

# Assessing U.S. and North American Energy Security in 2017



American Security Project

Perspective

—

BGen Stephen A. Cheney, USMC (Ret)

Andrew Holland

August 2017

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Lee Cullum, at one time a commentator on the PBS NewsHour and "All Things Considered" on NPR, currently contributes to the Dallas Morning News and hosts "CEO."



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Nicholas Clark is the CEO and Executive Director of Alexium International. He is also co-founder and Managing Partner at Viaticus Capital.



### **Admiral William Fallon, USN (Ret.)**

Admiral Fallon has led U.S. and Allied forces and played a leadership role in military and diplomatic matters at the highest levels of the U.S. government.



### **Raj Fernando**

Raj Fernando is CEO and founder of Chopper Trading, a technology based trading firm headquartered in Chicago.



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Scott Gilbert is a Partner of Gilbert LLP and Managing Director of Reneo LLC.



### **Vice Admiral Lee Gunn, USN (Ret.)**

Vice Admiral Gunn is the President of the Institute of Public Research at the CNA Corporation, a non-profit corporation in Virginia.



### **The Honorable Chuck Hagel**

Chuck Hagel served as the 24th U.S. Secretary of Defense and served two terms in the United States Senate (1997-2009). Hagel was a senior member of the Senate Foreign Relations; Banking, Housing and Urban Affairs; and Intelligence Committees.



### **Lieutenant General Claudia Kennedy, USA (Ret.)**

Lieutenant General Kennedy was the first woman to achieve the rank of three-star general in the United States Army.



### **General Lester L. Lyles, USAF (Ret.)**

General Lyles retired from the United States Air Force after a distinguished 35 year career. He is presently Chairman of USAA, a member of the Defense Science Board, and a member of the President's Intelligence Advisory Board.



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Dennis Mehiel is the Principal Shareholder and Chairman of U.S. Corrugated, Inc.



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### **LtGen Norman Seip, USAF (Ret)**

Lieutenant General Norman R. Seip, USAF (Ret) served in the Air Force for 35 years. His last assignment was Commander of 12th Air Force.

## In this Report:

This report is drawn from testimony by ASP's CEO, Brigadier General Stephen Cheney, USMC (ret.), to the Senate Energy and Natural Resources Committee on Tuesday, July 18, 2017 at the hearing on "[U.S. and North American Energy and Resource Security](#)." In the report, ASP argues that we must not confuse "Energy Security" with "Energy Independence." The increase in production of oil and gas has given America breathing room; policymakers should pursue sustainable energy security by investing in the future.

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## IN BRIEF

- We should define Energy Security as the ability of a country to define its interests overseas independently from how it uses energy domestically.
- Due to the American "Energy Revolution," the current "Status" of North American energy and resource security is good, but the "Outlook" is hazy.
- Oil and gas production has risen over the last decade, providing increased security from foreign interference.
- Renewables, nuclear power, and energy efficiency play an increasingly important, if often overlooked, role in maintaining security.
- True energy security only comes from "Shared Security" when energy is traded across borders with allies and neighbors.
- Cyber attacks are a growing threat to American energy security, and we need sustained public-private partnerships between the federal government and private companies to invest in cyber defenses.
- To ensure sustainable energy security, the U.S. should increase investment in scientific research and development into breakthrough energy sources.

## About the Authors

*Brigadier General Stephen Cheney, USMC (ret.) is the Chief Executive Officer of the American Security Project. He is a graduate of the U.S. Naval Academy and has over 30 years experience as a Marine. He has been on the Board of Directors for ASP since 2006.*

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# Adapted from Testimony: The Status and Outlook for U.S. and North American Energy and Resource Security

## Committee on Energy and Natural Resources

United States Senate

July 18, 2017

Energy security – how the United States uses and produces energy – is a national security issue of preeminent importance.

The American Security Project’s role in discussing energy security is to focus on the long-term national security importance of energy. For the military, assured access to energy is a pre-requisite to any operation. In the last 15 years, the military has learned the hard way that energy should not be taken for granted: our supply lines in Iraq and Afghanistan were a constant target for insurgents. In response, all four branches of the military have taken significant steps to both increase energy efficiency and reduce their single-source dependence on petroleum fuels. Our country can learn from the military’s experience.

**Energy security =**  
*the ability of a country to define its interests overseas independently from how it uses energy domestically.*

## What is Energy Security?

Before we can discuss where we are on energy security, we should understand what we are asking. Too often, policymakers use terms like “Energy Security” or “Energy Independence” – or now, “Energy Dominance” – without defining them. These mean different things to different audiences. For politicians, that can be a good thing! But for those of us trying to devise policies on how to build energy security, we need a definition.

Energy Security is generally defined as the ability to have uninterrupted access to energy resources at an affordable price.<sup>1</sup> That’s a start, but it is not enough, because of the indelible link with global affairs. America’s concept of energy security was defined by the two oil crises of the 1970s, where our country found its economy held hostage by hostile foreign powers over decisions that our leaders made in international affairs. To ensure that nothing like that ever happens again should be our goal in building energy security. Therefore, the American Security Project defines energy security as *the ability of a country to define its interests overseas independently from how it uses energy domestically.*

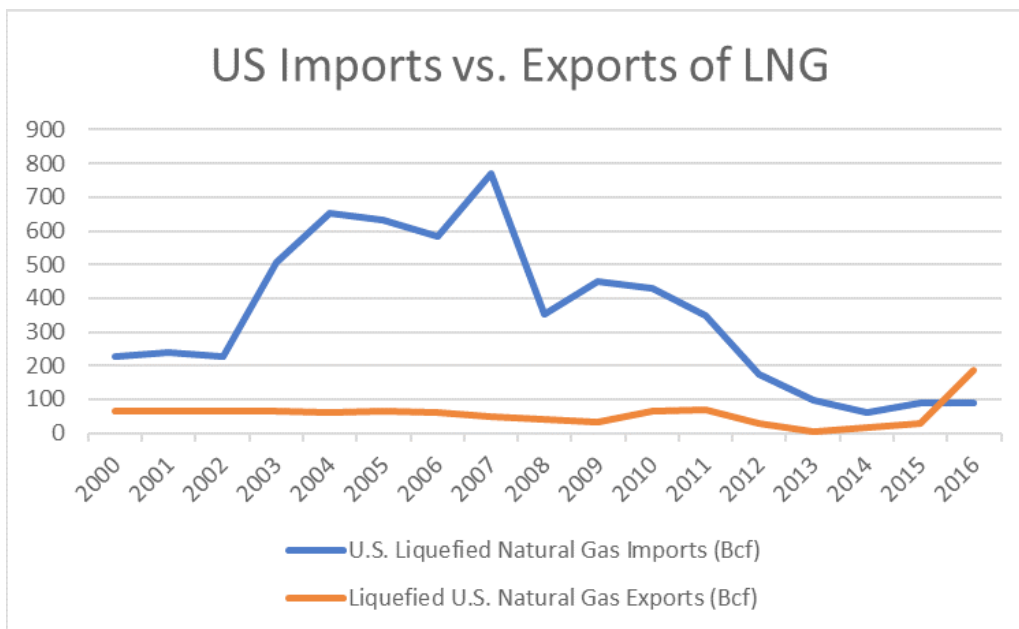
Most importantly, ‘energy security’ must not mean ‘energy independence’ in the sense that all the energy used in the United States comes from within its borders without international trade. In today’s globalized world, this is neither obtainable nor desirable: even domestically produced energy sources are subject to fluctuations in global commodity markets. Energy security in today’s world only comes when countries, businesses, and people share and compete in the global marketplace. Close trade relations build shared energy security. In today’s globalized world, if one country doesn’t have security, their neighbors and allies don’t have security either.

Finally, the United States must see energy security as a long-term process, not as a moment frozen in time. Some policies and actions could build security today, while harming our future security. Climate change is already affecting security both at home and around the world, so we must make sure that we take the greenhouse gas emissions from energy into account, lest we trade increased energy security today for a warmer, more unstable world in the future. Likewise, we should be very careful about selling the Strategic Petroleum Reserve – our national hedge against oil shortages – in exchange for a short-term way for Congress to get around budget caps. Thinking long-term in this way also means that we must invest now in scientific research and development into the next-generation of energy technology.

Factoring together each of these variables, the American Security Project determines that *the current “Status” of North American energy and resource security is good, but the “Outlook” is hazy*. There are few threats to America today that could stop our access to global energy markets, but we should be concerned that there are emerging threats that could undermine our future security, if not addressed soon. Moreover, we must guard against bad policy that could undermine our future security.

## Security Built by an Energy Revolution – And Good Policy

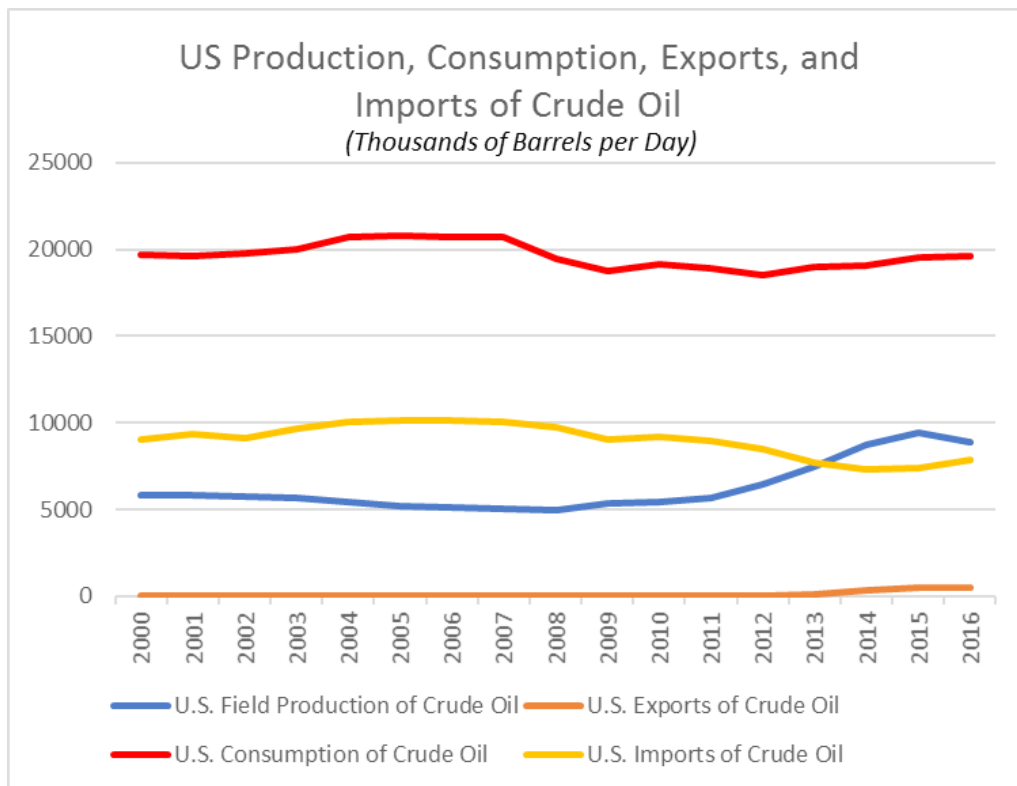
The shale revolution has increased American energy security. The events of the last decade in American energy production have been nothing short of revolutionary. The United States has gone from a major importer of natural gas, with plans for new Liquefied Natural Gas (LNG) import terminals along the East and West Coasts, to a point where the U.S. will be a net exporter of gas for the first time this year. For context, in April 2007, the United States imported 98,742 million cubic feet of LNG, a record. A decade later, in April 2017, by contrast, there was only 5,171 million cubic feet of LNG imported into the US, a 95% decline.<sup>2</sup> LNG exports went from zero as recently as 2013 to a pace of almost 600 billion cubic feet this year.<sup>3</sup>



Source: U.S. Energy Information Administration<sup>4</sup>



In oil, the difference is just as stark. After three decades of decline, oil production surged 88% in just six years, from 5 million barrels per day in 2008 to over 9 million per day by 2015.<sup>5</sup> To reflect the new abundance, Congress allowed crude oil exports in 2015. Just a year and half later, exports are now shooting up with over 900 thousand barrels per day in the first week of July.<sup>6</sup> However, policymakers should not become overconfident. The United States remains a net-importer of crude oil, and remains the world’s second largest oil importer, behind only China.



Source: U.S. Energy Information Administration<sup>7</sup>

However, we make a mistake if we think that security comes from domestic supply alone. Policies implemented in the 1970s, including the creation of the International Energy Agency (IEA), have built a coordinated, global, and shared energy security among developed-country members. International trading markets allow for a true global price of energy commodities – oil prices are seen on newscasts every night – allowing policymakers to see potential shortages and problems before they occur. The Strategic Petroleum Reserve – which holds oil stocks capable of replacing 90 days’ worth of imports – acts as a strategic buffer against threats and manipulation by energy-producing states.

Another key part of America’s energy security is our fleet of nuclear reactors. We are nuclear proponents. The 99 currently operating nuclear reactors provide about 20% of the electricity our country uses. They have a commendable service record as an always-on baseload supply of energy. They are the largest source of carbon-free energy in the country. Although there are political questions about how to store spent nuclear fuel, it would be good for our security to increase investment in nuclear power. Ironically, the energy revolution of the last decade was supposed to be paired with a “Nuclear Renaissance.” Unfortunately, lower cost natural gas, combined with regulatory uncertainty, appears to have limited the number of new nuclear plants. Developments in the next generation of nuclear power, like small modular reactors, will help us build a predictable energy supply. For those worried about safety, we should note that the Navy has operated varieties of “Small Modular Reactors” aboard ships and under the seas for 60 years with no adverse effects.

## Role of Efficiency, Renewables in Security

This massive change in fossil fuel energy production has been matched by dramatic – if less reported – increases in energy efficiency and renewable energy. Our cars and trucks now go farther on a tank of gas than ever before, as new vehicles are surpassing stringent federal fuel economy standards. The price of solar and wind have dropped dramatically. New technology means that even old-line hydropower can increase its utilization level. Emerging techniques for battery manufacturing will ensure that the electricity grids of the future bring more variable renewable power onto the grid than previously thought possible.

What does the boom in renewables mean for security? Any form of renewable power presents few concerns about energy security because they do not use a fuel that must be imported.

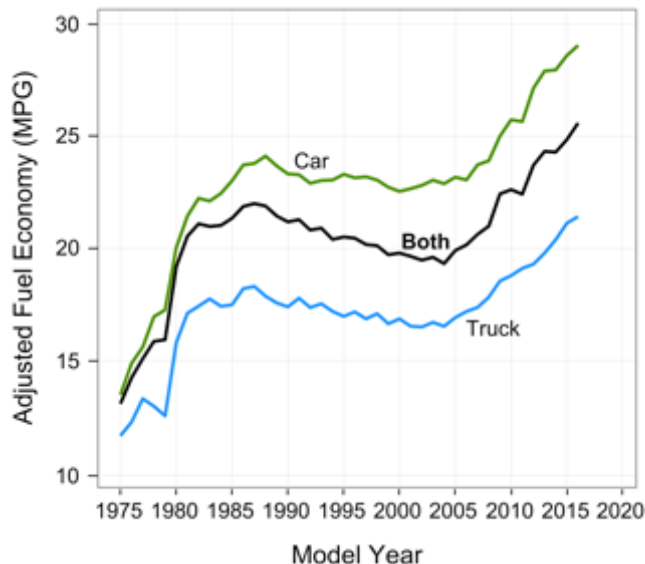
While some complain about dependence on imported solar panels or other energy-producing goods from China, this is not the same as energy security. Unlike dependence on a commodity like oil, importing solar panels – for example – constitutes a one-time-only fixed cost. Once the cost is borne, there is very little variable cost for generating renewable energy.

An economy that relies on renewable power for its energy needs would be fundamentally more secure. Centralized electrical grids are threatened by physical disruption from the weather or attacks, cyber disruption, electromagnetic pulse attacks and regulatory disruption. A renewable grid, on the contrary, is a fundamentally distributed grid.

A grid of distributed power sources would generate electricity from many smaller and more secure energy sources in contrast to large centralized power plants, with expansive and vulnerable infrastructure.

However, given the separation in fuels between electricity generation and transportation, policymakers should not be deluded into thinking that increasing renewable electricity generation automatically increases energy security. There also needs to be a coherent strategy to use more renewable power in transportation. Only by giving consumers a choice about how to fuel their cars will policymakers be able to break oil's grip on transportation.

In the United States, transportation is primarily by automobiles. Any proposal to use more renewable energy to increase energy security (particularly with respect to oil) must begin by either electrifying the auto fleet or significantly increasing use of ethanol and advanced biofuels.



*Source: U.S. Environmental Protection Agency<sup>8</sup>*

## Trade and Global Markets Build Security

Energy security is only possible in a “shared security” environment. No nation’s energy can really be secure if its neighbors or allies are insecure. The recent developments in energy markets that have boosted America’s energy security can boost the security of our allies and neighbors.

NAFTA has been critically important in integrating the North American energy market. To our north, the Canadian and American energy market has been thoroughly integrated for years, both in oil and the electric grid. Only recently, however, has that changed to our south. Mexico’s recent efforts to liberalize its energy investment laws will allow deeper cross-border integration between the U.S. and our southern neighbor. We must be careful in the proposed renegotiation of NAFTA that we do not allow the growing integration between Mexico and the United States to be harmed by unrelated tensions.

Often overlooked, our smaller neighbors to the South in the Caribbean and Central America are some of the most energy insecure places in the world. They do not have assured access to energy, and they often depend on the whims of one country (Venezuela) to supply their energy. The American Energy Revolution can supply investment in both renewable energy and the local grid, while also acting as a much-needed alternative source of fuel.

Perhaps the greatest opportunity in this region is Cuba. American businesses and investors could thrive in our nearest overseas neighbor if Congress would allow them. Instead, the Cubans rely on imports from our global adversaries like Russia and Venezuela. It does not have to be this way.

The new tool in America’s trade toolbox is LNG exports. They can help American allies in two key regions – Europe and Asia – by undercutting the political clout of dominant producer states and expanding the quantity of total energy supplied to energy-starved allies. LNG exports could improve the energy security of America’s closest allies. Exporting LNG can help America’s allies around the world bridge from dirtier sources of energy like coal and oil to cleaner, carbon-free sources of energy like solar and nuclear. U.S. LNG exports would create a more liquid market with deliveries based on supply and demand fundamentals. This would allow America’s allies to diversify their energy sources, reduce the burden on their economies, and free themselves from dependence on unfriendly countries.

## New Threats to Critical Infrastructure: Cyber Security

For decades, we have thought of energy security primarily as through the dependence on imported commodities. However, a new threat is emerging in the form of cyber-attacks. The FBI and the Department of Homeland Security alerted the energy sector that “advanced, persistent threat actors” were behind recent cyber-intrusions into the business systems of U.S. nuclear power and other energy companies.<sup>9</sup> The fear is that foreign agents could find weaknesses that allow a hostile actor to shut-down the American energy system from afar.

One doesn’t need to think too hard to imagine the potentially devastating effects this threat poses to U.S. energy security. The energy sector is the major source of essential services provided to billions of Americans daily. Without the water, transportation, and electricity that energy provides, the American economy would collapse. The country should not be threatened in such a way.



We need to develop a public-private partnership to implement improved cyberdefenses. Unlike the previous responses to cyber threats, we cannot afford to wait to implement counter measures until after an attack. The allowance of continued cyber security breaches by both nation states and individual hackers leaves the door open for increased threats to our nuclear infrastructure.

## Tomorrow's Security from Today's Investments: More R&D Needed

If events of the last decade have taught us anything, it should be about making predictions based on recent trends. We make a fundamental mistake if we assume that today's energy mixture is what the energy mix of 2030 or 2050 will look like. The fact is, the energy mix will change – because of concerns about climate change, accelerations in technology, and changes to global markets.

The downside risk on energy security comes from not investing in research and development. If other countries, particularly competitor countries like China, are successful in commercializing breakthrough energy technologies, they will sell the technology abroad at the expense of U.S. competitiveness. We should be particularly concerned that the U.S. is pulling back from technology R&D programs like the Advanced Research Projects Agency – Energy (ARPA-E) that provide smart federal investments in high risk, high reward technologies which boost our competitiveness by keeping America at the forefront of global energy technology research.

America needs more investment into game-changing energy technology including fusion energy. An American Security Project report lays out a roadmap for how an investment of \$30 billion over 10 years could lay the groundwork for a fusion-powered economy much faster than current predictions.<sup>10</sup>

The danger to our energy security comes from *not* investing for the future. Security now does not mean security later.

## We Should Take a Lesson from the Military

Over the last decade, the Marine Corps has worked to create an “Energy Ethos” – a shared vision that the efficient use of energy is a critical component of mission readiness.<sup>11</sup> Marines must be aware of and value limited energy and water resources. They don't do this because they've suddenly become tree huggers, they do this to enhance mission readiness and resiliency on installations and operational effectiveness in combat.

Similar programs in other services include the Army's “Net Zero” program for installations, the Air Force's “Energy Flight Plan,” and the Navy's “Great Green Fleet.”<sup>12, 13, 14</sup>



*US Marines deploying portable solar/battery units*

These programs have worked. According to the Department of Energy's Federal Energy Management Program (FEMP), energy used by the US Department of Defense in 2015 had fallen to its lowest recorded level since fiscal year 1975.<sup>15</sup> Reducing DoD dependence on petroleum and expanding alternative energy sources will not only promote efficiency, it will save lives – and there is no better barometer for success than that.

## **Conclusion: Energy and Resource Security Come from Variety and Variety Alone**

Over a century ago, after he ordered the Royal Navy changed from coal to oil, Winston Churchill said that “safety and certainty in oil lie in variety and variety alone.” That decision was a farsighted investment in the future that helped the United Kingdom beat Germany on the seas. Today, energy security depends on variety as well – variety in all sources of energy. Maintaining energy security for the future will rely on the same farsighted thinking that allows us to perceive looming threats and coming opportunities while maintaining our security today.

## **Policy Recommendations for Sustainable Long Term Energy Security**

America's amazing increase in oil and gas production has given the country breathing room; the United States now has more energy security than any time in the last fifty years. Policymakers should aim to ensure that security is sustainable by investing in the future. To increase energy security, the American Security Project recommends:

1. Continue government support for renewables like solar, wind, and biofuels
2. Work with neighbors and allies to build “shared security” in energy through trade
3. Invest in scientific R&D to ensure that American energy security is sustainable
4. Find ways to avoid closing valuable zero-carbon nuclear power plants
5. Beware of over-reliance on oil and gas revenue for economic growth
6. Manage security risk by diversifying fuel sources

The United States has a golden opportunity to capitalize on short term gains to build long term, sustainable energy security.

# Endnotes

1. See for example, the International Energy Agency defines energy security as “the uninterrupted availability of energy sources at an affordable price.” Available at: “What is energy security?” IEA, <http://www.iea.org/topics/energysecurity/subtopics/whatisenergysecurity/>. Accessed July 18, 2017.
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4. Ibid.
5. U.S. Energy Information Administration, “Weekly Imports & Exports” available at: [https://www.eia.gov/dnav/pet/pet\\_move\\_wkly\\_dc\\_NUS-Z00\\_mbbldp\\_w.htm](https://www.eia.gov/dnav/pet/pet_move_wkly_dc_NUS-Z00_mbbldp_w.htm). Accessed July 18, 2017.
6. Ibid.
7. Ibid.
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9. Nakashima, Ellen; *Washington Post*, “U.S. officials say Russian government hackers have penetrated energy and nuclear company business networks” July 8, 2017. Available at: [https://www.washingtonpost.com/world/national-security/us-officials-say-russian-government-hackers-have-penetrated-energy-and-nuclear-company-business-networks/2017/07/08/bbfd9a2-638b-11e7-8adc-fea80e32bf47\\_story.html?utm\\_term=.ed9061fd08a5/](https://www.washingtonpost.com/world/national-security/us-officials-say-russian-government-hackers-have-penetrated-energy-and-nuclear-company-business-networks/2017/07/08/bbfd9a2-638b-11e7-8adc-fea80e32bf47_story.html?utm_term=.ed9061fd08a5/). Accessed July 18, 2017
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11. Marine Corps Installations Command, ADC I&L Facilities Service Division, Available at: <http://www.mccom.marines.mil/Units/GF-Facilities/GF-1-Energy/Energy-Ethos/>. Accessed July 18, 2017.
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The American Security Project (ASP) is a nonpartisan organization created to educate the American public and the world about the changing nature of national security in the 21st Century.

Gone are the days when a nation's security could be measured by bombers and battleships. Security in this new era requires harnessing all of America's strengths: the force of our diplomacy; the might of our military; the vigor and competitiveness of our economy; and the power of our ideals.

We believe that America must lead in the pursuit of our common goals and shared security. We must confront international challenges with our partners and with all the tools at our disposal and address emerging problems before they become security crises. And to do this we must forge a bipartisan consensus here at home.

ASP brings together prominent American business leaders, former members of Congress, retired military flag officers, and prominent former government officials. ASP conducts research on a broad range of issues and engages and empowers the American public by taking its findings directly to them via events, traditional & new media, meetings, and publications.

We live in a time when the threats to our security are as complex and diverse as terrorism, nuclear proliferation, climate change, energy challenges, and our economic wellbeing. Partisan bickering and age old solutions simply won't solve our problems. America – and the world - needs an honest dialogue about security that is as robust as it is realistic.

ASP exists to promote that dialogue, to forge that consensus, and to spur constructive action so that America meets the challenges to its security while seizing the opportunities that abound.



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