



Exporting U.S. Natural Gas: The Benefits Outweigh the Risks

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In a remarkably brief period, America has become awash in oil and natural gas. According to the U.S. Energy Information Agency (EIA) we have surpassed Russia as the world's leading energy superpower, producing more oil and natural gas combined than any other country.¹ This newfound abundance has turned old assumptions about U.S. energy scarcity and security on their head. For the first time since the energy crisis of the 1970s, there is mounting pressure—both domestically and abroad—for the United States to once again become a major energy exporter.

According to the EIA, America's proved reserves² of natural gas have increased in each of the last 15 years to a total of 308.4 trillion cubic feet (Tcf) in 2013,³ up 84% from 1999 estimates.⁴ The agency also estimates that unproved natural gas resources were at an increased level of 1,903.7 Tcf in 2009.⁵ These U.S. government estimates are in line with other assessments reported by several respected sources.⁶

Most of these reserves are unconventional resources like coal bed methane, tight gas, and shale that have become more accessible due to significant advances in gas extraction technologies. As a result, the oil and gas industry, including expanding gas and oil production, have accounted for more than 9 million full- and part-time American jobs over the past few years.⁷

The energy revolution also shows up in the results of the Progressive Policy Institute's recently released 2014 U.S. Investment Heroes, an annual survey of the top 25 U.S. companies that invest most in the United States. On that list are 10 energy companies, involved in the exploration and production of oil and gas or energy distribution and power, that invested a total of \$57 billion in 2013, representing 37% of the top 25 investment.

Not only has the shale gas boom benefited the economy, but we have seen environmental benefits as well. According to the U.S. Environmental Protection Agency (EPA), greenhouse gas

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emissions decreased by 3.4% from 2011 to 2012.⁸ This reduction can be attributed to many factors, but fuel switching (coal to natural gas) in electricity generation has played a major role, as electricity production in 2012 accounted for 32% of all U.S. greenhouse gas emissions.⁹

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Meanwhile, demand for gas is soaring in Europe and Asia, where prices are many times greater than here at home. Thus, of course, many U.S. energy companies are lining up to export natural gas to these markets, which requires them to cool down the gas to liquid form (LNG) for shipping abroad. Proponents of U.S. LNG exports emphasize the potential benefits of billions of dollars in investment and more employment opportunities in a sector that already is seeing robust job growth.

Many of these same companies, meanwhile, are chafing under what they regard as an ill-defined standard in determining whether an authorization for LNG exports is inconsistent with the “public interest.” Under a 1938 law, as amended in 1992, the Department of Energy, before issuing a final approval for LNG export projects destined to countries without a free trade agreement with the United States, must determine whether the LNG export is inconsistent with the “public interest.” Currently, South Korea is the only major LNG importer that has a free trade pact with the United States.

Industry’s calls for easing or lifting such restrictions, however, have run into heavy opposition from a variety of sources: including environmentalists, who worry that increased domestic fossil fuel production will lead to a surge in U.S. greenhouse gas emissions and other environmental impacts; chemical companies that use natural gas as a feedstock; and the

manufacturing sector, which is counting on cheap gas to spur its revival. Environmental groups also have voiced concerns about fugitive methane emissions associated with natural gas production and transportation, as well as fears that a glut of cheap gas will delay deployment of renewable energy technologies.

In Congress, lawmakers from both parties are trying to inject a sense of urgency into what many consider as the DOE’s slow-moving license review process. Senator Mark Udall (D-Colo.), for example, has a bill to expedite approval for U.S. LNG exports to all World Trade Organization countries. His current opponent, Rep. Corey Gardner (R-Colo.), has introduced a similar bill in the House. Neither bill, however, has attracted enough support to move to the President’s desk, indicating a need for a bipartisan push in the next Congress to expedite approvals for U.S. LNG exports. Other Members of Congress point to the ongoing Ukraine-Russia conflict and the energy stranglehold that Russia has in Europe, as a compelling reason to wield the United States’ vast natural gas resources to weaken Moscow’s leverage.

The Obama administration is on record as supporting natural gas exports in principle. “Our new capacities as a gas producer and the approval of seven export licenses is going to help supply gas to global markets, and we look forward to doing that starting in 2015. And we will supply more gas than all of Europe consumes today,” remarked Secretary of State John Kerry at an EU–U.S. Energy Council meeting held earlier this year.

In August 2014, the Obama administration issued new rules intended to streamline LNG export license review. The new rules require companies wishing to export natural gas to countries that do not have free trade agreements (“non-FTA”) with the United States complete federal environmental reviews before seeking DOE approval for LNG exports. LNG export applicants hail this revision as an improvement because it clarifies the sequence of regulatory review by the Federal Energy Regulatory Commission (“FERC”) and DOE, providing certainty of timely evaluations of the necessary environmental review. In addition,

the new rules change the order in which DOE takes up applications to export LNG. Instead of being bound by chronology, DOE will be able to act on the strongest applications first, specifically those where the applicants have made significant progress on their environmental review. These are welcome changes that could actually expedite permitting.

In one important respect, however, the administration's rules fall short: They fail to clarify the government's vague standard for deciding whether or not U.S. gas exports are in "the public interest." Under existing law, applications for exports to countries that have a free trade agreement (FTA) with the United States are considered presumptively to be in the public interest (even though companies still need to go through the FERC environmental review processes).

However, licenses for exporting to non-FTA countries—which includes most of our potential overseas markets—carry a rebuttable presumption, meaning the burden is on opponents to show why they are not in the public interest. While that may not seem like a high bar, the public interest standard leaves wide scope for bureaucratic subjectivity and delay.

This policy brief examines the LNG export debate and concludes with recommendations that strike a pragmatic balance between the needs of our economy and legitimate environmental concerns. We believe it is time to lift outdated restrictions on exporting natural gas and expedite environmental reviews. U.S. natural gas is now a plentiful national resource that should be traded on global markets like any other commodity. Government's proper role is not to put new regulatory obstacles in the way of gas exports, but to let markets work and intervene only if that results in actual, rather than speculative, harms to the public, gas consumers, and environmental health and safety.

Finally, we recommend the DOE conduct a periodic survey of the global natural gas export market to identify issues related to natural gas supply, demand, prices, and changes in the

international market. This information would serve to inform DOE and policymakers on conditions where markets are not functioning that may warrant corrective action in U.S. LNG export policy.

THE REGULATORY GAUNTLET

The Obama administration's revised rules for DOE export licensing provide some certainty and clarity that at one time seemed illusive to many LNG export applicants. In particular the revised rules shed the old "Order of Precedence" in which DOE considered LNG applications for purposes of issuing a conditional export license to countries without a free trade agreement with the U.S. Under the old "queue", DOE would review LNG export applications in the order in which the applications were received. Under the revised rule, DOE will act on an LNG export application only when it is ready for final action, such that FERC has completed the pertinent NEPA review process and has provided DOE with sufficient information on which to base a public interest determination. This revision is welcomed progress as it gives those applicants who have committed resources to the NEPA review, and who have a higher probability of completing the proposed project a higher standing in the DOE approval process queue. It also allows DOE to efficiently deploy its resources in the review process.¹⁰

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Even with the revised rule improvement, the "public interest" determination remains an open ended process, where LNG export applicants still must contend with an amorphous standard allowing it to be too subjective. Under Section 3 of the Natural Gas Act, "DOE "shall issue" an order approving an application to import or export natural gas "unless, after opportunity for hearing, it finds that the proposed exportation or

importation will not be consistent with the public interest.”¹¹ DOE has recognized that this language “creates a rebuttable presumption that a proposed export of natural gas is in the public interest, and DOE must grant such an application unless those who oppose the application overcome that presumption.”

Yet, DOE maintains that the presumption does not eliminate DOE’s authority to impose informational requirements on applicants or to decide when it has a complete record on which to base its decision.¹² In its decisions on LNG exports, DOE has identified several factors to be considered when reviewing an application for LNG export authorization, including security of natural gas supply, economic, environmental, and international impacts among others. These are all valuable and relevant factors to be considered during review. However DOE has not shown consistency in applying the public interest standard. Its conditional orders show that DOE has allowed a range of factors that it weighs when reviewing an application for export authorization, eliciting a kind of openendedness which does not guarantee regulatory certainty. The administration should seek to ensure that the “public interest” decision making process is not subjective, but based on a set of objective standards that are clear and specific.

THE EXPORT DEBATE

Credible forecasts show the United States becoming a net exporter of natural gas by the first half of 2016 by one account¹³ and 2015¹⁴ by another. Whether these forecasts are met depend on how quickly federal regulators approve proposed LNG export projects. Of the 26 non-FTA applications currently under review, DOE has given conditional approval to eight projects. Only three projects have been given full authorization for construction and operation of LNG export facilities.

Many major industrial users of natural gas generally support free trade, but are deeply skeptical of LNG exports. Having been burned by price volatility in the past, they worry that sending more gas overseas will depress domestic supplies, causing their prices to spike. They also



point out that cheap gas is abetting America’s manufacturing revival, as some U.S. companies bring production home and foreign manufacturing concerns see the United States as a more attractive place to invest. If not opposed outright to more U.S. exports, some in the chemical and manufacturing sector want to see volume limits on exports. Dow Chemical has called for a “more prudent and balanced” approach to natural gas exports.¹⁵ Other critics fear rising electricity bills. That’s because natural gas is increasingly the fuel of choice for generating electricity, as more companies stop burning coal.

For environmental activists, hydraulic fracturing, or “fracking,” is the big concern. “Exporting natural gas would increase fracking and carbon emissions, put sensitive ecological areas at risk, and do nothing to address our country’s energy challenges,”¹⁶ the Sierra Club’s website warns. “Simply put, this gas needs to stay in the ground. If it’s dug up and exported, it will directly harm just about everyone in the U.S. economy while simultaneously making global warming worse,” wrote Bill McKibben and Mike Tidwell earlier this year.¹⁷ Their “keep it in the ground” movement has

successfully pushed for moratoria on natural gas production in some northeast states, but has made little headway in other regions, like Colorado. More mainstream environmental groups are concerned that an influx of cheap gas will undermine investment in renewable energy and clean technology. They've also highlighted the problem of fugitive methane gas releases associated with the extraction and the transportation of natural gas. Methane has a shorter lifetime in the atmosphere than carbon dioxide, but is more efficient at trapping radiation, making it a more potent greenhouse gas.

NATURAL GAS AND CLIMATE CHANGE

The environmental community fears that growing use of natural gas will extend our dependence on fossil fuel and delay the transition to climate-friendly alternative fuels. At a climate march held in New York City on September 21, protesters urged clean energy technology deployment. "The solution is so clear. It's to get to a 100% clean energy power society and economy," stated Ricken Patel, the founding executive director of Avaaz, the march organizer.¹⁸ In the here and now, however, it's worth noting that the influx of natural gas has actually led to a reduction of U.S. greenhouse gas emissions.

We need to look no further than within the United States to see the impact that fuel switching from coal to natural gas for power generation has on greenhouse gas emissions. It is generally accepted that gas-fired generation produces about one half of carbon dioxide emissions per kilowatt hour as coal-fired generation. The United States experienced a decline in carbon dioxide emissions between 2011 and 2012 of 3.4%, according to the EPA.¹⁹ Several factors accounted for this decline, but natural gas played a significant role as we've experienced an almost even swap between natural gas-fired generation up by 212 billion kilowatt-hours (kwh) and coal-fired down by 215.²⁰ However, U.S. carbon dioxide emissions rose 2.7% during the first half of 2014, with the largest increases coming from homes and the commercial sector, which may be indicative of the economy picking up steam.²¹

Thus another promising benefit from LNG exports is the potential reduction in global demand for oil and coal, leading to lower greenhouse gas emissions worldwide. In a May 2014 draft report on Europe and Asia, the DOE modeled the life-cycle greenhouse gas emissions from shipping natural gas abroad to countries that use it to replace coal-fired generation. "For most scenarios in both the European and Asian regions, the generation of power from imported natural gas has lower life cycle greenhouse gas emissions than power generation from regional coal."²² The draft DOE study also looked at potential increases in global warming as a result of U.S. LNG exports to Europe and Asia over both 20-year and 100-year horizons. While the 100-year period was more favorable to LNG exports, the report concludes, "This analysis has determined that the use of U.S. [liquefied natural gas] exports for power production in European and Asian markets will not increase [greenhouse-gas] emissions, on a lifecycle perspective, when compared to regional coal extraction and consumption for power production."²³

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Some mainstream environmental groups, notably the Environmental Defense Fund, have flagged the risks of methane releases from leaks and intentional venting that occurs in the natural gas supply chain. This is a serious concern and requires close monitoring by regulators. However, it is also a soluble problem and should not be used as a pretext to delay LNG exports. Although methane is an especially potent greenhouse gas, it is short-lived in the atmosphere and cost-effective technologies exist that can minimize the hazards of "fugitive methane."²⁴ In addition, EPA regulations for New Source Performance

Standards (NSPS) and National Emissions Standards for Hazardous Air Pollutants (NESHAP) which primarily target volatile organic compounds (VOCs), and hazardous air pollutants (HAPs) will not only improve air quality but assist in reducing methane emissions.²⁵ A recently released EPA report on greenhouse gas emissions shows that methane emissions from fracked natural-gas wells have reduced 73% from 2011 levels.²⁶

Environmentalists are understandably worried that that low natural gas prices undercut incentives to invest in renewable fuels and “green” technologies that can boost energy efficiency. The nuclear power industry no doubt has similar qualms about the influx of cheap shale gas. Yet from this perspective, modest price rises due to LNG exports would actually be welcome. In any event, rather than expend their energies in a vain effort to block LNG exports, environmental groups should press for more public spending on research, in conjunction with the private sector, aimed at developing new low- and no-carbon technologies.

HOW MUCH TO EXPORT?

Another point of contention is whether there should be restrictions on the quantity of natural gas U.S. companies are allowed to export. On one side are companies, mainly large industrial natural gas consumers, who argue that expanded exports will drive up domestic prices. They also cite studies purporting to show that using natural gas for domestic purposes—i.e., heating homes and generating electricity—will do more for the economy than shipping it away.²⁷ According to polls commissioned by the petrochemical industry, Americans oppose natural gas exports because they fear it will mean rising prices.²⁸ One poll conducted in 2012 asked U.S. voters if they would support natural gas exports regardless of net economic benefits if prices increased, manufacturing suffered and workers experienced reduced wages. Not surprisingly, 65% said they were opposed under this bleak scenario.²⁹

On the other side, energy companies that favor exports cite several studies that claim benefits will outweigh costs.³⁰ Meanwhile, DOE has

commissioned studies on the macroeconomic consequences of expanding LNG exports. The most frequently cited is a 2014 National Economic Research Associates (NERA) study, which found that LNG exports at varying levels of volume, ranging from 6 Bcf/d to no restrictions, would have a rather modest upward impact on domestic natural gas prices (the highest increase in domestic wellhead prices is 20% more than the reference case in 2020),³¹ and that net economic benefits increased as the level of LNG exports increased. Interestingly, NERA concluded that “scenarios with unlimited exports always had higher net economic benefits than corresponding cases with limited exports.”³²

Exerting downward pressure on gas prices is the uncontested fact that America’s proven natural gas reserves are expanding rapidly—by more than 70% from 2000 to 2010.³³ Low U.S. prices—now around \$4.00 per MMBtu—indicate that production is outpacing domestic demand.³⁴ The production glut suggests that ramping up U.S. gas exports is unlikely to cause immediate price shocks, but it doesn’t settle the question of whether there should be any limits on overseas sales of LNG.

DOE has already approved 3.94 Bcf/d for LNG exports to non-FTA countries.³⁵ However, DOE has announced it will seek analysis from the EIA and an outside group to consider the impact of LNG exports between 12 and 20 Bcf/d. In any case, various studies, including the British Petroleum Energy Outlook 2035, indicate that U.S. LNG exports are likely to reach a total net volume of 11.2 Bcf/d in 2035.³⁶

To be sure, global demand for LNG is rising and is predicted to reach approximately 17 Tcf by 2018.³⁷ The main players in the global gas trade are, in descending order, Qatar, Malaysia, Australia, Nigeria, Indonesia, Algeria, Oman, Brunei, United Arab Emirates, and Yemen. When you add growing U.S. LNG liquefaction capacity to that of these well-established exporters, world supplies of LNG exceed projected global demand. With so many established market players, with longstanding contracts in place, it is unlikely that U.S. LNG exports will exceed EIA projections.

Importantly, the DOE studies confirm many of the price impact estimates of previous non-governmental analyses. The NERA study concluded that natural gas prices would remain in a “relatively narrow range across” all of its market scenarios. In particular, NERA stated, “Natural gas price increases at the time LNG exports could begin range from zero to \$0.33 (2010\$/Mcf). The largest price increases that would be observed after five more years of potentially growing exports could range from \$0.22 to \$1.11 (2010\$/Mcf).”³⁸ While the projected price impact appears relatively small, it would come at a time when natural gas demand in the electric power sector is expected to grow (0.7%/year from 2012 to 2040).³⁹

Measuring the real-world impact of policy changes on gas prices, and making policy judgments on the basis of actual experience, is preferable to slapping arbitrary limits on exports based on speculative fears.

Over the last decade, natural gas has upped its share of U.S. electricity generation to 27%. In a nod to industrial natural gas consumers, DOE has announced plans to commission a new economic study to examine all relevant factors affecting demand, supply, and price. In addition, the federal government should monitor and report periodically to Congress on the impact of growing LNG exports on domestic gas prices. Since the EIA already provides an annual and short-term energy outlook, it should be charged with this task. Measuring the real-world impact of policy changes on gas prices, and making policy judgments on the basis of actual experience, is preferable to slapping arbitrary limits on exports based on speculative fears.

After all, U.S. production is not the only factor at play here. Massive LNG export projects are under

construction all around the world, and they have the potential to glut the Asian market—today the prize market for LNG exports. What happens to gas consumption as Japan restarts its nuclear reactors? What if other countries increase their own shale gas development? If there is a reduction in the price differential between the United States and potential foreign destinations to less than \$6—the cost of liquefying plus shipping—then there is no financial incentive to export gas from the United States.

Treating natural gas like any other tradable product, in other words, need not lead to the “drain America first” policy and high gas prices some critics fear. As with any other commodity, the nascent global gas market will be susceptible to myriad market permutations. The basic laws of supply and demand will apply, and as noted earlier, that likely will have a moderating impact on gas prices since the projected capacity for LNG export facilities far surpasses projected global demand.

What’s more, LNG exports will be governed by long-term contracts that include the cost of transport. Thus, it’s reasonable to expect that the United States will continue to enjoy lower natural gas prices than export-consuming countries.

THE NEW GEOPOLITICS OF GAS

In addition to the manifest economic benefits of boosting U.S. LNG exports, there may be significant geopolitical advantages as well. Europe’s reaction to Russian aggression against Ukraine, for example, has no doubt been constrained by its heavy dependence on Russian gas and oil. Russia supplied 30% of the natural gas consumed by Europe in 2013,⁴⁰ and Moscow supplies almost all of the natural gas Ukraine consumes.

Being a petro-superpower, however, is a double-edged sword for Russia. Constrained by corruption and cronyism, its economy has become overly dependent on energy. Russia, which derives almost half its revenues from oil and gas sales, would take a huge economic hit if it faced serious competition from the U.S. and other gas producers.

Ukraine needs U.S. natural gas “so that we cannot be blackmailed by Moscow,” said President Petro Poroshenko. “We need a reliable partner and ally to help fuel our nation.”⁴¹ This perspective is shared by other European leaders as well. Anita Orban, Hungarian Ambassador-at-Large for Energy Security, recently noted, “The United States has the chance to become a key player in international exports of natural gas. If Washington expands export opportunities, the results would include strengthened domestic production, enhanced global energy security, expanded market opportunities, lower global prices and stronger transatlantic alliances. By making strategic choices, the United States could demonstrate, once again, that it considers the Czech Republic, Hungary, Slovakia and Poland close allies and start a new, even closer, chapter in bilateral relations.”⁴²

However, there are some major caveats. First, the U.S. government doesn’t produce or sell gas; private energy companies do. Washington cannot tell them who their customers should be; they will go where markets offer the best returns. And even if they deemed Europe a profitable destination for their gas, it would take some time to build the domestic infrastructure and LNG export facilities to get large quantities of U.S.-produced gas across the Atlantic.

A WINDOW OF OPPORTUNITY

The United States may not be the world’s biggest producer of natural gas forever. Other countries also have vast shale gas reserves. China, for example, is said to have over 1100 Tcf of shale gas reserves, followed by Argentina, and Algeria. Ukraine itself has shale gas reserves of around 42 Tcf, even if it lacks the capacity to get it out of the ground. As these and other gas-rich countries move up the technological curve, we should expect America’s advantages to diminish and our price advantage to narrow over time.

The shale boom has already improved our trade balance by dramatically decreasing natural gas imports. In 2013, the United States was a net importer of goods and a net exporter of services, with energy representing 15% of overall U.S. goods imports, while energy exports accounted for 7% of overall goods exports. According to the EIA, “net energy imports account for nearly half of the total U.S. trade deficit in goods and services.”⁴³

The rapid growth of oil and shale gas production, however, has led to significant changes in the nation’s energy trade flows. Last year, the value of energy fuels exports increased 8% compared to 2012, while the value of energy fuels imports decreased by 11%.⁴³ This is not an anomaly, as net energy imports have decreased their share of total U.S. energy consumption to less than 20% in 2012 from 30% in 2006, and net energy imports are projected to fall to 6% by 2020. Huge energy trade deficits account for a major portion of the overall U.S. trade deficit, yet they are set to decline significantly because of increased natural gas production.

CONCLUSION

The United States has an opportunity that history rarely affords any country: To restore our once-dominant position in global energy markets—a status that seemed to be lost forever when it appeared that America was “running out” of fossil fuels. Of course, the United States still has a solemn responsibility to manage our newfound shale resources sustainably and within the framework of a balanced energy policy that steadily reduces greenhouse gas emissions. The fact remains, though, that U.S. technological prowess once again has changed the equation and created new economic possibilities. We can’t allow obsolete thinking, opposition from entrenched interests, exaggerated environmental fears, or regulatory paralysis to prevent us from seizing this opportunity.

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The Progressive Policy Institute (PPI) is an independent research institution that seeks to define and promote a new progressive politics in the 21st century. Through research, policy analysis and dialogue, PPI challenges the status quo and advocates for radical policy solutions.

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