



# MANHATTAN INSTITUTE'S **POWER & GROWTH** INITIATIVE



## LIBERATING THE ENERGY ECONOMY: What Washington Must Do

Mark P. Mills  
*Senior Fellow, Manhattan Institute*



## EXECUTIVE SUMMARY

The United States is the largest single supplier of grains, accounting for about 40 percent of global exports. We enjoy the associated trade, jobs, and revenue benefits that come from being the world's breadbasket.

Technology is now doing for the American energy and fuel sectors what it previously did for the agricultural sector. In a complete reversal of the widely accepted energy paradigms of declining domestic hydrocarbon production, dependence, and shortage, it is now realistic for America not just to feed the world but to fuel it as well.

Last year, the United States exported almost \$140 billion in agricultural goods and about \$120 billion in hydrocarbons. Within a year or so, we will likely export more fuel and petroleum products than food. Shortly after that, hydrocarbon exports will exceed those from information technology equipment, then quickly exceed automotive-sector exports. And this is only the beginning of what is possible.

Policies that accelerate hydrocarbon production could create at least 3 million jobs and \$3–\$7 trillion worth of economic benefits, radically resetting energy geopolitics.

The United States can quite literally drill, dig, build, and ship its way out of the current economic and jobs malaise. But we can do so only if the nation adopts new energy policies that reflect the technological, economic, and demographic realities of 2012.

Surprising all the experts, the United States has reversed a 40-year decline in oil output and has become the world's fastest-growing hydrocarbon region. Recently, the U.S. became a net exporter of petroleum products for the first time since 1949. The same technology revolution has generated a flood of natural gas and a rush of applications to export it. Technology has helped drive coal exports to record levels as well.

In August 2012, the U.S. Energy Information Administration (EIA) released a summary of the nation's "proven reserves" of oil and natural gas, recording the highest increase in the 35 years since the EIA began publishing estimates.

For all this, thank technologists and engineers, along with thousands of small, independent producers. This growth in energy abundance occurred without policies intended to encourage it, and it has happened almost entirely on private and state—not federal—lands.

The new reality of hydrocarbon abundance makes possible not only energy independence but also a credible scenario in which the Middle East is displaced as the world's primary energy exporter. Hydrocarbons currently supply 85 percent of the world's energy, and every forecast sees them as central for the foreseeable future. Essentially all growth in global energy demand is now outside the U.S.

Yet our energy policy has evolved unintentionally to become complex, overreaching, and often capricious. Regulations are suppressing American energy productivity. We can bring to bear the power of technology to enhance the efficiency and transparency of the regulatory infrastructure itself, while preserving the intent and purpose of legislation. We should do this without overburdening the regulated and the regulators.

In order to liberate the new energy economy, policymakers should:

- Hold the Bureau of Land Management (BLM) accountable for the timely processing of applications;
- Require the Department of the Interior to adhere to the statutory provision in the Federal Land Policy and Management Act;
- Stop the BLM from arbitrarily designating huge new swaths of land as “Wild Lands,” thereby preventing access for resource assessment and for development;
- Suspend BLM plans to add additional regulations to the process known as “fracking,” especially those redundant with existing state regulations;
- Require that legal challenges to development be limited to those whose legal rights will be directly and adversely affected;
- Require plaintiffs to pay for legal action dismissed on frivolous grounds;
- Require science-based rule-making across the board;
- Require cost-benefit analysis on the basis of established economic principles;
- Open up current “off-limit” federal lands to exploration;
- Provide or facilitate the ability for agencies to share staff resources with those that are understaffed;
- Make the R&D tax credit permanent to encourage innovation;
- Explore non-federally funded mechanisms for financing energy technology demonstration projects (e.g., Clean Energy Bank concept).

Beyond specifics such as the aforementioned, there is a need to fundamentally reset the energy policy framework to fully unleash the enormous benefits from expanding hydrocarbon production and exports. The next president and Congress need to:

1. Pass omnibus energy legislation that is both pro-development and pro-export and that emulates the philosophy underpinning the North American Free Trade Agreement (NAFTA);
2. Establish a single federal portal for approval of all major energy projects, rather than subject applicants to multiple and sometimes conflicting or duplicative and time-consuming processes across myriad agencies; and
3. Declare a time-out on all new federal regulations. Given the crushing burden of 40 years of regulatory expansion, there should be an across-the-board suspension of implementation of all new rules, with the exception of those with near-term safety relevance. An interagency task force should explore how to use twenty-first-century information techniques to make sense out of the regulatory morass, enable sensible cost-benefit analyses, and provide transparency and efficiency for citizens and businesses.

America is in the middle of an appalling jobs crisis. Dramatically increasing the production of domestic hydrocarbons—oil, natural gas, and coal—offers the single biggest opportunity to generate jobs, especially those in the hard-hit middle class, and to create collateral financial benefits to state and federal treasuries.

Not in nearly 50 years has the energy “ground game” changed so radically. But capturing these opportunities requires bold policies. This positive energy future isn’t inevitable. The United States could by default walk away from all these jobs and revenues, passing up the chance to become the major player in world energy markets. Should this happen, other nations will step in to fill the void.

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## ABOUT THE AUTHOR

**MARK P. MILLS** is a senior fellow of the Manhattan Institute and founder and CEO of the Digital Power Group, a tech-centric capital advisory group. He was the cofounder and former chief tech strategist for Digital Power Capital, a boutique venture fund. Mills cofounded and served as chairman and CTO of ICx Technologies, helping take it public in a 2007 IPO. He is a member of the advisory council of the McCormick School of Engineering and Applied Science at Northwestern University and serves on the board of directors of the Marshall Institute.

Mills writes the “Energy Intelligence” column for *Forbes* and is coauthor of the book *The Bottomless Well: The Twilight of Fuel, the Virtue of Waste, and Why We Will Never Run Out of Energy* (Basic Books, 2005) which rose to #1 in Amazon.com’s science and math rankings. He has been published in various popular publications, including *The Wall Street Journal* and *The New York Times Magazine*. Mills has appeared on many news and talk shows including those on CNN, FOX News, CNBC, PBS, NBC, and ABC, and on *The Daily Show with Jon Stewart*.

Mills was earlier a technology adviser for Banc of America Securities, and a coauthor of a successful energy-tech investment newsletter, the *Huber-Mills Digital Power Report*, published by Forbes and the Gilder Group. He has testified before the U.S. Congress and briefed many state public service commissions and state legislators. Mills served in the White House Science Office under President Ronald Reagan. Early in his career, he was an experimental physicist and development engineer for RCA in the fields of integrated circuits and microprocessors, and worked at Bell Northern Research (NORTEL) in fiber optics, defense, and solid-state devices, fields in which he holds several patents. Mills holds a degree in physics from Queen’s University, Canada.





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## LIBERATING THE ENERGY ECONOMY: What Washington Must Do

### INTRODUCTION

The United States has long been the world's breadbasket, the largest single supplier of grains, accounting for about 40 percent of global exports.<sup>1</sup> In addition to the social, humanitarian, and geopolitical benefits of such a position, America has enjoyed the associated trade, jobs, and revenue benefits. Last year, America exported close to \$140 billion in agricultural goods.

And last year, the United States exported over \$120 billion in hydrocarbons.<sup>2</sup> Within a year or so, the United States will almost certainly export more fuel and petroleum products than it does food. Shortly after that, America's hydrocarbon exports will likely exceed its exports associated with information technology equipment, and following that, exceed exports associated with automobiles.<sup>3</sup> And this is only the beginning of what is possible.

Technology is now doing for the American energy and fuel sectors what it previously did for the agricultural sector. Quietly, largely without federal support, emerging from the inexorable progress of technology—and, in significant measure, arising from the efforts of thousands of small businesses—America has become the fastest-growing source of hydrocarbons in the world.

It is now realistic to think in terms of the United States becoming, in collaboration with Canada and Mexico, not just self-sufficient—“energy independent”—but the world’s primary supplier of fuel. The new energy reality is reversing our decades-old condition of dependence and creating the potential to unleash the single largest source of new exports, tax revenues, and high-paying jobs.

The net domestic outcome of policies that would encourage and accelerate investment across the nation and for all fuels would be the creation of at least 3 million high-paying jobs, and \$3–\$7 trillion of economic benefits to our economy.<sup>4</sup> These benefits would relieve strained state and federal budgets and provide funding for everything from the arts to public education and social programs.

The United States can quite literally drill, dig, build, and ship its way out of the current economic and jobs malaise. We can do so, however, only if Congress and the administration adopt energy policies that reflect current realities.

Energy policies directed not at replacing or preserving hydrocarbons, but instead at making the United States a net energy exporter will be the most effective way to achieve political and economic independence. Producing more than we need domestically will provide proportionally greater financial and jobs benefits than could any policy designed to minimize the use of hydrocarbons.

But the energy policies in place today were forged in the 1970s. Although they reflect the presumptions and preferences of that earlier era, they have been carried through for decades. Continuing to promulgate and keep on the books technology-driven policies anchored in the 1970s and 1980s makes as much sense as formulating agricultural policies in the 1970s on the basis of the technological realities and state of the world in the 1930s. In today’s world, it makes no sense for:

- A 1975 law to prohibit the export of raw crude oil without presidential approval;<sup>5</sup>
- A 1938 and 1975 law to restrict the export of natural gas and for the Department of Energy to

determine if exporting an abundant nonmilitary product such as natural gas is in the “national interest”;

- The State Department to weigh in on a proposed oil pipeline of enormous mutual benefit to both the United States and Canada;
- The Bureau Land Management (BLM) to open up millions of acres for industrial-scale solar arrays but block minuscule land use for oil or gas extraction;
- The Environmental Protection Agency (EPA) to weigh in on whether coal *exports* might require more extensive review;<sup>6</sup>
- Some 87 percent of offshore and 60 percent of federal lands to be entirely off-limits to energy exploration and development;<sup>7</sup> or for
- The federal government to take hundreds of days to approve drilling permits that are nearly identical to those that it takes states just over a month to approve.

It’s time for a major energy policy reset, one that takes into account the sweeping technological, economic, and demographic changes that have occurred over the past several decades. To unleash the flood of benefits from expanding hydrocarbon production and exports, the president and Congress need to:

**1. Establish a clear, pro-development, pro-export hydrocarbon policy emulating the philosophy underpinning the North American Free Trade Agreement (NAFTA).**

Congress should repeal the 1975 Energy Policy and Conservation Act, which is anchored in an old and invalid paradigm, and replace it with an Energy Production and Export Act. The new omnibus legislation should encourage and facilitate production and export of hydrocarbons; take advantage of the mutual structural, economic, and social benefits of full policy integration with Canada and Mexico; and eliminate the requirement that the president and the agencies approve any energy exports.

Such a sweeping change would continue to embrace a role for non-hydrocarbon energy but would

do so in recognition of hydrocarbon's central role in supplying the vast majority of the world's energy now and for the foreseeable future.

## **2. Establish a single federal portal for approval of all major energy projects.**

The United States should emulate Canada's philosophy of encouraging and facilitating energy projects and exports by establishing a single portal for approval of major energy projects, rather than subjecting applicants to multiple and sometimes conflicting or duplicative processes across numerous agencies. The president should, by executive order, call for the immediate development of a framework to implement such a portal.

A single portal, if properly implemented, would maintain the intent of legislation to protect the environment and ensure safety, while harmonizing inadvertent conflicts and complexity and adding consistency and predictability to approval timelines.

## **3. Declare a time-out on all new federal regulations.**

Given the crushing burden from 40 years of regulatory expansion, there should be an across-the-board suspension of implementation of all new rules, with the exception of those with near-term safety relevance. An interagency task force should be appointed to explore how to use twenty-first-century information techniques and algorithms to identify unintended conflicts, remove inadvertent restrictions, reconcile parallel objectives, provide transparency and efficiency for citizens and businesses, and revise legislation so as to subject new as well as existing regulations to a sensible cost-benefit analysis.

## **NEW ENERGY REALITIES**

Circumstances today are radically different from those in the decades when the broad pastiche of American energy policies was assembled.<sup>8</sup> The old realities of the 1970s framed the policies of Congress and successive administrations. The new realities call for a reframing.

## **New Resource Reality**

In August 2012, the U.S. Energy Information Administration (EIA) released a largely unheralded summary of the nation's "proved reserves" of oil and natural gas.<sup>9</sup> Proved reserves rose by the highest amounts ever recorded in the 35 years that EIA has been publishing estimates.

We have long known that America holds Middle East-scale coal reserves, countable in hundreds of billions of barrels in oil-equivalent terms. But the belief that liquid and gaseous hydrocarbons are scarce and characterized by shortages has become so ingrained that our national energy debate doesn't acknowledge the new abundance. Some of the confusion arises over a misunderstanding of the concept of "reserves."

The distinction between proved reserves and physical resources is almost entirely a function of technology. The U.S. oil reserve figure was about 30 billion barrels in 1980.<sup>10</sup> Since then, about 80 billion barrels have been pumped from America's oil fields, and the reserve figure today stands at just over 20 billion barrels.<sup>11</sup> The resource was obviously larger than the narrowly defined reserve number. In fact, total hydrocarbon resources in North America exceed 10,000 billion barrels (in oil-equivalent terms, counting all three hydrocarbons)—an amount three to five times greater than total Middle East resources.<sup>12</sup>

Over the past few years, the United States has become a net exporter of petroleum products for the first time since 1949.<sup>13</sup> This happened without policies intended to encourage it, reversing a 40-year decline in crude production and doubling our exports of petroleum products. The same technological and structural shift has generated a tidal wave of natural gas output and enhanced mine productivity so much that we have more coal than we know what to do with, except to export more to a hungry world.

But it is oil that has been the benchmark primary fuel ever since the 1973 and 1979 oil crises. No one believed that the decline in production that began in 1969 would ever reverse.

## New Technology Reality

The technologies that have unlocked this abundance are familiar: better materials engineering, sensors, controls, and information-related systems. Precision steerable horizontal drilling using real-time micro-seismic imaging and continuous data acquisition enables companies to weave through meandering hydrocarbon-rich seams. When this new technology is combined with the older technique of hydraulically pressurizing the now-horizontal wells, revolutionary amounts of oil and gas are accessible in a process popularly known as “fracking.”

Many analysts and pundits behave as if the hydrocarbon industries operate in a parallel universe where technology is static. As one indicator of the technology reality, consider patents: over the past five years, more than 150,000 hydrocarbon-related patents have been granted, compared with 60,000 associated with all alternative energy technologies.<sup>14</sup>

All this technology has yielded stunning productivity gains in oil and gas drilling. The energy productivity of oil and gas wells has improved more in the past four years than the energy productivity of solar cells has in the past 40 years.<sup>15</sup> And much more productivity-enhancing hydrocarbon technology progress is on the horizon.<sup>16</sup>

The productivity gains in hydrocarbons—oil, coal, and natural gas—are particularly important because hydrocarbons supply over 85 percent of the world’s energy today. And in every credible forecast, hydrocarbons will provide the vast majority of the world’s energy two decades from now.

## New Demographic Reality

When the world was upended by the 1973 and 1979 oil crises, the United States was the largest consumer and fastest-growing user of energy. Today, China has surpassed the United States as the number-one consumer, and nearly all growth in energy demand now occurs outside North America.

By 2035, global energy use in the rest of the world will increase by an amount equal to adding two United

States’ worth of demand. Even if efficiency and conservation measures were erased or domestic energy use to remain static, growth in global demand for fuels would continue to soar. The United States is no longer the world’s swing consumer.

## New Economic Reality

The technology innovations that have now enabled access to the vast quantities of North America’s resources could not have come at a better time. The world is hungry for fuel, and Americans are eager for jobs and revenues.

The stubbornly high U.S. unemployment rate has remained at levels not experienced since the Great Depression. The hydrocarbon industry tends to create skilled employment for a segment of the American populace desperately in need of it. Creating jobs and generating both royalties and tax receipts for local, state, and federal treasuries is critical in today’s environment.

## New Realities Create a New Impetus

The dynamic that these new realities create can be summarized briefly: we have the resources that the world wants to buy, the technology to unlock these resources, the skilled workforce needed to develop them, and the infrastructure to move that energy to the market.

The question on the table: Do we have the political will to restructure policies to capture and accelerate the benefits arising from the unexpected and permanent shift in the structure of global energy markets?

## THE BENEFITS OF INCREASED ENERGY PRODUCTION AND EXPORTS

The objective of assuring sufficient production to meet domestic demand was long ago met and surpassed in the agriculture sector. The United States is “food independent” precisely because we are a net exporter, not internally self-sufficient in isolationist terms.

It is now credible to think in terms of displacing the Middle East as the primary supplier of energy

to world markets.<sup>17</sup> The dramatic increases in domestic energy production that are now clearly feasible—and, in some measure, already started—can bring collaterally dramatic gains in royalties and tax receipts for local, state, and federal treasuries, along with truly surprising increases in employment. And they would reset energy geopolitics for the first time since the 1970s.

John Deutch, MIT professor and former undersecretary of energy, deputy secretary of defense, and director of the CIA recently observed:

*A United States hopelessly dependent on imported oil and natural gas is a thing of the past.... North America's massive resources are going to shift market power away from OPEC and Russia and to consuming nations.*<sup>18</sup>

Similarly, Philip Verleger, former director of the office of energy policy at the U.S. Treasury Department summarized the new reality:

*In a little more than a decade, the United States will find itself as an energy exporter and this amazing outcome will have happened by accident. The United States will then have low-cost energy supplies for decades. If oil prices remain high, America will benefit from the difference.... I have been studying energy issues for forty years and the data are difficult to believe. But facts are facts. U.S. energy independence, as controversial as it sounds, will lay the groundwork for the New American Century.*<sup>19</sup>

And Lucian Pugliaresi, president of the Energy Policy Research Foundation, and long-time global energy expert concludes:

*North America is at the early stages of a "game changing" surge in liquids output which will radically alter product trade in the Atlantic Basin (& beyond).*<sup>20</sup>

In a just-released bottom-up analysis of the state of the U.S. oil business, industry experts now forecast that the oil sector will follow the same shale revolution that has transformed the natural gas sector. This is a dramatic

revision of forecasts from just one year ago. The United States is on track to exceed Saudi Arabian oil production by 2022. It is notable that Bentek's new forecast is based on today's oil-rig count and not an accelerated scenario that sensible policies could make happen:

*Waterborne crude oil imports to the U.S. will plummet 87% ... over the next 10 years. Growth in Canadian crude oil imports to the U.S. will be a key driver in allowing the U.S. to wean itself almost entirely off waterborne sources of crude.... [O]nly 5% of total U.S. crude oil supply will be sourced from overseas by 2022.*<sup>21</sup>

This shift has been the subject of numerous recent analyses not just from hydrocarbon industry analysts but also from independent experts, Wall Street, and the Department of Energy. All have found dramatic potential for new hydrocarbon production and new revenues, royalties, and tax receipts for local economies, states, and the federal treasury.

## But It's Mostly About the Jobs

The potential for job creation is the most important reason to accelerate production of domestic hydrocarbons. The types of jobs directly and indirectly created by the hydrocarbon industry are not just high-paying; they are located predominantly in middle-class markets that have been hit hardest by the Great Recession.

In undertaking detailed analyses of recent trends:

- Citi estimates that the oil and gas extraction sector could add as many as 3.6 million net new jobs by 2020.<sup>22</sup>
- Wood Mackenzie estimates that there will be at least 1.5 million U.S. jobs, direct and indirect, over the coming two decades.<sup>23</sup>
- IHS Global Insight estimates that the gas industry alone will add more than a million jobs over the coming two decades.<sup>24</sup>

None of these estimates incorporates contributions from the coal industry, where America holds one-fourth of world reserves. Some 600,000 jobs are

currently associated with the U.S. coal industry.<sup>25</sup> Expanding coal exports by an amount comparable to the potential increase in the oil and gas sectors would create hundreds of thousands of additional jobs.<sup>26</sup>

And none of the above estimates contemplates a major shift in federal policy to accelerate and incentivize further hydrocarbon production.

In a recent interview, Jim Tisch, CEO of Loews (a conglomerate with major investments in offshore drilling, natural gas pipelines, exploration, and production) observed:

*For every additional billion cubic feet of natural gas we produce a day, we have to add an additional 10,000 permanent jobs. If we allow export of natural gas, it does enormous things for our economy.... All we need is for the politicians to have responsible regulations and not try and micromanage the business.<sup>27</sup>*

Despite popular misperceptions about the nature of hydrocarbon businesses, a policy anchored in driving America to become an energy exporter would preferentially help small businesses. Small companies, operating almost entirely on private and state lands, are responsible for the recent growth in U.S. oil and natural gas production. U.S. oil and natural gas production has declined on federal lands and increased on nonfederal lands over the past decade.<sup>28</sup>

This new small-business reality was articulated by one such company in congressional testimony in July 2012. Mike McDonald, president and co-owner of Triad Energy, stated:

*There are roughly 18,000 independent producers like me operating in 32 states. Although some are larger and well known, the average independent producer employs 11 full-time and three part-time employees. He or she has been in business for 26 years on average. Together, we drill 95 percent of all U.S. wells and account for 68 percent of total U.S. production—roughly 82 percent of U.S. natural gas production and more than 54 percent of domestic oil production.*

*Onshore here in America, independents are responsible for:*

- *over 3 percent of the total U.S. workforce;*
- ***more than 4 million American jobs;***
- *more than \$579 billion in total economic activity;*
- *4 percent of U.S. GDP;*

*In 2010, independent producers' employees paid \$30.7 billion in income, sales, and excise taxes. Our combined total federal, state, and local taxes, royalties and rents were \$69.1 billion. Our ecosystem of direct, indirect and induced jobs generated \$131 billion for federal and state coffers. **Every \$1 million of upstream capital expenditure by independent producers** results in \$1.1 million in total taxes, \$5.1 million in overall contribution to U.S. GDP, **six direct jobs, and 33 total upstream jobs.**<sup>29</sup> [emphasis added]*

American Enterprise Institute scholar and political analyst Michael Barone has written about the contrasts between communities that allow businessmen such as Mike McDonald to operate, such as those in North Dakota, and communities that don't, such as those in California.

*So Fremont [California] is the site of the gleaming headquarters of Solyndra, the solar-panel firm promoted by an Obama megacontributor, which got a \$535 million loan guarantee from Obama's stimulus package. But the wave of the future turned out to be a stagnant puddle. Solyndra went bankrupt. Meanwhile, Fremont, like most of coastal California, has had continual outmigration to other states and has grown only due to immigrants. It grew only 6 percent between 2000 and 2011....*

*Williston [in North Dakota's oil-rich Bakken field] is the nation's fastest-growing small city—so fast that it doesn't have enough housing for the workers pouring in. [The surrounding] Williams County grew 23 percent between 2000 and 2011.... But*

*Fremont and Williston are more evidence, if any is needed, that the collective decisions of participants in economic markets do a better job of allocating resources than do the often contributor-driven decisions of a few politicians.<sup>30</sup>*

But none of the upside is foreordained, nor is it even realistic to forecast that it will materialize. In addition to new physical infrastructure, the nation needs a new regulatory and policy infrastructure revamped to reflect twenty-first-century realities: to facilitate, not inhibit, production and export; and to unleash the pent-up capital ready to spend, build, and hire.

## THE IMPEDIMENTS TO ACCELERATING PRODUCTION AND EXPORTS

The impediments are no longer technology, or resource-based, but virtually all political. That regulations and antiquated policies impede and even halt productive hydrocarbon development has been extensively documented. Examples of the multitude of regulatory impediments come from congressional investigations,<sup>31</sup> Wall Street,<sup>32</sup> trade groups,<sup>33</sup> policy organizations,<sup>34</sup> think tanks, and state agencies.<sup>35</sup>

For example, companies attempting to put billions of private capital to work building a liquefied natural gas (LNG) export terminal and the related infrastructure that will generate billions of dollars in value, taxes, royalties, and jobs, must deal with a labyrinthine mix of permits from an array of federal agencies, including: the Departments of Energy, the Interior, and Transportation; the Federal Energy Regulatory Commission (FERC); Environmental Protection Agency; Department of Homeland Security (U.S. Coast Guard); U.S. Army Corps of Engineers; U.S. Fish and Wildlife; National Oceanic and Atmospheric Administration (NOAA), the Pipeline and Hazardous Materials Safety Administration; and the Federal Aviation Administration. Even if successful in running the regulatory gauntlet, it can be years before a company acquires all the necessary permits.<sup>36</sup>

Read the reports and analyses. Talk to practitioners, engineers, and executives in the hydrocarbon indus-

tries. The problems and complaints relate to three overarching and endemic features of today's regulatory system: complexity, creep, and capriciousness.

### 1. Complexity

The continual expansion and imposition of new rules within all federal agencies has added layer upon layer of requirements, creating—typically, without intent—ever-greater complexity. This, in turn, creates confusion and conflict between current and past rules, not just between government and industry but also within and among agencies. Different federal agencies frequently have different objectives, interpretations, cultures, and even directives.

And there is the perennial problem of conflict across the same scope of issues between federal and state authorities. In many cases, the inherent complexity of the underlying science is either ignored or manipulated.<sup>37</sup>

### 2. Creep

Rules and regulations invariably exhibit creep, moving away from original intent (at times, appropriately) because of the march of time and changes in underlying circumstances, technologies, markets, and laws. How rules are interpreted also creeps away from original intent, as new interpretations arise within an agency (both with and without explicit directives), from lax congressional oversight, and from vague or sloppy definitions in original enacting legislation.<sup>38</sup>

Creep can occur without consideration of costs and benefits and without accountability. One of the most challenging issues is creeping timelines, where agencies can lengthen review and processes whether by intent or default (lack of budget, staff, etc.), all without accountability. This has already happened with the Federal Energy Regulatory Commission's recent addition of an additional six-month pre-approval feature for LNG export applicants. The average approval time for Gulf of Mexico offshore permits has roughly doubled in the past several years.<sup>39</sup>

### 3. Capriciousness

Rules and regulations are frequently applied differently at different times, or in different places, or when directed at different companies. Capriciousness may be unintentional, arising sometimes from complexity; or it can be deliberate, emanating from policy directives. The BLM recently announced a program to open access to federal land for large-scale solar development, but it continues to exclude or impede hydrocarbon development.<sup>40</sup>

Another example: LNG from Alaska can be sold to China but not to Hawaii.<sup>41</sup> And, at a fundamental social and economic level, the implementation of rules and regulations (particularly as they relate to the original intent of the Clean Air Act) does not incorporate cost-benefit analysis or has flawed standards for considering it. For society at large, imposition of costly new rules without a balanced economic calculus is inherently capricious.

The reality of dealing with regulations is best articulated by those on the front lines of production. In industry testimony at the earlier referenced July 2012 congressional hearings, Jack Ekstrom, vice president of corporate and government relations for Denver's Whiting Petroleum, noted that it takes that company about 40 days to obtain North Dakota drilling permits and an average of nearly 300 days to get federal drilling permits.<sup>42</sup> This difference alone explains why nearly all the increased oil and gas production over the past four years has been on private and state, not federal, lands. Ekstrom pointed out that "a federal drilling permit is required even when the federal government owns none of the surface and a minute fractional interest in the subsurface minerals."

It is notable that Whiting Petroleum went public in 2003 with 110 employees, rising to 700 today, with 200 open positions. The nation would surely profit from many more companies like this.

At the same July 2012 congressional hearing, yet more insight on regulatory burdens came from the earlier cited testimony of Mike McDonald, president of Triad Energy:

*[E]ach phase of the well drilling and completion process already is federally regulated by the Clean Water Act; the Comprehensive Environmental Response, Compensation and Liability Act; the Emergency Planning and Community Right-to-Know Act; and by the Occupational Safety and Health Administration.*

*Despite these facts the Bureau of Land Management has proposed a new layer of costly, time-consuming, and duplicative regulations for hydraulic fracturing on federal and tribal lands while simultaneously admitting that hydraulic fracturing is not a problem.*

*One of the costliest regulations facing independent producers today is the EPA's new greenhouse gas reporting regimen.<sup>43</sup>*

On the last point, McDonald is referring to the EPA's desire to track fugitive methane (natural gas is methane) leaks because of methane's potential contribution to global warming. The impact of this single new feature of an EPA rule was outlined by Brian Woodard, vice president of regulatory affairs at the Oklahoma Independent Petroleum Association, also at the July 2012 congressional hearings:

*As part of the 2008 Consolidated Appropriations Act, Congress directed EPA to conduct an inventory of greenhouse gas (GHG) emissions above "appropriate thresholds" in all sectors of the economy.... Although Congress directed EPA to conduct "an inventory," EPA's rule requires annual reporting on behalf of operators.*

*To place this level of methane emissions into context, EPA's own inventories note that enteric fermentation, or cattle flatulence, contributes substantially higher quantities of methane emissions than does our industry. However, rather than using simple estimation techniques, EPA created an extremely complex and burdensome regulation that consumed 44 pages in the Federal Register.... The rule is so complex that companies must integrate production software and new monitoring equipment into their daily operating systems.<sup>44</sup>*



The role, structure, and nature of EPA regulations and their enforcement are a consistent theme in every analysis of the challenges for the hydrocarbon industry and all its associated (and, indeed, most other) industries. The EPA has issued more than 6,000 additional new rules in the past 15 years.<sup>45</sup>

EPA rules are far from the sole challenge. Rules and approvals for various aspects of energy development reside in numerous agencies, including the Interior, State, Commerce, and Energy Departments. But the growth in regulations at the EPA alone creates not only the potential for confusion and unintended conflicts in purpose or implementation, but a daunting and nearly opaque compliance challenge for businesses, especially small ones.

## **OLD PARADIGMS DIE HARD BUT THEY CAN DIE**

The world has now experienced structural changes in the energy sector more profound than those of 40 years ago. Back then, the reality of embargoes, crises, and declining domestic oil and gas production shocked the world. In the United States, the crises led to the creation of the Department of Energy and the myriad policies and regulations that followed. The circumstances of that time called for bold actions to protect and preserve American energy supplies and to protect our economy.

Today's fundamental shift in energy and economic circumstances calls for bold policies again. But now they should be directed at accessing and accelerating the production of hydrocarbons for both domestic use and for export. Current policies, legislation, and regulation are anchored in the twin paradigms of limits and import dependence.

Energy "independence" is now possible—and imminently so. But independence from the economic, political, social, and security challenges of being a net importer can be achieved only by pursuing a policy of net exports, just as we have long done in the agriculture sector (and others).

American food independence does not obviate the necessity for imports, given the rich diversity of products in a dynamic world market. It would be impossible and counterproductive for bureaucrats to calibrate those markets at the national level and to decide, for example, which agricultural product exports were in the national interest. Markets are determined by complex and dynamic global factors—from demand and infrastructure to weather.

The energy sector presents a comparable, arguably broader, array of "calibration" challenges, especially in the diversity of products and in the complexity of de facto exports. It is entirely unrealistic to believe that bureaucrats can best decide whether and when it is better to export crude oil (versus diesel fuel) or natural gas as a chilled liquid (versus in the form of manufactured ethylene or plastic).

Although agricultural products and just about everything else in common commerce can be exported without special permission, that is not the case with hydrocarbons. (Exceptions fall into the obvious categories: products that are related to military, weapons, and nuclear domains.)<sup>46</sup>

Today it is illegal to export raw crude oil from the United States.<sup>47</sup> It is, for now, functionally illegal to export LNG, given how the permits are managed; in fact, the gating agency, the Department of Energy, has suspended consideration of all such permits.<sup>48</sup> Given the combination of opposition and regulatory delays,<sup>49</sup> it is, for all practical purposes, nearly impossible to significantly increase coal exports.<sup>50</sup>

Meanwhile, for America's farmers, it is legal to export wheat, corn, and meat without special permission; all that is necessary is good business sense and a willing buyer. The Department of Agriculture even has an office dedicated to providing export assistance.<sup>51</sup> The USDA Foreign Agricultural Service states:

*Looking to increase sales and expand your customer base? Exporting may be the answer! Selling to overseas markets is a lucrative activity for many U.S. companies. . . . We have the resources, products, and services to help your company explore international sales.<sup>52</sup>*

Now there's a good idea for the Department of Energy.

Unprocessed crude oil exports are prohibited by the Energy Policy and Conservation Act of 1975.<sup>53</sup> The title of the legislation speaks volumes about the paradigm extant in 1975. Businesses have also been prohibited from exporting natural gas without federal permission since passage of the Natural Gas Act of 1938, and those prohibitions were reinforced under the Energy Policy and Conservation Act of 1975.<sup>54</sup>

While permission is readily granted to export LNG to 16 nations with which the United States has free-trade agreements, none of those nations are buyers.<sup>55</sup> Since the potential buyers are not party to the agreement, the Department of Energy determines whether to grant permission, on the basis of its determination as to whether the export is in the "national interest."

The standard refrain in Washington, D.C., is that deeply embedded regulations and attitudes are hard to change. But sometimes changes in the status quo can lead to major shifts in policy; there is precedent. Congress and earlier administrations have on occasion created entirely new agencies (the EPA and DOE come to mind), eliminated regulatory restrictions, and even repealed outmoded laws.

Consider that once upon a time, following the first energy crisis, Congress believed that the United States would soon run out of natural gas. So under President Carter, Congress passed the Powerplant and Industrial Fuel Use Act of 1978, which banned the use of natural gas for electricity generation. About a decade after that, as President Reagan signed legislation eliminating those restrictions on natural gas, he stated:

*We saw in 1974 and 1979 the disastrous effects which a disruption of Gulf oil can have upon the economy of the United States and our principal trading partners. We're working to see that that experience is not repeated. Achieving this requires American military and political strength, the cooperation of our allies, as well as economic strength and independence, especially in matters concerning energy.*

*I've long believed that our country's natural gas resources should be free from regulatory burdens that are costly and counterproductive.... Removal of these and other regulatory obstacles will benefit our economy, energy security, and environment.*<sup>56</sup>

Nearly another decade later, upon signing legislation to selectively eliminate the federal prohibition regarding the export of crude oil (albeit for one operation, and for Alaska only), President Clinton stated:

*Permitting this oil to move freely in international commerce will contribute to economic growth, reduce dependence on imported oil, and create new jobs for American workers.... [W]e will be ... creating new jobs in the oil industry, and preserving jobs for America's merchant seamen.... [A]nd the Federal Government will also benefit from up to \$2 billion in additional Federal, State, and local royalty and tax payments.*<sup>57</sup>

The logic expressed by Presidents Reagan and Clinton, as well as the economic benefits that they foresaw in those policy changes, apply even more today. And the logic is relevant not just for one fuel type, or one state's exception, but across all hydrocarbon domains and for the entire country.

Then there is the Environmental Protection Agency, where we find, widely documented, a challenging domain of regulations that delay and can de facto eliminate the opportunity for expanding hydrocarbon infrastructure, for both domestic use and export.<sup>58</sup> But change is possible here, too. We saw evidence of that in August 2012, when the imminent closure of Sunoco's Philadelphia oil refinery was threatening to lead to both higher East Coast gasoline prices and the loss of more than 850 union jobs by autumn 2012. The refinery, in the face of ever-increasing environmental regulations, was an unappealing acquisition as Sunoco sought a buyer. However, following the involvement of the White House, Carlyle Group agreed to buy it. Carlyle will spend \$200 million to refurbish the refinery to take advantage of low-cost domestic crude, processed now with low-cost local natural gas from Pennsylvania's gas shale.

According to *The Wall Street Journal*: “To help seal the deal ... the Obama administration and state regulators agreed to loosen certain environmental restrictions on the refinery.” The happy outcome will be the continued operation of a critical East Coast supply of gasoline that will, according to the White House, “protect consumers from higher prices at the pump and keep people from losing their jobs.”<sup>59</sup>

Thousands of less well-connected hydrocarbon-related businesses in America would appreciate the same cooperation from regulators to “loosen certain environmental restrictions” to enable project development, expansion, revenues, and job creation.

This summer’s Philadelphia refinery story stands in stark contrast to the widely publicized debate and suspension of approval to build the Keystone XL Pipeline earlier this year. The Keystone Pipeline wasn’t going to save jobs, but its construction promised new jobs, and in the near term. It would have allowed the transport of heavy crude from Canada’s vast fields of oil sands to America’s world-class Gulf Coast refining companies, which have the capability to process the heavy and low-cost crude. The project would create yet more opportunity for increasing the domestic supply and the export of valuable refined petroleum products to world markets.

As has been widely reported and debated, the current administration halted approval of the Keystone Pipeline. Nonetheless, President Obama has articulated the value of increased domestic production and export of hydrocarbons, at least for Brazil. Brazil launched the world’s most aggressive biofuels program in 1975 in reaction to the belief, at that time, that Brazil had no significant oil resources. There was political and public delight in Brazil with the 2006 discovery of massive deepwater offshore oil fields. On a state visit to Brazil last year, President Obama observed:

*By some estimates, the oil you recently discovered off the shores of Brazil could amount to twice the reserves we have in the United States. We want to work with you.... [W]hen you’re ready to start selling, we want to be one of your best customers. At a time when we’ve been reminded how easily instabil-*

*ity in other parts of the world can affect the price of oil, the United States could not be happier with the potential for a new, stable source of energy.*<sup>60</sup>

This logic surely applies to America. President Obama went on to say:

*[E]ven as we focus on oil in the near term, we shouldn’t lose sight of the fact that the only long-term solution to the world’s dependence on fossil fuels is clean energy technology.*

We can debate how best to fund R&D to find long-term solutions for replacing hydrocarbons and how many of those clean solutions may emerge from unconventional hydrocarbons themselves, but the “near term” is the key issue in the ongoing economic carnage in the Great Recession.

## THE SOLUTIONS TO UNLEASHING HYDROCARBON PRODUCTION AND EXPORTS

It is axiomatic that there is no perfect solution to the tangle of regulatory issues and various internecine conflicts plaguing an industry as large and diverse as the hydrocarbon business. But there are solutions. Efforts to resolve these issues should be approached with an understanding that encouraging development and extraction of natural resources is in the national and public interest. Policymakers interested in liberating the economic, employment, and social potential of our domestic energy resources should:

- Hold the BLM accountable for the timely processing of applications;
- Require the Department of the Interior to adhere to the statutory provision in the Federal Land Policy and Management Act;
- Stop the BLM from arbitrarily designating huge new swaths of land as “Wild Lands,” thereby preventing access for resource assessment and for development;

- Suspend BLM plans to add additional regulations to the fracking process, especially those that are made redundant by existing state regulations;
- Require that legal challenges to development be limited to those whose legal rights will be directly and adversely affected;
- Require plaintiffs to pay for legal action dismissed on frivolous grounds;
- Require science-based rule-making across the board;
- Require cost-benefit analysis on the basis of established economic principles;
- Open up current “off-limit” federal lands to exploration;
- Provide or facilitate the ability for agencies to share staff resources with those that are understaffed;
- Make the R&D tax credit permanent to encourage innovation; and
- Explore non-federally funded mechanisms for financing energy technology demonstration projects (e.g., Clean Energy Bank concept).

This list is far from exhaustive. Much more needs to be done. But incremental progress and fixes to specific regulatory and legislative problems will not be sufficient to realize the opportunities that are now available to us. Resolutions will be limited and slow in coming so long as the various constituencies and policymakers approach these issues individually, semi-chaotically, and from the inside of an outmoded policy apparatus set up to address yesterday’s priorities.

The necessary solutions can emerge only with a fundamental shift in the overall policy objectives of the nation, combining presidential directives and an omnibus class of energy legislation from Congress. To unleash the flood of economic and jobs benefits from expanding hydrocarbon production and exports, the president and Congress need to:

1. Establish a single, clear, pro-development, pro-export hydrocarbon policy—an Energy Production and Export Act.

Because the animating paradigm of the 1975 Energy Policy and Conservation Act is no longer valid, that act should be repealed and replaced with new omnibus legislation: an Energy Production and Export Act designed to create a new philosophical directive and to fix many of the well-known specific problems that have evolved over the decades since 1975. Among many other things, the new act should encourage exports and eliminate the requirement that the president and the agencies must approve energy exports.

2. Establish a single federal portal for approval of all major energy projects.

Rather than have developers, small or large, be forced to submit multiple applications to numerous federal agencies, the United States should emulate Canada’s philosophy of encouraging and facilitating energy projects and exports. Specifically, it should be incumbent on the federal government to identify, reconcile, and facilitate conflicts in intent and scheduling that occur among competing agencies. The president can, by executive order, call for immediate coordination and exploration of the challenges and propose enabling legislation.

Bearing in mind the structural differences, it would also be helpful to emulate Canada’s approach to resolving conflicts between federal and state/provincial agencies. In Canada, when the same federal and provincial regulatory objective is identified, the authority to review and approve is delegated to the local agency.

3. Enact a time-out on implementing all new federal regulations.

Given the crushing burden resulting from 40 years of expanding regulations and the sheer volume and complexity of new rules across all federal agencies, there should be an across-the-board

suspension of implementation of all new rules, with the exception of any that have demonstrable near-term safety relevance.<sup>61</sup>

A task force should be formed to explore how twenty-first-century information techniques and algorithms can be applied to identify unintended conflicts and inadvertent restrictions, to reconcile parallel objectives among agencies, and to provide transparency and efficiency for citizens and businesses. Immediate attention should be given to bringing realistic economic tests to regulations through consistent cost-benefit analyses. A fundamental update and reform of the regulatory rule-making process is long overdue. The bipartisan and bicameral bill—the Regulatory Accountability Act of 2011<sup>62</sup>—should be an urgent priority of the next Congress.

Businesses of all kinds across the country (particularly those in the hydrocarbon industries), when asked what constrains expansion, nearly universally cite—in one

form or another—the “three Cs” of regulatory inhibitions: complexity, creep, and capriciousness.

Surely in the information age, we can apply modern advancements in communications, software, and computing to the task of enhancing efficiency and transparency in the regulatory process such that the intent and purpose of legislation can be met without overburdening the regulated and the regulators. And surely in these times of remarkable economic challenge, we can find the political will to reset the national energy framework to take advantage of the new resource abundance and employment potential unleashed by technical innovation.

This is the time to recognize that the world has changed. The United States is now in a position to be the world’s most important source of both food and fuel, with all the benefits that entails for other nations and for ourselves.

### OBJECTIONS TO ENERGY EXPORTS

While domestic hydrocarbon production has already increased, it is far from guaranteed that this trend will continue, especially in the face of new and proposed regulations. Nor is production growing fast enough to generate the economic and jobs outcomes outlined earlier.

Even though the concept of trade is central to a dynamic domestic economy as well as global prosperity, the prospect of rising hydrocarbon exports has led some analysts, congressmen, and pundits to raise a variety of objections—not so much to expanding hydrocarbon production itself (though that, too) but specifically to the idea of more exports.

#### We Need It Here

Some believe that, given the state of the economy, America should keep its oil and gas for the use of Americans. This concern is implicitly anchored in a worry that there may be real near-term limits to the unexpected abundance—we might just run out of all this good stuff. Not likely. The United States consumes about 20 billion barrels of oil-equivalent annually in all forms of energy. Total North American hydrocarbon resources exceed 13,000 billion barrels of oil-equivalent.<sup>63</sup>

Whether hydrocarbons or food, the notion that resources should be hoarded runs counter to the mutually beneficial aspects of trade for all nations. This principle arises in part from the reality that how and where resources are produced and how markets can transport and use them is enormously complex and dynamic. Markets are better—and even when imperfect, far better than bureaucrats, or anyone else—at determining when there is higher value in exporting or importing a raw material or derivative product.

### Exports Will Hurt America's Energy-Intensive Industries Because Prices Will Rise

This objection is largely directed at natural gas. (The same complaint could well surface for coal and petroleum products as exports rise.) Some domestic manufacturers that benefit from the current exceptionally low price of natural gas raise the concern that exports may drag domestic costs higher, toward international prices. There is truth to this, which is precisely why domestic producers are looking to international markets.

Domestic natural gas is particularly inexpensive right now—at a ten-year low<sup>64</sup>—mainly because of the confluence of the record production and the associated limits in infrastructure to transport, store, consume, and export it. Natural gas is currently below \$20 per barrel-of-oil-equivalent (BOE) in the U.S., compared with about \$100–\$120 per BOE in Europe and Japan. Low-cost feedstock provides energy-intensive businesses (especially chemical producers) with significant advantages over global competition—hence a recent rush of announcements of expansions and construction of U.S. chemical plants. However, the natural gas oversupply/under-demand imbalance cannot long survive. And artificially impeding production—by stifling exports—will likely have the long-term unintended effect of reducing supply and increasing prices.

U.S. producers are already rapidly shifting away from natural gas drilling toward oil-dominated fields. The current return on investment in the former is in the single digits or negative in many regions of the country; in the latter, it ranges between 28 percent and 85 percent.<sup>65</sup> Consequently, national rig counts for natural gas drilling are down 45 percent<sup>66</sup> in the past year and up 33 percent<sup>67</sup> for oil rigs.<sup>68</sup>

But the prospects for (eventual) expansion of production are good if consensus forecasts are correct in seeing natural gas prices close to doubling in the near term, creating plenty of profit incentive for production while keeping the domestic resources at a fraction of the global price. Given the magnitude of overall domestic and global demand, a recent analysis by Deloitte finds that LNG exports would unlikely affect domestic prices by more than single-digit percentages.<sup>69</sup>

In addition, there are geographic diversity conditions that determine whether and where it is easier or more profitable to export rather than sell domestically. Some regions of the country have limited demand from chemical processing but an abundance of natural gas suitable for export; it is the same for oil and coal. The dynamics of energy markets, as well as private capital at risk, will sort out whether, for example, Northeast natural gas is better exported as LNG or sent by pipeline (if it exists) to a processor elsewhere domestically, or whether it makes more sense to build local a chemical plant to use the low-cost gas.

It makes no more sense to intervene in the market to constrain energy exports to protect U.S. businesses than to do so for corn exports to protect livestock producers. Businesses intent on securing critical inputs can pursue negotiated, preferred, or exclusive relationships with suppliers. At times, a buyer has acquired a supplier outright: for example, Delta Airlines acquired a Philadelphia oil refinery;<sup>70</sup> and a chemical company might purchase a gas-fracking business soon, while the prices are low.

### **It Keeps Us from Focusing on Non-Hydrocarbon Alternative Technology**

The variant on this complaint is along these lines: “Our oil addiction is the problem.” Setting aside the fact that oil is an extraordinarily remarkable fuel—one with a constellation of features that has yet to be duplicated at any reasonable price—the “addiction” pejorative and misnomer are anchored in the old paradigm of shortages and import dependence.

The opportunity for an export-oriented energy policy does not create a Hobson’s choice between hydrocarbons and non-hydrocarbons. To the extent that alternatives remain inherently more expensive than

mainstream energy, finances directed at alternative subsidies and research more easily come from the wealth and tax revenues generated by hydrocarbon export abundance.

The pursuit of alternatives to oil is really a pursuit of alternatives to the declining availability of “conventional” oil. By definition, the unlocking of shale oil and tight oil has come from what are labeled “unconventional” resources. Whether synthetic oil made from biological matter (biofuels), for example, can in the future come close to being cost-effective remains suspect and far from proven.

Technology is likely to unlock even more “unconventional” sources of oil. Or R&D may yet find catalysts that can cost-effectively convert natural gas at \$20–\$40 per BOE into gasoline that comes from \$100 per-barrel crude. The magic of yet-to-be-discovered catalysts could yet reduce the costs of the long-standing and proven technology to convert coal into synthetic oil (invented in World War II). We can add to the list the near-term potential for capturing and using by-product carbon dioxide from coal-fired electric power plants to pressurize oil wells (colocated in hydrocarbon-rich geology) and unlock hundreds of billions of barrels not currently extractable.

### **Increased Production, Needed for Exports, Won’t Lower Oil Prices**

Oil prices are determined globally, and near-term prices are largely determined by expectations about future supply and demand. The launch of a credible long-term national strategy to support and expand North American energy production would have a substantial impact on marginal supply-demand balance and would inevitably help mitigate price swings. Adding millions of barrels per day to world supply between now and 2015 would significantly affect both the real and perceived marginal production on global markets. (Marginal production capability is a primary factor in global price volatility.)<sup>71</sup>

And if prices stay high or rise—whether from constraints on other supplies or from unexpected global demand—the U.S. will benefit from higher-valued exports.

## We Don't Have the Infrastructure

Radically expanding North American hydrocarbon production would require significant investment in infrastructure. We will need to build more pipelines, ports, refineries, refrigerators (to liquefy natural gas), rails, roads, and manufacturing and management businesses, as well as more public-private university-centric R&D partnerships to expand our technology lead. But it will come from the private sector, generating benefits to the public sector, to private citizens, and to businesses. Current plans to expand the natural gas infrastructure alone approach \$140 billion of private, and foreign, capital.<sup>72</sup>

It is clear that America would benefit from an expansion of foreign direct investment in energy and energy-related infrastructure, a trend that we are already starting to see.<sup>73</sup> The list is long and growing, with investments coming from such countries as South Korea, China, Malaysia, and Norway (Norway's Statoil is betting \$20 billion in assets on U.S. oil and gas plays, including the Gulf's deep waters).<sup>74</sup> An Egyptian company is investing \$250 million to restart a Beaumont, Texas, chemical plant and is constructing a \$1.3 billion fertilizer plant in Iowa.<sup>75</sup> In Youngstown, Ohio, global steelmaker Vallourec & Mannesmann is building a \$650 million steel mill.<sup>76</sup>

## The Investment Could Be Wasted

Radical growth in investment in production in the U.S. could, in theory, lead to an oversupply of hydrocarbons in world markets. Since the investments will have been made by private businesses, no public funds would be put at risk. In such an event, there would be the beneficial consumer outcome in any radical decrease in prices. Provided that prices didn't drop below the "\$30 to \$60" for oil, new technology is so productive that drillers, according to a number of experts, would likely stay above water and keep producing.<sup>77</sup>

## It Will Just Encourage More "Dangerous" Fracking

A strange industry of mythology has emerged around the idea that there are widespread hazards, especially

involving contamination of drinking water, associated with the oil and gas production technique called hydraulic fracturing (fracking).

There is insufficient space to fully rebut hyperbolic claims of imminent disaster from fracking. Extensive technical literature is readily available addressing this issue. For example, the Michigan Department of Environmental Quality published a lucid overview of the technology, along with popular claims and concerns.<sup>78</sup> Among the clarifications:

*There have been a few rare cases where gas from drilling operations has escaped into fresh water aquifers; however, that was caused by improper well construction, not hydraulic fracturing. Where gas occurs in water wells, it is almost always from natural pockets of methane gas. Over time, gas seeps into the water well and is transmitted into the home. It has been documented in Michigan public health advisories dating back to the 1960s. It has never been associated with hydraulic fracturing.*

Similarly, a recent article in the Duke Environmental Law & Policy Forum contains a detailed examination of the record associated with fracking, and summarizes:

*Given the heated debate currently surrounding hydraulic fracturing, one might never guess that oil and gas developers have safely used the technique since before The Beatles' first American tour in 1964. Approximately one million oil or gas wells have been fracture stimulated by injecting fluids into rock formations, cracking them to produce oil and gas. The perception that hydraulic fracturing may contaminate groundwater has caused widespread public concern and, in some cases, opposition to hydraulic fracturing. Although various studies fail to confirm a connection between fracture stimulation and groundwater contamination, many environmentalists, policymakers, and citizens remain skeptical. We emphasize, however, there is no conspiracy between the oil and gas industry and government regulators to create a false impression that hydraulic fracture stimulation is safe. Rather, scientific studies and basic geology prove that hydraulic fracturing is a*



*safe and effective way to recover oil and gas from shale formations.*<sup>79</sup>

## Promoting Hydrocarbon Production Promotes Global Warming

Without regard to the urgency or solidity of climate-change arguments, the contention that the U.S. “must set an example” by not supplying the world with hydrocarbons fails on a simple consideration. Regardless of what policies the U.S. undertakes, in either supply or consumption, global use of hydrocarbons is rapidly increasing and will continue to do so for decades. Every credible forecast sees global consumption of hydrocarbons increasing by 2035 by an amount equal to two United States’ worth of demand. The demand for hydrocarbons is a fact of life—better that the U.S. gain the economic benefit and jobs from supplying those hydrocarbons. And because

of its technological sophistication, the U.S. is arguably best suited to undertake such production in the most environmentally sound manner.

## The Public Won’t Support Major Expansion of Hydrocarbon Production

Energy issues wax and wane in general with the world price of oil, partly because prices (or supply shocks) make headlines and, in large measure, because the price of gasoline is visible to consumers on a daily basis, unlike the price of electricity, coal, or natural gas.

Below is a summary of a recent Harris national survey<sup>80</sup> revealing that opinions about these energy issues are strongly held. It appears that there is substantial, deep, and bipartisan support for increasing the development of domestic hydrocarbons.

	Strongly Yes	Strongly No	Somewhat Yes	Somewhat No
Support or oppose increased access to oil & natural gas resources?	47%	9%	24%	8%
<i>Democrats</i>	33%	16%	27%	12%
<i>Millennials</i>	35%	13%	31%	13%
This will lead to more U.S. jobs	65%	4%	25%	3%
<i>Democrats</i>	49%	6%	36%	6%
<i>Millennials</i>	74%	2%	19%	3%
Support Keystone Pipeline	57%	12%	17%	7%
Energy important in this election	66%	3%	26%	4%

\* Millennials defined as respondents age 18-34

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## FELLOWS

Robert Bryce  
Peter W. Huber  
James Manzi  
Mark P. Mills

The Power and Growth Initiative at the Manhattan Institute is focused on increasing public understanding of North America's abundant energy resources and encouraging public policies that will allow the United States to harness the benefits—for our economy and for our influence in the world—of that abundance. This effort springs from a new energy reality: technology has unlocked our vast resources of natural gas, oil, and coal for both domestic use as well as export, and can create millions of new jobs while providing affordable energy to the world.

By 2030, the International Energy Agency forecasts global energy demand to grow by about 50 percent, to some 120 billion barrels of oil equivalent per year. Of that amount, the IEA and other forecasters expect that up to 80 percent will come from oil, coal, and natural gas. The vast natural resources of the United States and its North American allies in Canada and Mexico, mean that we stand capable of supplying much of the new demand. Yet the underlying paradigms embedded in American energy policy and regulatory structures are anchored in the idea of shortages and import dependence. A reversal in thinking is needed to orient North America around hydrocarbon abundance. The United States alone has thousands of billions of barrels of oil-equivalent in the form of coal, oil and gas shales, and other non-conventional resources. Canada and Mexico also sit atop thousands of billions of barrels of hydrocarbon resources, all of which will become increasingly accessible and affordable as technology evolves.

The United States is not running out of energy. It is time to appreciate the staggering economic and geopolitical benefits that the development of our vast hydrocarbon resources can bring. It is no overstatement to say that jobs related to extraction, transport, and export of hydrocarbons can awaken the United States from its economic doldrums and produce revenue such that key national needs can be met—including renewal of infrastructure and investment in scientific research.

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