Securing America's Future Energy

Issue Brief

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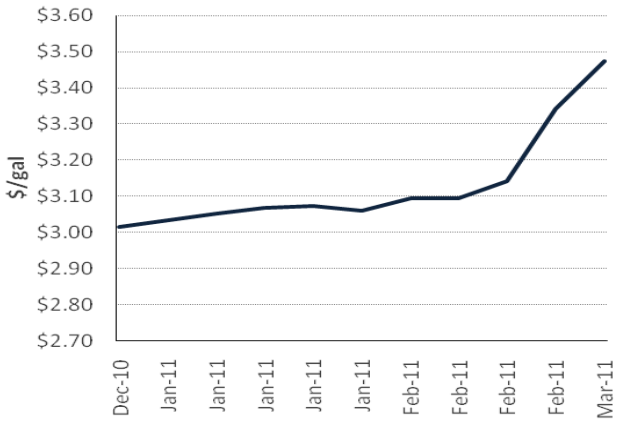
Oil Shock: Options for Policymakers

After 18 months of relative stability, oil prices have risen sharply in recent weeks in response to ongoing instability in the Middle East and North Africa (MENA). While the primary driver of the most recent increase in oil prices has been widespread violence in Libya, markets are also reacting to political turmoil in a number of MENA countries, including some that are significant oil producers and others that control important shipping infrastructure. Perhaps of greater concern to the oil market than the geopolitical events that already have occurred, however, is concern that the unrest could spread elsewhere and further affect oil production and transshipment.

As benchmark oil prices have increased, gasoline prices in the United States have followed. The average price of regular gasoline increased 42 cents per gallon between January 31 and March 7. The last week in February, prices rose 19.4 cents per gallon, the second largest weekly price increase since 1990. Rising prices have stirred concern among consumers, exacerbated by the fact that we are still suffering substantial effects of the 2007-2009 economic recession. Given this national concern about rising prices and the risks they pose to our economy, particularly in the midst of a fragile recovery, intense pressure for the government to respond to the crisis and ameliorate its effects is to be expected.

FIGURE 1 Average Price of Regular Gasoline



Source: U.S. Department of Energy, Energy Information Administration

Unfortunately, there is little to do at this point that will have a meaningful effect in the short to medium term. Demand is generally too inelastic in the short term, we do not control readily-producible additional supply, and it would be unprecedented for the United States to offer subsidies—even on a temporary basis—to offset rising gasoline prices.

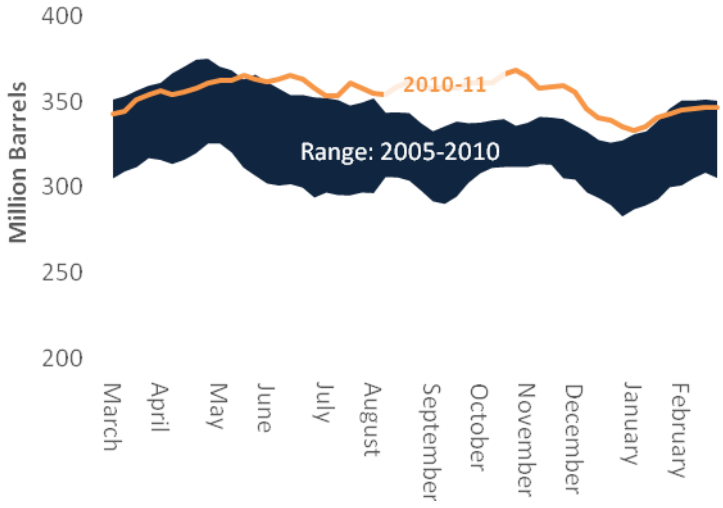
This policy brief examines the options that policymakers might consider for the short term, and the challenges associated with them. It then examines other options that may be useful for the medium to long term, and the issues surrounding them.

Short-Term Policy Options

In response to unfavorable economic news, there often is intense political pressure for policymakers—particularly the White House—to explain what it is doing to address the problem. When that happens in periods of rising oil prices, the list almost always is full of bad choices, because there are almost never good short-term solutions to rising oil prices. Short-term demand for gasoline is quite inelastic (though it can become less inelastic if prices are sustained as some drivers begin taking public transit, adjusting and consolidating trips, and shifting to the use of more efficient cars, when reasonably available). The government also has little ability to affect supply in the short-term, other than using the Strategic Petroleum Reserve, which is addressed below. Stated simply, by the time prices are rising sharply, it generally is too late to do much about it.

The Strategic Petroleum Reserve: The first lever that many policymakers instinctively reach for when oil prices spike is the Strategic Petroleum Reserve (SPR). The SPR currently holds about 726.5 million barrels of oil to be used at the order of the Secretary of Energy in response to a supply emergency. Administration after administration has stated that it would not use the SPR in response to high prices, but only in response to a genuine supply emergency. Although supply emergencies can sometimes be difficult to distinguish from price spikes, the current situation is quite clear. American crude oil stocks are above the typical range for this time of year (Figure 2).

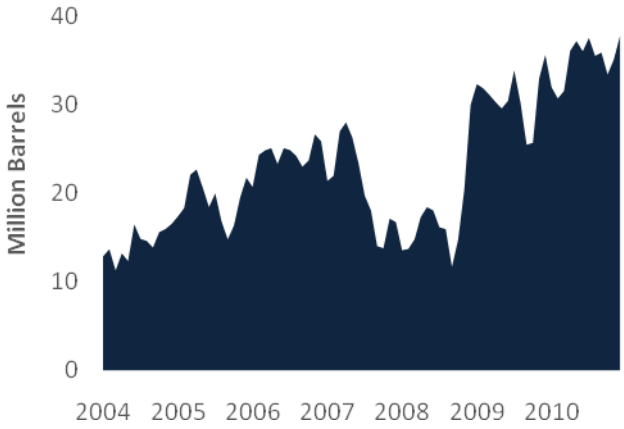
FIGURE 2 Weekly U.S. Commercial Crude Stocks



Source: DOE, EIA

Stocks in Cushing, Oklahoma, the most significant oil supply hub in the nation, and the price settlement point for the U.S. benchmark West Texas Intermediate crude oil on the New York Mercantile Exchange, are at an all time high (Figure 3). Finally, stocks in the Organization for Economic Cooperation and Development (OECD) are high as well.

FIGURE 3 Stocks of Crude Oil, Cushing, OK



Source: DOE, EIA

Stated simply, at this moment, there is not yet an oil shortage, despite the recent interruption in the flow of oil from Libya. Oil prices have risen largely in response to uncertainty about what the future holds, and less in response to the disruption of oil supplies from Libya, which have largely been replaced in recent days by other OPEC producers.

Aside from the fact that release of oil from the SPR in response to the current situation is not a use of the reserve contemplated by the original statute, the United States government would also be taking some level of responsibility for oil prices at a time when it has limited ability to control them, particularly if the unrest in the Middle East extends over a substantial period of time. Once we release oil from the SPR, it becomes hard to explain when and why the government might stop releasing oil. Stated differently, if there is no clear explanation for a decision to release oil from the SPR other than the fact that prices are high, it is hard to explain why the government would end the release until and unless prices stop rising—or return to low levels. Of course, depending on market conditions, prices might not be low for some time, and ending a release could actually cause prices to rise, complicating matters even further. These situations are among the reasons that the SPR was not developed for use simply in response to high oil prices.

Moreover, using the SPR creates an expectation in the oil market of future interventions, which decreases the incentive for private stockholders to build private stocks, thereby increasing the risk of future shortages. And while some observers have argued that the SPR is bigger than it needs to be, so long as it is at its current size as a matter of policy, using it

now means that it would not be available later in the event that more substantial supply interruptions meaningfully harm the oil market.

Perhaps most importantly, releasing oil from the SPR is unlikely to reduce oil prices for any significant period of time. It is well within the realm of possibility that a decision to release oil from the SPR might allow OPEC producers with spare capacity to increase production less than they otherwise would have. It is, after all, not in their interest for the price of oil to get too low.

If, despite all of this, the administration still feels the need to do something with the SPR, it could test the reserve to demonstrate an ability and readiness to use it if necessary. This might have little effect, as the SPR has been used in recent years and clearly works, and the market understands that we still have no clear guidelines as to when we can and will use the reserve. However, it would serve as a reminder of the SPR as a policy option should market dynamics deteriorate enough.

Other Short-Term Measures: In addition to the use of the SPR, a typical list of short-term responses to high gasoline prices would likely include the following options, each of which has substantial drawbacks.

- Reduce Use of Heating Oil and other Non-Transportation Petroleum Fuels: The government could promote policies to reduce uses of oil outside of the transportation sector, with residential heating oil and propane being among the most prominent. However, this would be largely ineffective, because those non-transportation uses are highly diverse, with no single dominant application. In addition, petroleum is highly optimized in its other uses after decades of efficiency gains, and would therefore be hard to displace. Moreover, as we enter spring and summer, use of heating oil (290,000 b/d) and propane (about 400,000 b/d) will decline until next fall. Finally, heating oil and propane are generally used where there is no natural gas, and the cost and challenge of effectuating a conversion to natural gas for residential use is substantial.

- Exports of Natural Gas to Relieve Pressure on Global Oil Prices: The United States has substantial natural gas reserves in newly-developed shale gas regions. Some observers have suggested that the United States could export gas to displace oil use in the electric power sectors of other nations. However, volumes available for export in the near to medium term would be too small to meaningfully affect world oil markets, and would risk further integrating the United States into a world gas market that could ultimately result in higher natural gas prices in the United States. Perhaps of greater importance, however, is the fact that few countries use meaningful quantities of oil for power generation, and many of those that do are large oil producers unlikely to buy American natural gas. Finally, unless designed as dual fuel generators, it is not simple to switch a power plant from oil to gas, and adequate infrastructure/pipeline capacity to deliver the gas to the plant is required.

- Ease Ethanol Import Tariffs to Increase Supply: Easing the ethanol tariff is unlikely to matter, because it will not fundamentally change the world supply/demand balance in the near term. Removing the tariff without actually increasing world supply will allow sellers to capture extra profits by selling the cheaper fuel at the market price.

- **Petroleum Product Reserve:** It is possible some parties might advocate for the establishment of a product reserve (gasoline, jet fuel, etc.). This would be ineffective, because we do not suffer a shortage of refining capacity; the current price volatility is the result of some crude oil supply coming off the market when Libya reduced its output—much of which has since been replaced by Saudi Arabia, Kuwait, Nigeria, and the United Arab Emirates—and (more significantly) concerns about the ongoing unrest further affecting the flow of crude oil from the Middle East. OPEC simply has less spare capacity than it did only a few weeks ago. Ultimately, worldwide commercial stocks of products are sufficient to respond to product shortages when driven by market signals (as happened following Hurricane Katrina). Moreover, because product deteriorates and must be turned over regularly, maintaining product stocks would require ongoing, unnecessary and unwanted government participation in fuel markets.

Causes and Effects

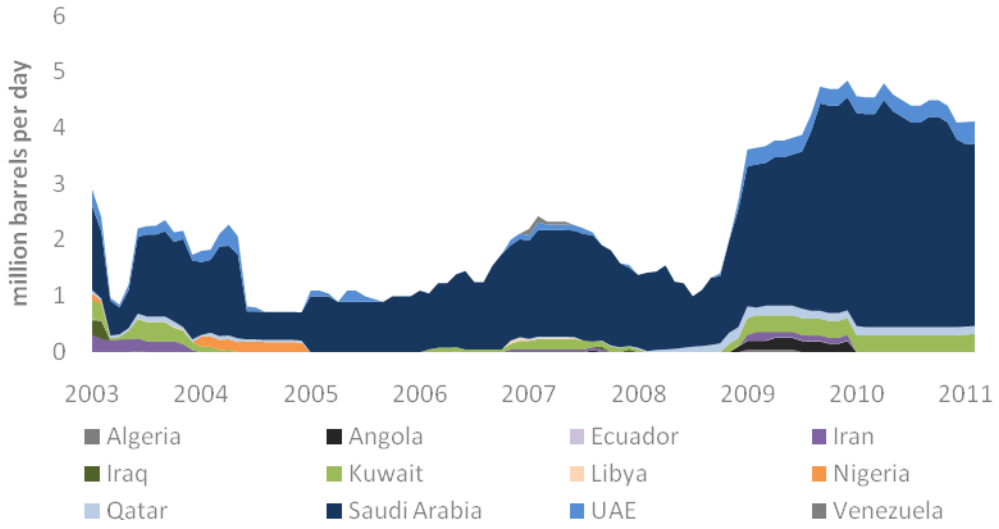
If unable to identify policies to affect either the supply of or demand for oil in the short term, the next question often asked is whether we can identify policies that might offer long-term signals to the market that would increase confidence and lower prices in the short term.

Before addressing that question directly, however, it is important to distinguish periods of rising prices from periods of high prices. Americans cared about fuel prices in 2008 when they spiked to $147 per barrel, and they care again today as prices soar to unexpected highs over $100/bbl. As a nation, however, we were generally content when prices were stable in the $70-$80/bbl range for a few years, a price level that was unthinkable less than a decade ago. The lesson is that consumers eventually adjust to sustained price levels even if they are high. It is the adjustment process itself that is traumatic, more so than the 'destination.' Stated differently, price volatility is the real culprit.

A proper answer to the question of whether short-term actions can affect long term prices lies in basic economic principles. It is commonly suggested in policymaking circles that if the United States produces more oil, or uses less oil, the global oil price will fall. That is, after all, a basic economic principle. Its application, however, is limited to competitive markets, and the oil market is decidedly not competitive.

That OPEC is a prototypical cartel is obvious. If any support were needed for the proposition, it could be seen in the fact that the members agree on production quotas to maintain a price level, and that some members maintain substantial spare production capacity (Figure 4) even when their production costs are only a tiny fraction of market prices. In any competitive market, a producer would increase output until their marginal cost approached marginal prices. Yet the Saudis, for instance, maintain millions of barrels per day of spare production capacity, though their widely reported average production cost of $2 per barrel is a tiny fraction of its current market value. Accordingly, the economic principles that are relevant to the oil market are more similar to those that apply to a monopoly than to a competitive industry.

FIGURE 4 OPEC Spare Production Capacity by Country



Source: DOE, EIA

Monopoly firms possess market power, which is the ability to effectively set a price rather than allowing the market to do so. A monopolist's market power is limited by the demand side of the market, as a negatively sloped demand curve means that rising prices will result in the loss of customers. Moreover, the inverse elasticity rule dictates that the less elastic demand is for the product, the greater the pricing power possessed by the monopoly, and since demand for gasoline is highly inelastic in the short term, members of the cartel have substantial market power and ability to influence prices.

These characteristics help explain why most of the major price swings in oil prices over the past 40 years—both up and down—have been the result of supply-side decisions, not demand growth.

Prices rose sharply in:

- 1973-74, as a result of the oil embargo;
- 1979-81, as a result of the Iranian revolution and the Iran-Iraq War;
- 1990-91, as a result of the Iraqi invasion of Kuwait;
- 1999-2000, as the result of OPEC's production cuts and better adherence to quotas following the 1998 collapse of the oil market; and
- 2004-2008, as the result of growing demand from the developing world, the shrinkage of spare capacity, the increasing expense of developing more complex oil fields, and the lack of incentives to increase production capacity.

Prices fell sharply in:

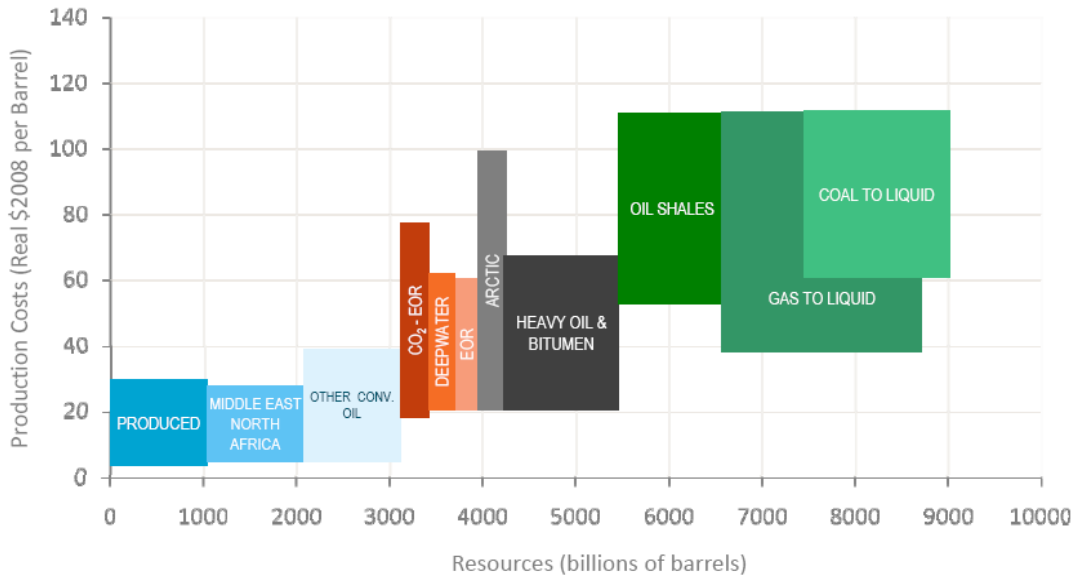
- 1986, as the result of Saudi Arabia increasing production substantially to reclaim market share that eroded over several years of cutting production to maintain prices while other OPEC members cheated against their quotas;
- 1991, after the onset of the U.S attack against Iraq, at which point it was clear that the war would end in a decisive victory for the U.S.-led international coalition;
- 1998, after rampant overproduction by OPEC members who did not adhere to quotas, reinforced by substantial new production capacity coming on line; and
- 2008, after the global financial crisis and recession.

Of 10 price events in the last 40 years (the nine above plus the one occurring right now), eight clearly were supply-side driven.

The first exception was the rise in prices in the 2000s, which was largely the result of rapidly rising oil demand that coincided with a sharp contraction in spare production capacity. With the market so tight in a period of rising demand, it acted more like a competitive market than a monopoly. This makes sense: monopolists exercise market power by constraining supply, not expanding it.

The price rise was reinforced by the fact that oil is more expensive to produce today than in the past, at least outside of OPEC. As international oil companies (IOCs) move increasingly toward unconventional hydrocarbon resources, the marginal cost of production is rising. To the extent that it now costs more to produce the marginal barrel of oil, the long-term average price of oil is unlikely to fall below that price level.

FIGURE 5 Long Term Oil Supply Cost Curve



Source : International Energy agency, World Energy Outlook 2008

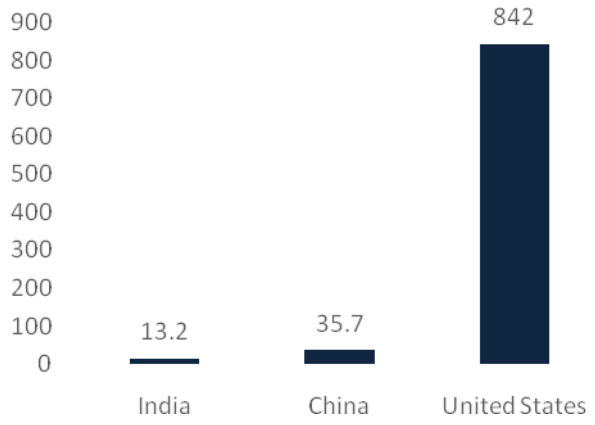
The second exception to the experience was the price collapse in 2008. Simply stated, that was the result of the collapsing demand that accompanied the greatest recession since the 1930s. It provided no useful guidance for how to moderate prices in the future, short of tanking the economy.

The critical point of this review of prices over the past 40 years is that the oil market is not a competitive market, and increasing supply or decreasing demand may not have the effect on prices that would occur in other circumstances. Certainly, the majority of notable price-related events in oil markets over the past several decades have not come about due to competitive dynamics.

There is an open question as to whether market dynamics in the next several years will be dominated by supply issues, or if demand issues may play a greater role than in the past. There is certainly a case to be made that times have changed, and that the market is more likely to be influenced by demand-side issues than in the past. This change is based on forecasts for substantial demand growth in the developing world that will overshadow any reduced consumption in the United States, suggesting that even if we are the largest consumer in the market, we may not be the most important any more.

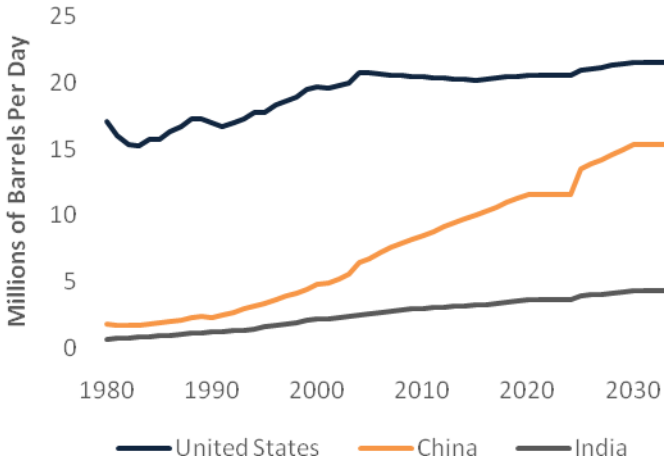
As shown in Figure 7, demand in China and India alone over the next 25 years is forecast to grow by an average of 400,000 barrels per day each and every year, while demand in the United States over that period is forecast to remain largely flat. Even if the United States cut the use of oil for the light-duty fleet by half (about 4 mbd), worldwide demand will still grow, obviating any downward pressure on prices. There were examples of this sharp demand growth in the developing world growth in the second half of the last decade, and it was partially responsible for the price spike in 2006-2008. That growth was interrupted by the recession and the resultant reduced global demand for oil. However, it appears increasingly likely that such demand growth will return to its pre-recession state as the global economy recovers.

FIGURE 6 Vehicles Per 1000 People (2008)



Source : Oak Ridge National Laboratory, Transportation Energy Data Book, Ed. 29

FIGURE 7 Forecast Oil Demand



Source : DOE, EIA

What Policies Can the Government Pursue?

Ultimately, the growth in demand abroad has placed us in a position of relative weakness, in which our alternatives are more limited and more complex. There are, however, both medium- and long-term policies that Congress and the White House can consider.

First, even if increasing domestic supply and reducing domestic demand will not affect the prices of a globally-traded commodity, that does not mean that there is not value in pursuing policies in those areas. Increasing domestic supply, for example, would have the effect of improving a massive trade deficit in petroleum and refined products ($260 billion in 2010). Reducing domestic demand, on the other hand, will neither prevent price shocks nor fully insulate the American economy from them, but it could help to mitigate their effects. Further, serious efforts to face issues of supply and demand will signal to global markets that the United States is serious about altering its energy equation, in itself a valuable exercise. There are a wide variety of policies—each with benefits and tradeoffs—that government could consider to achieve these goals, including:

- **Offshore Production:** Quickly establish rules for offshore operations in the Western and Central Gulf of Mexico, hire an appropriate number of trained people to oversee offshore operations properly, and start issuing permits more rapidly.
- **Offshore Access:** Open the Eastern Gulf and portions of the Atlantic outer continental shelf for oil and gas development.
- **Fuel Economy:** Issue the tightest fuel economy standards for 2017-2025 that could be justified legally and scientifically.
- **Feebates:** Complement fuel economy standards with feebates, fees charged for the purchase of relatively inefficient cars that are then used to pay for incentives for the purchase of relatively efficient cars, in a revenue neutral manner.
- **Congestion Fees:** Initiate a program to begin promoting the collection of congestion fees from drivers to reduce congestion and improve system efficiency.

- **Fuel Tax:** Increase the gas tax, perhaps simply adjusting it for its loss of purchasing power due to inflation since it was last raised in the early 1990s. This is clearly a hot-button issue politically, though a decision to increase the gas tax would have some strong supporters on the left and the right.
- **Adjustable Fuel Tax:** Design a fuel tax that would operate similar to a floor price of gasoline (as an alternative to a traditional tax of a certain number of cents per gallon or even a percentage of the price). Such a tax would have the benefit of not ever being responsible rising costs, though it would be responsible, perhaps, for keeping prices from falling as far as they might otherwise fall.
- **ANWR:** Initiate a dialogue over production in the 1002 Area of the Arctic National Wildlife Refuge (ANWR). Touching such a hot-button issue would demonstrate that policymakers view the current situation as a genuine crisis and are leaving no stone untouched.

Ultimately, however, it is critical to come back to the essential point that the United States cannot and will not ever be able to control international oil prices. Therefore, as long as our economy remains dependent on oil, price spikes will continue to have a deleterious effect on the United States. The lynchpin of this dependence is found in the nation's transportation system, which uses 70 percent of the oil consumed in the United States and is 94 percent dependent on petroleum with no readily available substitutes. Policymakers, therefore, can and should consider long-term policies designed to separate our economy from oil:

- **Electrification of Transportation:** Advances in battery technology for the first time truly make possible an electrified transportation sector that is powered by a wide variety of domestic sources: natural gas, nuclear, coal, hydroelectric, wind, solar, and geothermal. The electrical generation system in the United States uses virtually no oil. Electricity prices are far more stable than oil prices, there is substantial spare generation capacity, and the backbone of the infrastructure already largely exists.
- **Natural Gas Vehicles and Biofuels:** Though there are challenges (including infrastructure and continuing participation in a liquid fuel market in which oil will continue to determine price), other alternatives to petroleum are also options policymakers may consider.