Before the Subcommittee on Energy and Power

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Hearing on "21st Century Energy Markets: How the Changing Dynamics of World Energy Markets Impact our Economy and Energy Security"

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Chairman Whitfield, Ranking Member Rush, and distinguished Members of the Subcommittee: Thank you for the opportunity to appear before the Subcommittee today. The subject of this hearing is particularly timely in light of the changing circumstances in the international oil market and the new kinds of risks that are emerging from oil price volatility. The United States has been afforded a huge opportunity to improve both its position relative to economic exposure to world energy market volatility and its geopolitical influence in the past few years, but we are by no means out of the woods when it comes to energy security. I am honored to discuss with you today this important topic and specifically, to outline the geopolitical elements to today's oil market situation and their implications for the United States.

The decision by the Organization of Petroleum Exporting Countries (OPEC) to reverse itself to favor market share over prices is a complex one. It is not at all clear to me, regardless of the media hype to that effect, that OPEC members are targeting U.S. unconventional oil and gas production. While it is true that rising U.S. oil production was what put OPEC under pressure in

the first place, the decision by key member states such as Saudi Arabia, Kuwait, the United Arab Emirates and Qatar, to allow oil markets to remain oversupplied is driven mainly by broader geopolitical concerns, many of which coincide with those of the United States. These include increasing the pressure on Iran and Russia to come to the bargaining table and settle existing conflicts (eg, Syria, Iraq and Iran's nuclear aspirations) through compromise and diplomacy. Saudi Arabia also has strong unique geopolitical and national security interests to maintain its position as a major supplier of oil and thereby an important ally to the United States. In 2014, U.S. crude imports from Saudi Arabia has lost about 440,000 b/d of market share, with exports to the U.S. dropping to 894,000 b/d starting last summer, their lowest level since 2009, according to US Energy Information Administration (EIA) data. Much of the Saudi oil was replaced by shipments from Canada whose exports to the U.S. jumped to 2.956 million b/d, up roughly 340,000 b/d from a year earlier 2013.

The combination of the stronger U.S. oil and gas sector, and an aggressive Saudi oil policy, appears to be having some of the desired effects. Iran's top leaders have in recent weeks implied that compromise could be elemental to P5+1 talks while Russia is facing increased financial pressure. Saudi Arabia and other Arab Gulf countries have amassed large floating oil stocks that serve as a deterrent to increased adventurism by either Tehran or Moscow, though it remains unclear if an end game with diffused conflicts will actually emerge. The United States has hampered its potentially enhanced international stature by keeping its own oil surplus sheathed. US tight oil could be a greater benefit to U.S. allies and free markets, were the Congress to lift the 40 year old export ban.

America's Global Leadership Role

The United States can do much more to use its advantageous energy position to enhance its global leadership role. Our current policies of limiting natural gas exports and banning crude oil exports must be considered in the context of the U.S. international leadership role and not just in the confines of U.S. domestic political priorities. In the global context, hoarding energy supplies inside our borders sends the message to other countries that they too should be hoarding their energy. Such attitudes were precisely what worsened the economic damage to the global economy during the 1979 oil crisis. The United States is bound by our membership in the International Energy Agency (IEA) emergency stockpile system to share our energy in times of emergency or major disruption, so it seems all the more ludicrous that our hoarding of supplies will be limited to periods where energy supply is sufficient.

It is not the case that hoarding energy supplies inside our borders helps lower prices to consumers. The United States is both an importer from and exporter of gasoline to the international market. As such, U.S. gasoline prices are generally speaking tied to global market trends. Analysis by the U.S. Department of Energy, among others, has shown that the export ban is not lowering gasoline prices here in the U.S.

The current consequence of the U.S. oil export ban is the accumulation of historically high, surplus crude oil inventories that is depressing U.S. crude oil prices relative to global markets. Stocks at oil trading hub Cushing, Oklahoma, are near their historical high of 52 million barrels, causing a substantial discount (over $1.50) between the current price and prices for future months. Left untreated, the shortage of available tankage could mean the United States will sacrifice some of the projected future oil production increase of 500,000 b/d to 800,000 b/d expected to materialize over the rest of 2015 by the U.S. Energy Information Administration (EIA) and major financial institutions such as Citi. The crude oil containment problem could be

easily solved by allowing exports, a policy that could assist allies such as Mexico and Europe who are eager to have access to U.S. condensates and tight oil. Such energy trade strengthens our ties to important allies and trading partners and thereby enhances American power and influence.

The United States needs to lead from the front when it comes to energy geopolitics. Open trade and investment in energy is important to vital U.S. interests. Artificial restrictions on energy flows can be a source of international conflict as we can already see from events in Eastern Europe and the Middle East. Moreover, the United States has a direct interest in preventing energy from being used as a strategic weapon or as a spoil of war in civil conflict between competing militias or sectarian groups. A formalized national security assessment needs to be a more transparent metric for decision making on energy infrastructure and trade policy, similar to the manner in which environmental assessments are performed. Our international diplomacy should be addressing energy pro-actively. By leading the charge of new energy technologies and energy exports, the United States has the ability to fashion a global energy world that is more secure, freer of geopolitical strings and lower in carbon emissions. We should not shirk that responsibility to save a few pennies on the energy bill of some subset of the U.S. manufacturing sector which will be increasingly competitive given its geographic proximity to abundant, new U.S. energy resources and access to innovative technologies like the industrial internet.

Seeds of Future Instability

The global oil market still faces key sources of instability for supply. With low oil prices, Venezuela's economic problems have raised the risk of a severe political crisis. Lacking access to adequate finance, Venezuela's oil industry will have difficulty maintaining oil output levels in the face of steep natural decline rates at its fields. State oil firm PDVSA's lack of funds has

prompted a slowdown in progress for new Orinoco Belt heavy oil projects and upgrading units for existing production are said to be in disrepair. The country, which faces the possibility of a sovereign default on its massive debt, suffers from an inflation rate of 60% and the population is suffering from acute shortages of basic foodstuffs and medicines. Venezuela has debt repayment of about $11 billion to $12 billion annually and relies heavily on oil exports as its source of revenue. With Parliamentary elections technically due to take place later this year, the Maduro government has turned to violent repression to damp down civil unrest, recently arresting popular opposition leader Antonio Ledezma, mayor of Caracas, on a charge of conspiracy.

Russia has so far avoided a similar kind of crisis as the falling ruble reduced the costs of doing business in the Russian energy sector, but eventually Russian output could also face financial hurdles as major Russian companies like Rosneft and Novatek face collapsing profits and are unable to raise external capital. Falling energy price and plunging sales to Europe have also hit Russian gas giant Gazprom's revenue, potentially depriving Russia of $6 billion in revenues to the Federal budget this year alone. Average Russian natural gas prices to Europe are expected to fall by a third this year and sales to some key European clients are down by half as the slow economy, energy efficiency efforts, diversification to alternative supplies and a mild winter have eaten into Gazprom's sales. Gazprom revenues usually contribute a fifth of Russia's federal budget. In the past, sales to Europe have accounted for more than half of Gazprom's revenues.

Iraqi and Libyan production is also under threat from the warfare raging in those countries where various parties are vying to control oil assets. Dangerously, the Islamic State (ISIS) temporarily gained control of Iraq North Oil Company's 35,000 b/d Khabbaz oil field near Kirkuk. The battle was significant because Kirkuk is an important Iraqi oil production region whose political status has been highly contested. The Kirkuk oil fields came under the control of the KRG military in

July 2014, and Iraqi central government forces are currently joining the fight there against ISIS, but the region's territorial status remains contested. The fields around Kirkuk are producing 400,000 to 500,000 b/d currently and could contribute to a large increase in the country's future oil production.

ISIS continued strategy to try to grab oil fields for its possible "statehood" underscores a grave danger for the region and a source of instability to global oil supply. If existing national borders and authorities are not considered permanent or authoritative, regional oil facilities will become both strategic assets and spoils of war in not only the greater battle for Syria and Iraq but potentially in the struggle for geopolitical power across the entire region. This turn of events is a serious challenge to stability across the Middle East and for the global oil market. My research with econometrician Mahmoud El-Gamal shows that oil facilities damaged during wartime can dramatically reduce access to oil from a country for years, if not decades.[1]

The concern that oil will drive military actions across the Middle East cannot be overstated. IS, led by former military leaders from Saddam Hussein's brutal regime, clearly understand the importance of oil assets and revenues during wartime, given their history of the 8 year war with Iran and battle for Kuwait. ISIS "oil related" threat in the region has not been lost on other regional powers. Troops are already lining the Saudi northern border, and Iran has positioned troops to protect Iraq's southern oil fields at a time when Basrah's local leaders have been threatening to hold a referendum on whether to become a semi-autonomous region like the KRG.

Increasing Importance of US Energy Diplomacy

[1] El-Gamal, Mahmoud Amin and Amy Myers Jaffe (2013) Oil Demand, Supply and Medium Term Price Prospects: A Wavelets-Based Analysis. Institute of Transportation Studies, University of California, Davis, Research Report UCD-ITS-RR-13-10

All this is to say that the United States should be pursuing its energy diplomacy more pro-actively. Militias in the Middle East and Africa have learned that they can undermine the authority of existing political leadership in the region by overtaking oil facilities. A prime example of this is Libya where what might have been a successful transitioning government fell into disarray as rebel factions grabbed or turned off key oil installations or denied access to export ports and terminals.

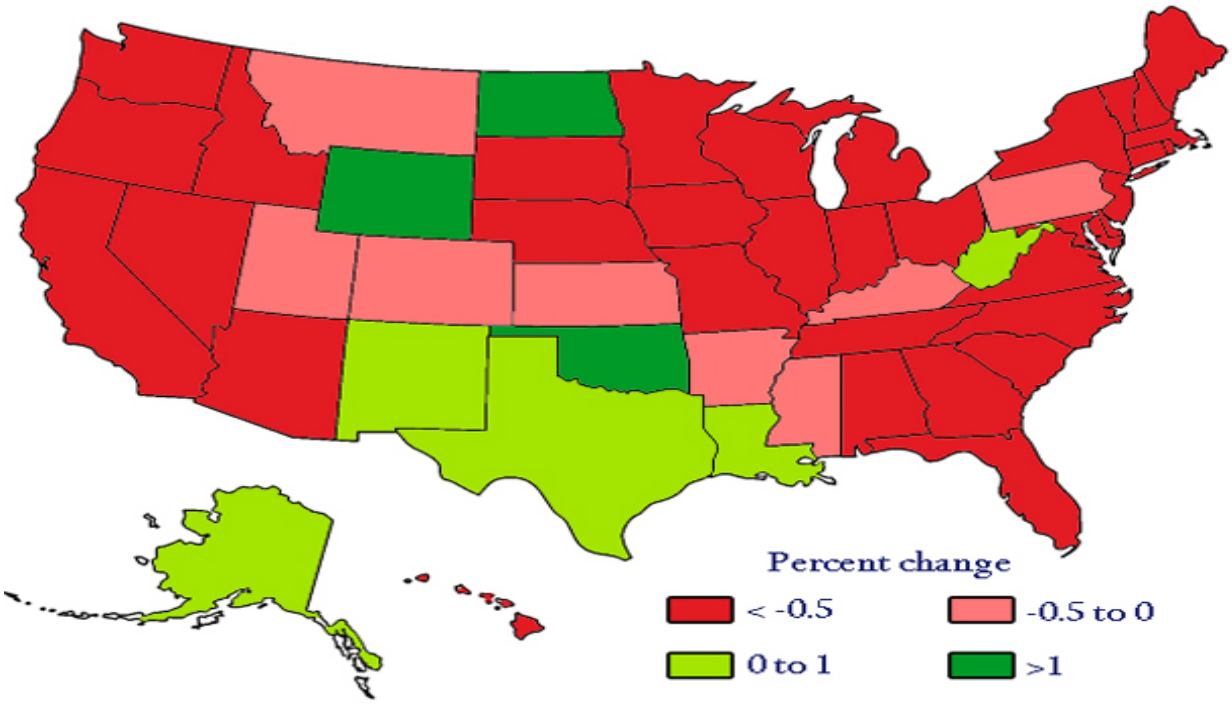
The United States should be following up military action with intensive diplomacy geared to help emerging political leaders to better negotiate about equitable systems and institutions for the distribution of oil wealth in the region. The United States should be elevating oil and gas revenue sharing conflict diplomacy to the highest levels. If the U.S. is going to be successful engaging diplomatically in the Middle East, it needs to take a leadership role in the difficult task of helping leaders forge lasting domestic political pacts on how to share oil revenue equitably and to minimize official corruption in countries that are or could be torn by civil war or sectarian violence. That NATO and the United States have not clearly taken this challenge seriously enough is demonstrated in Libya where what started as a promising beginning for a newly elected Libyan government has ended in violent civil conflict driven in part by lack of agreement over regional oil revenue sharing. The failure to implement effectively such oil conflict diplomacy has crippled U.S. efforts to stabilize countries such as Iraq and Libya.

US Energy Policy: Build on Success

The United States has substantially lowered its oil imports but we are still attached to the global oil market and subject to the risks facing it. Overall, the U.S. economy still benefits from lower oil prices, analysis from the U.S. Federal Reserve Bank shows. It would take a four-fold increase

from today's level, for example, before an oil price fall would do more harm than good to Pennsylvania's economy.

ECONOMIC IMPACT OF RISING OIL PRICES PER STATE



Source: Yucel, Brown (2014)

As U.S. Energy Information Administration (EIA) analysts *Shirley Neff and Margaret Coleman* show in the lead analysis article in a newly published Special Issue of Energy Strategy Reviews on "U.S. Energy Independence: Present and Emerging Issues", U.S. demand-side management policies are finally paying off, with U.S. oil consumption falling almost 10 percent between 2005 and 2013 and expected to find deeper reductions in the coming decades. U.S. oil demand is expected to decline by more than 20 to 30 percent in the next twenty years, *Neff and Coleman*

argue, demonstrating the importance of well-designed transportation policies. There is no question that technological innovation and new investment strategies by U.S. independent oil companies are bringing about a renaissance in U.S. domestic oil and gas production, creating a prolific U.S. energy supply outlook. But without government intervention to curb our appetite for oil, this rising production might have done little more than meet increases in incremental demand— putting us back in the deep dependency of prior decades and with OPEC and Russia in the driver's seat.

It is important to note that the dramatic rise in U.S. energy production comes in the form of both oil and gas and renewable energy. In effect, the country has hit the jackpot on both fossil fuels and clean technology simultaneously, leaving us in an enviable position where cheap and ample energy supply is driving economic growth and wealth creation. The U.S. has added more than 500,000 jobs in the oil, gas and clean tech sectors in the past five years, contributing to a boom often likened to a second industrial revolution. Renewable energy production in the United States has been steadily on the rise, with over 17,000 megawatts (MW) of solar, wind and geothermal capacity currently under construction. The U.S. Energy Information Administration estimates that that renewable energy will represent one-third of all new electricity generation added to the national grid over the next three years. Installed U.S. solar energy capacity increased 418 percent between 2010 and 2014 to 12,057 MW.

Policy makers might also want to consider ways to lock in the benefits of a healthy U.S. clean tech and domestic natural gas sector from the negative fallout from the OPEC price war.

One way to help U.S. natural gas producers beat OPEC would be to nurture natural gas as a fuel for the U.S. heavy-duty trucking fleet. While launching a national network for liquefied natural gas (LNG) fueled trucks might be difficult and expensive, an initial small-scale natural gas transportation network for heavy trucking could be launched in key U.S. regions situated near high-volume travel corridors, according to a new study published by the Institute of Transportation Studies at the University of California Davis and Rice University. The study highlights how California, the Great Lakes and the mid-Atlantic are well positioned to serve as pilot networks due to their proximity to trucking corridors. The U.S. Department of Energy tried a corridor approach to biofuels use in the 1990s, but natural gas is likely to have more compelling economics. Such a network could enable a faster transition to renewable natural gas, biogas and waste-to-energy pathways — though it would require significant policy intervention to reap climate change benefits. Utilizing natural gas for heavy trucking would also improve energy security and weather-related resiliency by diversifying the geographic fuel supply, while potentially improving U.S. economic competitiveness by lowering costs along national freight supply chains. But stricter efficiency standards for LNG-fueled heavy-duty trucks and stronger regulations of methane leakage along the natural gas supply chain are needed for natural gas to advance low-carbon-fuel goals. To date, the long-haul trucking industry has favored less-expensive spark ignition (SI) engine technology that has lower levels of climate performance.

Moving forward on clean tech, California holds lessons for the wider U.S., including concerns that carbon regulation will create economic inefficiencies and kill economic growth. California's economy has been growing by about 4 percent a year and will soon be the 7th largest economy in the world, overtaking Brazil. Its policies serve as a starting point for demonstrating viable, market responsive climate policy approaches, by stimulating innovations and investments in low-

carbon technologies and behaviors. California policy, for example, has stimulated investments in and sales of plug-in electric vehicles (PEV) and is driving other energy innovations such as smart grid technology, big data logistics efficiency software and distributed generation technologies. To date, over a third of U.S. PEV sales are in California, even though the state accounts for only 12 percent of the population.