

Five Choices on Energy that We Need to Make

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Introduction

How America uses and produces energy remains hotly debated in Washington and around the country. The debate about energy has become yet one more example of a culture war between opposing political factions.

The result is a stalemate that harms America's economic competitiveness, national security, and the environment.

An Energy Revolution with Roots in the 1970s

Regardless of the politics, we are in the midst of an energy revolution. This is the result of energy choices made decades ago by politicians, businesses, and consumers. Many of these choices go back to the 1970s, in response to the Mid-East oil embargo of 1973 and the Iranian Revolution of 1979. Republican and Democratic Administrations, accompanied by Congress, made a series of decisions about how to increase America's energy security and safeguard our economy.

By working with businesses, the American government diversified the world's sources of oil, created deep and liquid financial markets, and they opened the US Strategic Petroleum Reserve. By working with scientists, they invested into research into alternative energy sources like solar and wind, into unconventional fossil fuel through the technology of fracking, and into energy efficiency, dramatically increasing the fuel economy of automobiles.



New 21st Century Energy Challenges

Today our political rhetoric and vocabulary about energy has not changed since the 1970s.

Our energy debates are stuck in the shortages of the 1970s and the optimistic growth and low prices of 1980s. But – the problems of 2014 are not the problems that we faced 30 or 40 years ago.

Climate change is real and is harming America's national security today – in the 1970s that was far in the future. The decades since then have seen an enormous diffusion of economic and political power to countries like China, Brazil, India, and others.

Our government has become complacent about the problems of our energy future.

This means that we are still coasting on the choices made in response to the crises of the 1970s – we are not responding to the challenges of the 21st Century. We hear that we need an “all of the above” strategy for energy – but that is not a strategy, it is a poll-tested slogan. A real strategy involves making decisions in which some would win and some would lose.

Time for Choices

Repeatedly, Congress and successive administrations have affirmed that energy is too important to leave solely to markets: we see government's hand in every area of energy production and consumption. It is time to think strategically about what choices we need to make.

This brief provides a perspective on five major choices that the U.S. government is facing on energy.

These issues are not new, but the longer that the government differs a decision, the greater the consequences.

We can no longer pretend that just kicking the can down the road has no harmful effects.

1. Fossil Fuel Exports

2. Building New Energy Infrastructure

3. Ensuring Safe Storage of Nuclear Waste

4. The Future of Support for Renewable Energy

5. Scientific Research into Next Generation Energy

1. Fossil Fuel Exports

The production of oil and natural gas in the United States is booming because of the commercialization of hydraulic fracturing ('fracking') has revolutionized natural gas production in the U.S..

Today, one of the consequences of the boom in oil and gas production is that there is a growing surplus of oil, natural gas, and even coal (some of which has been displaced by natural gas as an electricity source) that producers want to export.

Over decades, Congress has put in place various government regulations to regulate or restrict the export of fossil fuels. They each reflect the time in which the legislation was passed – not the challenges of today. The result is a checkerboard of regulations, some of which lead to some strange outcomes.

For instance, under the 1975 Energy Policy and Conservation Act, the export of crude oil is illegal without a permit from the Department of Commerce, unless that crude was produced on Alaska's North Slope and travels through the Trans-Alaska Pipeline. On the other hand, the export of refined petroleum products (like diesel fuel, kerosene, or refined gasoline) is virtually unregulated. Regulations for natural gas are similarly convoluted.

Under the 1938 Natural Gas Act, the export or import of natural gas is illegal unless the Secretary of Energy finds that it is in "the public interest" – a finding that is guaranteed in statute if the gas is exported to a free-trade agreement partner. On the other hand, the exports of natural gas liquids (like propane, ethane, or others) are unregulated, even though they often come directly from the same wells as natural gas (methane).

Finally, the export of coal is unregulated, even though coal is generally the most polluting source of fossil fuels.

To further complicate the issue, the Jones Act of 1920 requires that all trade between U.S. ports be carried solely on American ships, crewed and owned by U.S. citizens. This means that, because the U.S. does not have oil tankers at modern scale, it is usually more cost effective for a company to export refined fuel from Gulf Coast ports abroad and import refined fuel from Europe to the East Coast than it is to simply ship fuel from the Gulf of Mexico to the East Coast.

This complexity is crying out for reform.

A coherent government policy for trade in fossil fuels exports would have a single government department determine which fossil fuels it was in the national interest to export – not different policies for some fuels and no policy for others.

Such a policy would take into account the harm that burning that fuel does to the atmosphere, noting that the location of greenhouse gas emissions does not matter – the U.S. is harmed equally whether the hydrocarbon is burned inside or outside our borders.

On natural gas, the consequences of inaction are most clear. Around the world, producers are racing to build

Liquefied Natural Gas (LNG) terminals.

The longer that American producers have to wait for permits, the greater the likelihood that they may lose out to foreign competitors. As of January, 2014, there are 25 export applications currently under DOE review.¹

The longer American businesses wait to begin exporting LNG, the more likely that foreign competitors in Russia, Australia, Norway, Qatar, Indonesia, or elsewhere will seize market access. This, in turn, would perpetuate a system in which state-owned natural gas producers are able to extract political concessions in return for monopoly rent.

A liberalization of natural gas exports from the United States is a new geopolitical tool for the U.S. Exports of coal have no similar benefits – and yet our current system gives a default preference to coal exports over natural gas exports.

The consequences of inaction on fossil fuel exports creates a bias towards the status-quo; an untenable position over the long term.

2. Building New Energy Infrastructure

The United States is facing a crisis in our energy infrastructure.

Of our electricity generating capacity, over 540 gigawatts, nearly 51%, is at least thirty years old.² The oldest capacity is mostly coal and nuclear power plants, many of which are reaching their anticipated lifetimes.

The rapid adoption of renewable power generation from solar and wind means that our energy distribution grid is unable to meet the demands placed upon it. The oil and natural gas boom from fracking has happened in areas like the Bakken Shale in North Dakota and the Marcellus Shale in Pennsylvania; unlike traditional energy production regions like Texas, these areas do not have the infrastructure to transport the gushers of oil and gas that is being produced.

Put together, the U.S. needs trillions of dollars in investment into building, maintaining, and replacing our aging energy infrastructure.

A maze of federal, state, and local environmental regulations and laws enable local individuals or motivated activist groups to block or slow the building of any new energy infrastructure – ranging from pipelines to transmission lines, coal power plants to wind turbines. To make it even more difficult, projects that cross state lines face overlapping regulations.

Each of these regulations provides an opportunity for litigation, which can drag the process out even

further. This bureaucratic overlap ensures that no one person or agency has central authority to approve or disapprove a given project. The predictable result is that decisions about what to build and when are delayed or go unmade.

The consequences of failing to make a decision can be worse than a “yes” or a “no” because industry cannot effectively reallocate resources when a decision is pending. The longer the delay draws out, the greater the consequences.

The Keystone XL Pipeline, perhaps the most visible project for which a decision has been delayed by regulation, is genuinely controversial. In a recent speech, the Canadian Foreign Minister said *“the time for a decision on Keystone is now, even if it’s not the right one. We can’t continue in this state of limbo,”* reflecting industry concerns about how long the process has taken. While the Keystone XL pipeline is an extreme and very visible example of delay, the challenges it has faced are not unique.

Delay and litigation over government permits have become a feature of almost all new energy installations, whether renewable, nuclear, or fossil fuels.

To be clear, it is important that the government undertakes environmental review of new energy facilities and infrastructure, taking into account public comments. On the other hand, this should not simply be a venue for opponents to delay.

The consequences are stark.

Across the globe, replacing energy infrastructure and expanding capacity to meet growing needs will result in cumulative investments of \$37 trillion by 2035.³ The share of that investment devoted to the United States is not a given.

If the United States is unable to meet the infrastructure needs of a modern economy because of permitting red-tape, those investments will be made outside our borders – reducing America’s ability to compete around the world.

The prize is leadership in building a new energy economy.

If American companies and American workers gain expertise in building the energy infrastructure needed for a 21st Century economy, then they can sell that expertise to the 95% of consumers who live outside the United States.

If our competitors are the only ones who are allowed to build modern power plants, smart grid infrastructure, and transit, then the United States will be forced to go to them when it is time to build our own.

The strategic consequences of a new dependence on foreign technology would harm America’s long term security.

3. Ensuring Safe Storage of Nuclear Waste

The government has a legal requirement to provide a permanent repository for spent nuclear waste. Under the 1982 Nuclear Waste Policy Act, the U.S. government was to create a permanent storage site for radioactive spent nuclear fuel by February 1998. Sixteen years later, the federal government is no closer to meeting this requirement; as a result, utilities have filed dozens of lawsuits for over \$6 billion in claims.

After spent nuclear fuel is removed from the reactor, it is placed in temporary water cooling pools within the reactor facility. This was not intended to be a permanent solution, but the government's failure to find a long-term strategy for storing spent nuclear fuel means that most of America's radioactive spent fuel – 63,000 tons of nuclear waste – is stored on-site.

The failure to make a decision on spent fuel means that even decommissioned nuclear reactors hold their radioactive waste on site.

Two years ago, the Blue Ribbon Commission on America's Nuclear Future released its final report on how to handle America's nuclear waste to the Secretary of Energy. The commission released a list of 8 specific recommendations, ranging from working more closely with communities hosting nuclear waste to promptly initiating efforts to plan, site, and build both a permanent geologic disposal facility and a temporary central storage facility.

It provided a balanced approach that deserved timely consideration from Congress. So far, it has gotten little more than political posturing.

Until the government's requirement to permanently store the waste is met, it is very difficult to foresee much further growth in nuclear power. Even though the actual risks posed by spent nuclear fuel are not insurmountable, the open-ended legal liability posed by storing waste in spent fuel ponds on a reactor site may be enough to dissuade financiers of new nuclear power plants from investing.

The immediate consequences of inaction on nuclear waste are clear: a long-term financial obligation from the U.S. government to nuclear power plant operators. Department of Energy statistics show that new lawsuits and other costs could eventually push the government's legal liability to over \$16 billion by 2020.⁴ The industry argues that damages are likely to be closer to \$50 billion.⁵

Beyond this clear outstanding, open-ended government obligation, it is difficult to foresee a sustained "Nuclear Renaissance" in the United States until a decision is made by the government on how to safely store nuclear waste.

Building a nuclear reactor is a large financial undertaking, and banks do not like an open-ended and uncertain obligation like nuclear waste to remain on the books.

4. The Future of Support for Renewable Energy

Renewable energy sources, particularly solar and wind power, are seeing the largest proportional gains of any energy source. Although this is partially a factor that they are growing from a small base, today the total volume of wind and solar is beginning to change the system.

Wind was the largest addition to electric capacity in 2012 and solar power – both large utility-scale installations and small systems on homes or businesses – has seen growth that is almost exponential. In some months of 2013, solar was the only electric capacity added to the national grid.⁶

For decades, the growth of renewable energy has been based upon government support, including direct government support (i.e. subsidies or tax breaks), indirect support (like reduced-rate loans), government mandates (renewable portfolio standards).

Increasingly, economic scale in manufacturing and business practices means that costs have come down to the point where they can compete with new energy sources from traditional fossil fuels. Consumer preferences, too, are driving a move to renewable technology.

The problem for industry is that government support for renewable energy has become a political pinball. The result is that, instead of business cycles affecting investment and employment in renewable energy, political cycles cause booms and busts.

Nowhere is this more evident than with the wind Production Tax Credit (PTC). In the two decades since the PTC was first implemented in the 1992 Energy Policy Act, the PTC has expired for extended periods of time four times. Sometimes it has been retroactively renewed, while other times Congress has renewed it without giving credit for past investments.

The consequences of pinball budgets and political uncertainty is business uncertainty. While a short term extension of a subsidy can drive installation of renewable energy, it is not likely to become the basis of a long-term industry.

Compared to countries like Germany or China, where governments have very clearly decided to promote renewable energy for the long term, fights over renewable energy support in the United States may not harm deployment of renewables, but they will ensure that companies think twice about investing for the long term here.

5. Scientific Research into Next Generation Energy

The way the world currently uses and produces energy is not sustainable, secure, or economically stable. Our dependence on fossil fuels saps resources from our economy, exacerbates climate change, and adds risk to global stability.

Current-generation renewable energy – solar, wind, hydro, and biomass – will continue to add capacity, but there are real logistical difficulties to scaling-up these technologies to meet a significant portion of base load energy demand.

Scientists are working today to develop new energy technologies that will power America's economy for the next generation – technologies that will provide clean, safe, secure and abundant power. There are many different pathways scientists are pursuing, like batteries, superconducting wires, advanced biofuels, and more. One technology that ASP has researched extensively because of its promise is fusion energy. Fusion, the process by which atoms are combined to form heavier elements, is the energy of the stars. When it is harnessed here on earth, it will be able to meet our needs.

Instead of providing a clear political direction that America will commercialize fusion energy and lead the world into the next generation, the Department of Energy and the Administration ignore it, while Congress is divided.

With new authorization from Congress and direction from the Administration, America's scientists could begin today to build the next generation of facilities to develop and prove the feasibility of fusion power.

Our scientists are ready today to begin constructing new fusion facilities that could lead the world and drive innovation. In short order, they could begin construction of new machines that would show how to build and operate a real power plant operated by fusion.

America's economic competitors in China and Russia have begun work on next-generation fusion facilities. If they take the lead in fusion development, they will be able to dictate the rules of the 21st Century economy. We can beat them, but only if we can get to the starting line.

What is at risk by not making a decision on fusion?

First, developing fusion energy will provide a clean source of power that can fully break America's dependence on fossil fuels. This will provide numerous security benefits.

Second, pioneering a new high-tech industry will bring vast new streams of revenue to America's leading industrial companies, creating thousands of new jobs and strengthening our overall economy.

Third, developing fusion energy will lead to countless spinoff innovations in robotics, supercomputing, and superconducting materials.

Fourth, pursuing fusion will be a clarion call to bright young American minds to enter the critical fields of science, technology, engineering and mathematics.

Finally, achieving practical fusion power will cement American leadership in solving some of the world's critical problems, and drive American competitiveness in the coming decades.

Other countries already have ambitious plans to develop fusion. The U.S. will be left behind if Congress and the president fail to make the smart investments we know are necessary. Given a limited budget and little political will, American fusion scientists are making great advances.

With an increase of in funding and enhanced leadership, the U.S. can once a gain spearhead a new industry.

Conclusion: The U.S. Needs Stable, Predictable Policy

The United States faces a series of urgent choices that will determine how its economy is powered to meet the needs of the 21st century.

How America chooses to replace and expand its energy supply will affect the health of the world's environment, America's national security, and the well-being of the U.S. economy. That process starts by identifying what values

Every energy choice involves tradeoffs. And, perhaps that is the reason that we have avoided making choices.

In a system where all decisions have become inherently political, a politician will try to avoid making a choice that will anger a constituency. That is how we end up with a bipartisan agreement that we need an "All of the above" energy policy, but no agreement on what that means.

The energy revolution of today, both in fossil fuel production and renewables, is a factor of decisions made decades ago – and those decisions were not always popular.

Making a decision on these five energy choices will not be popular – but they are necessary. The time has passed for bipartisan delay and obfuscation: it is time to get to work.

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Endnotes

- 1 Applications Received by DOE/FE to Export Domestically Produced LNG from the Lower-48 States (as of December 31, 2013) <http://energy.gov/sites/prod/files/2014/01/f6/Summary%20of%20LNG%20Export%20Applications.pdf>
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- 3 International Energy Agency. (2012). WORLD ENERGY OUTLOOK 2012 FACTSHEET. Paris: IEA
- 4 Report of the ENERGY AND WATER DEVELOPMENT APPROPRIATIONS BILL, 2012 112th Congress, 1st Session, Report 112-118, p. 76 <http://www.gpo.gov/fdsys/pkg/CRPT-112hrpt118/pdf/CRPT-112hrpt118.pdf>
- 5 Darius Dixon “The \$38 billion nuclear waste fiasco” Politico, November 30, 2013. <http://www.politico.com/story/2013/11/nuclear-waste-fiasco-100450.html>
- 6 SNL Energy “Solar the sole capacity completed in October, at 530 MW” November 25, 2013. <http://www.snl.com/InteractiveX/Article.aspx?cdid=A-25991323-12588>

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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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