the 112th Congress to reauthorize the GSP until June 12, 2012. It would apply retroactively to imports since December 31, 2011. Congress regularly reauthorizes GSP for short periods. The program had expired seven times between 1993 and 2002; each time it was reauthorized and applied retroactively for the lapsed period. See http://www.ustr.gov/webfm_send/2465. AGOA was enacted in 2000 to promote stable sustainable economic growth and development in Sub-Saharan Africa. It has a broader list of products than GSP that eligible countries may export to the United States that are subject to zero import duty. Oil accounts for more than 90% of AGOA imports—mostly from Nigeria and Angola, both OPEC members (http://www.agoa.gov/resources/US_African_Trade_Profile_2009.pdf).

[25] Data provided by the International Trade Administration. Forgone revenue estimate assumes a scenario where the same number of barrels would have been imported from countries with waivers if such waivers did not exist. This is an assumption. Although the tariff amount is small, it is possible that its absence could have shifted oil trade flows (e.g., that less oil would have been imported to the United States from these particular countries if waivers did not exist).

[26] U.S. President (Clinton), "The Uruguay Round Trade Agreements, Texts of Agreements Implementing Bill, Statement of Administrative Action and Required Supporting Statements," 103rd Cong., 2nd sess., September 27, 1994, 103-316, Vol 2 (Washington: GPO, 1994), pp. 2418-2422.

[27] Ibid, p. 2418.

restriction is likely to only cause a rebalancing in the movement of petroleum. Restrictions on exports might, in fact, create inefficiencies in the movement of world oil supplies that could foster less optimal distribution of oil and possibly lead to higher prices in some markets.[28] An alternative way to consider the issue is that exports of oil products less in demand in the United States help offset the import cost of crude oil and other oil products for which there may be greater U.S. demand.

Reducing the Need for Imports: Supply and Demand Policies

President Obama highlighted the long-term nature of potential solutions to oil import challenges in his March 30, 2011 speech on energy. The Administration has targeted reducing oil imports by one-third over the next decade through encouraging greater conventional crude oil production, increased production of biofuels, and efficiency or alternative fuel vehicles.[29] Members of Congress have also introduced a range of proposals aimed at increasing domestic liquid fuels supply or reducing liquid fuels demand. These include creation of new policies or programs, or the removal of existing policy barriers to supply enhancing (or demand dampening) investment. Either sets of options come with associated costs and benefits to be weighed.

Production and use of ethanol as a motor fuel is an example. Fuel ethanol production has increased by roughly 0.6 Mb/d since 2005, when the renewable fuels standard and ethanol excise tax credit were passed.[30] This is the largest single component of the domestic supply growth between 2005 and 2010 discussed above (in volumetric terms). But some critics argue that increased use of corn for biofuels is driving up food prices. Other critics have cited the high cost to tax payers in the form of forgone revenues. The ethanol tax credit reduced federal excise tax revenue by roughly $6 billion in 2009; it cost taxpayers $1.78 for each gallon of gasoline consumption displaced by corn-based ethanol according to Congressional Budget Office estimates.[31] And there are limits to how much fuel ethanol can be absorbed by the U.S. market.[32]

Offshore oil and gas development is another example of tradeoffs being debated. Oil output from the federal offshore region of the Gulf of Mexico was the second largest component of recent domestic supply growth. Output from the region has increased by roughly 0.4 Mb/d since 2005. But rising activity in progressively deeper and riskier waters, coupled with alleged industry and government complacency on safety, created environmental risks that were realized with the Deepwater Horizon oil spill.[33] Risks to human safety and the environment may be reduced with

[28] Information in this paragraph and more background on oil exports from the United States can be found in CRS Report R40120, *U.S. Oil Exports*, by Robert Bamberger.

[29] The Administration target is to cut oil imports by one-third in about a decade, relative to their levels when President Obama took office. The U.S. imported around 11 Mb/d net in 2008, so a one-third reduction would be 3.6 Mb/d. The target and plan were presented in President Obama's March 30, 2011 speech on energy, available at http://www.whitehouse.gov/the-press-office/2011/03/30/remarks-president-americas-energy-security.

[30] CRS Report R40110, *Biofuels Incentives: A Summary of Federal Programs*, by Brent D. Yacobucci.

[31] Congressional Budget Office, *Using Biofuel Tax Credits to Achieve Energy and Environmental Policy Goals*, July 2010, http://www.cbo.gov/ftpdocs/114xx/doc11477/07-14-Biofuels.pdf.

[32] CRS Report R40445, *Intermediate-Level Blends of Ethanol in Gasoline, and the Ethanol "Blend Wall"*, by Brent D. Yacobucci.

[33] For more information on the Deepwater Horizon Oil Spill and issues for Congress, see CRS Report R41407, *Deepwater Horizon Oil Spill: Highlighted Actions and Issues*, by Curry L. Hagerty and Jonathan L. Ramseur.

improved regulatory enforcement or new regulatory measures, but the risks may not be eliminated.

There are also demand side examples of policy trade-offs. Congress increased the Corporate Average Fuel Economy standard (CAFE) in 2007, its first increase for cars in two decades. CAFE's impacts can take years to manifest because it takes years to turn over the vehicle fleet. To spur growth in the auto industry and accelerate vehicle efficiency, Congress passed the Car Allowance Rebate System Act of 2009 (CARS, also known as "Cash-for-Clunkers") which provided a $3,500 or $4,500 rebate for trading in a used car for a more fuel efficient vehicle (amount depends on the fuel economy improvement). The CARS program provided a temporary stimulus that contributed to economic recovery from recession,[34] created jobs,[35] and likely reduced some fuel consumption faster than CAFE. But there were tradeoffs: Accelerating fuel efficiency through CARS may have cost the government significantly more than the estimated future fuel savings for participating consumers.[36] It may only reduce 2020 oil consumption and greenhouse gas emissions by an estimated 0.02%.[37] It accelerated some sales that would have taken place in future months anyways.[38] And by scrapping cars traded in, it may have increased the cost of vehicles for those who purchase used cars in the future.

A wide range of supply and demand related proposals aimed at reducing imports may be of interest to Congress. Each has their own cost and benefit tradeoffs. A number of CRS reports address these in depth, some of which are listed in **Appendix D**.

Strategic Petroleum Reserve

Congress created the Strategic Petroleum Reserve (SPR) in the Energy Policy and Conservation act of 1975 to guard against "severe energy supply interruptions." The policy had been considered since at least the Paley Commission report and was ultimately established in reaction to the 1973-1974 Arab Oil Embargo. The government-owned SPR is now filled to its 727 million barrel of crude capacity, equivalent to roughly 77 days worth of imports at 2010 import levels.[39] The crude

[34] According to the Council of Economic Advisors, CARS may have raised third quarter 2009 gross domestic product (GDP) growth by around 0.2 percentage points (annualized rate). Council of Economic Advisers, "Economic Analysis of the Car Allowance Rebate System," September 10, 2009, p. 12. Note, the United States was in recession from December 2007 until June 2009.

[35] Ibid, p. 13.

[36] According to National Highway Safety Administration (NHTSA), CARS cost approximately $3.0 billion, but provided future fuel savings for consumers who participated of only an expected $1.3 to $1.9 billion (based on applying a 7% and a 3% discount rate respectively to calculate present value of future savings). NHTSA, *Consumer Assistance to Recycle and Save Act of 2009: Report to the House Committee on Energy and Commerce, the Senate Committee on Commerce, Science, and Transportation and the House and Senate Committees on* Appropriations, December 2009, p. 46, http://www.cars.gov/files/official-information/CARS-Report-to-Congress.pdf.

This may still be the case even if one assumes a cost of the greenhouse gas emissions avoided: assuming $20 per ton, CARS saved another roughly $0.2 billion through avoided emissions (p. 49). The value of reducing other air pollutants was estimated at $0.2 billion (p. 53). Critics pointed out that the program could have been more cost effective had it required a wider difference in the fuel efficiency between cars traded in and new cars purchased.

[37] CRS Report R40654, *Accelerated Vehicle Retirement for Fuel Economy: "Cash for Clunkers"*, by Brent D. Yacobucci and Bill Canis.

[38] Edmunds.com, "Cash for Clunkers Results Finally In: Taxpayers Paid $24,000 per vehicle sold, Report Edmunds.com," October 28, 2009.

[39] The amount of oil held in the SPR is frequently described as a fraction of U.S. daily average imports. Were SPR oil released, it can only be pumped at a maximum rate of 4.4 Mb/d for up to 90 days. Then the drawdown rate begins to (continued...)

oil is stored in five underground salt domes in Texas and Louisiana. The government also holds 2 million barrels of heating oil in above-ground storage in the Northeast Home Heating Oil Reserve (NHOR).[40] The President has the authority to release oil from the SPR.

Most policy options available to address oil import related concerns are long-term in nature. Changes in the energy sector have long lead times and it can take many years for policies affecting supply or demand to have material impacts. The SPR provides a short term tool to respond to sudden supply disruptions at home or abroad. But what constitutes a significant enough supply disruption, or whether the SPR should be used to reduce oil prices, is debated. SPR releases were authorized in 1990-1991 around Iraq's invasion of Kuwait and Operation Desert Storm and also after Hurricane Katrina and Rita. For more information on the SPR, see CRS Report R41687, *The Strategic Petroleum Reserve and Refined Product Reserves: Authorization and Drawdown Policy*, by Anthony Andrews and Robert Pirog.

SPR releases can be coordinated with the International Energy Agency (IEA), whose members have also committed to hold strategic reserves.[41] More than 4 billion barrels of oil are held in stocks of IEA members, of which 1.6 billion barrels are held by member governments. Another 2.6 million barrels are held by companies in IEA countries.[42] European IEA members meet most of their commitment to hold strategic reserves by mandating that industry hold stocks for emergencies. Most of Europe's stock holdings are in the form of refined products, in contrast to strategic stocks held by IEA members in North America and the Pacific, which are largely in the form of crude oil and held by governments. IEA stocks could be brought to market at a maximum rate of 14.4 Mb/d in the first month of an IEA collective action.[43] The IEA has brought oil from strategic stocks to market in a coordinated release on two occasions (never at full capacity): 1991 Gulf War and after hurricanes hit the U.S. Gulf of Mexico in 2005.

As more of the world's oil is being consumed by developing countries, some of those nations have started to develop strategic stocks. Both China and India are building strategic stockpiles of oil. The IEA has engaged with them to explore opportunities for coordination should a strategic release become necessary.

(...continued)

decline as storage caverns are emptied. At full capacity, the SPR can send oil to the market for about 180 days.

[40] The Heating Oil Reserve is held to supplement commercial heating oil supplies should the heavily heating oil-dependent North East region be hit by a severe heating oil supply disruption. Since its creation in 2000, the Heating Oil Reserve has not been used for emergency purposes. Oil has been sold from the Heating Oil Reserve for budgetary reasons and to convert inventories to fuel with lower sulfur content. For more details, see http://www.fossil.energy.gov/programs/reserves/heatingoil/index.html.

[41] The United States and other members of the Organisation for Economic Co-operation and Development (OECD) agreed to hold strategic reserves and coordinate their use through the 1974 Agreement On An International Energy Program treaty (http://www.iea.org/about/docs/IEP.PDF). The treaty established the International Energy Agency (IEA) to carry out this coordination. IEA members are required to hold 90 days worth of oil imports in reserve and coordinate their use. The United States counts commercial inventories to satisfy the remainder of the 90-day requirement not met by the SPR.

[42] International Energy Agency, *IEA Response System for Oil Supply Emergencies*, 2011, http://www.iea.org/textbase/nppdf/free/2011/response_system.pdf.

[43] International Energy Agency, *Fact Sheet: IEA Stocks and Drawdown Capacity*, February 25, 2011, http://www.iea.org/files/Potential_IEA_Stockdraw_Capacity.pdf.

Appendix A. Net U.S. Oil Imports

Top 10 sources of net imports in million barrels a day

	2005	2006	2007	2008	2009	2010
Total	12.5	12.4	12.0	11.1	9.7	9.4
Canada	2.0	2.2	2.3	2.2	2.3	2.3
Saudi Arabia	1.5	1.5	1.5	1.5	1.0	1.1
Nigeria	1.2	1.1	1.1	1.0	0.8	1.0
Venezuela	1.5	1.4	1.3	1.2	1.0	1.0
Mexico	1.4	1.5	1.3	1.0	0.9	0.8
Russia	0.4	0.4	0.4	0.5	0.6	0.6
Algeria	0.5	0.7	0.7	0.5	0.5	0.5
Iraq	0.5	0.6	0.5	0.6	0.5	0.4
Angola	0.5	0.5	0.5	0.5	0.5	0.4
Colombia	0.2	0.1	0.1	0.2	0.2	0.3
All others	2.9	2.5	2.3	1.9	1.5	1.0
Selected Groups and Sub-Groups						
OPEC	5.6	5.5	5.9	5.9	4.7	4.8
- Persian Gulf OPEC Countries	2.3	2.2	2.2	2.4	1.7	1.7
Non-OPEC	7.0	6.9	6.1	5.2	5.0	4.7
- Canada and Mexico	3.4	3.6	3.5	3.2	3.1	3.2

Source: EIA, http://www.eia.gov/dnav/pet/pet_move_neti_a_ep00_IMN_mbblpd_a.htm.

Notes: Countries in italics are members of OPEC. Virtually all oil trade with the Persian Gulf is with OPEC members in the region.

Appendix B. Gross U.S. Oil Imports

Top 10 sources of gross imports in million barrels a day

	2005	2006	2007	2008	2009	2010
Total	13.7	13.7	13.5	12.9	11.7	11.8
Canada	2.2	2.4	2.5	2.5	2.5	2.5
Saudi Arabia	1.7	1.7	1.5	1.3	1.2	1.3
Nigeria	1.5	1.5	1.5	1.5	1.0	1.1
Venezuela	1.2	1.1	1.1	1.0	0.8	1.0
Mexico	1.5	1.4	1.4	1.2	1.1	1.0
Russia	0.4	0.4	0.4	0.5	0.6	0.6
Algeria	0.5	0.7	0.7	0.5	0.5	0.5
Iraq	0.5	0.6	0.5	0.6	0.5	0.4
Angola	0.5	0.5	0.5	0.5	0.5	0.4
Colombia	0.2	0.2	0.2	0.2	0.3	0.4
All others	3.6	3.4	3.3	3.1	2.9	2.5
Selected Groups and Sub-Groups						
OPEC	5.6	5.5	6.0	6.0	4.8	4.9
- Persian Gulf OPEC Countries	2.3	2.2	2.2	2.4	1.7	1.7
Non-OPEC	8.1	8.2	7.5	7.0	6.9	6.9
- Canada and Mexico	3.8	4.1	4.0	3.8	3.7	3.8

Source: EIA, http://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_ep00_im0_mbbl_m.htm.

Notes: Countries in italics are members of OPEC. Virtually all oil trade with the Persian Gulf is with OPEC members in the region.

Appendix C. Petroleum Tariff Rates

Normal petroleum import tariffs under the Harmonized Tariff Schedule of the United States (HTSUS)

Petroleum Categories	Normal Tariff
Petroleum oils and oils from bituminous minerals, crude, testing 25 degrees API gravity or more.	10.5¢/bbl
Petroleum oils and oils from bituminous minerals, crude, testing under 25 degrees API gravity.	5.25¢/bbl
Naphthas (excluding motor fuel/motor fuel blend stock) from petroleum oils and bitumen minerals (other than crude) or preparations 70% plus by weight from petroleum oils.	10.5¢/bbl
Distillate and residual fuel oil (including blends) derived from petroleum or oils from bituminous minerals, testing under 25 degrees API gravity.	5.25¢/bbl
Light oil mixture of hydrocarbons from petroleum oils and bitumen minerals (other than crude) or preparations 70% plus by weight from petroleum oils, not otherwise specified, not over 50% any single hydrocarbon.	10.5¢/bbl
Light oil motor fuel from petroleum oils and bituminous minerals (other than crude) or preparations 70% plus by weight from petroleum oils.	52.5¢/bbl
Distillate and residual fuel oil (including blends) derived from petroleum oils or oil of bituminous minerals, testing 25 degree API gravity.	10.5¢/bbl
Lubricating oils, with or without additives from petroleum oils and bitumen minerals (other than crude) or preparations 70% plus by weight from petroleum oils.	84¢/bbl
Light oil motor fuel blending stock from petroleum oils and bituminous minerals (other than crude) or preparations 70% plus by weight from petroleum oils.	52.5¢/bbl

Source: Harmonized Tariff Schedule Chapter 27. Categories identified by the International Trade Administration.

Notes: "bbl" stands for barrel (42 gallons). API gravity is a measure for the specific gravity of oil developed by the American Petroleum Institute and others. The higher the number, the lighter and less dense the oil. Lighter oils tend to require less processing and yield more valuable products.

Appendix D. Selected CRS Reports on Liquid Fuels Supply and Demand policy

These and additional reports on policies which can impact oil imports through changing aspects of oil supply and demand can be found at http://www.crs.gov:

CRS Report R41139, *Oil Industry Tax Issues in the FY2011 Budget Proposal*, by Robert Pirog

CRS Report R41227, *Energy Tax Policy: Historical Perspectives on and Current Status of Energy Tax Expenditures*, by Molly F. Sherlock

CRS Report R40645, *U.S. Offshore Oil and Gas Resources: Prospects and Processes*, by Marc Humphries, Robert Pirog, and Gene Whitney

CRS Report RL33404, *Offshore Oil and Gas Development: Legal Framework*, by Adam Vann

CRS Report R40806, *Energy Projects on Federal Lands: Leasing and Authorization*, by Adam Vann

CRS Report RL34748, *Developments in Oil Shale*, by Anthony Andrews

CRS Report R41282, *Agriculture-Based Biofuels: Overview and Emerging Issues*, by Randy Schnepf

CRS Report RL34738, *Cellulosic Biofuels: Analysis of Policy Issues for Congress*, by Kelsi Bracmort et al.

CRS Report R40168, *Alternative Fuels and Advanced Technology Vehicles: Issues in Congress*, by Brent D. Yacobucci

CRS Report R40166, *Automobile and Light Truck Fuel Economy: The CAFE Standards*, by Brent D. Yacobucci and Robert Bamberger

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