From: Erik Milito
To: LNGStudy
Subject: 2012 LNG Export Study - Reply Comments of the American Petroleum Institute and Preliminary ICF Results Attached
Date: Monday, February 25, 2013 3:36:24 PM
Attachments: American Petroleum Institute Reply Comments - DOE 2012 LNG Export Study - 25 February 2013.pdf
LNG Export ICF Preliminary Results 2-25-13.pdf

The attached reply comments are submitted by the American Petroleum Institute (API) in response to various comments submitted during the initial comment period and in further support of the expeditious approval of pending LNG export applications by the U.S. Department of Energy (DOE). The underlying conclusion of the DOE "2012 LNG Export Study"[1] remains sound: across all scenarios, the United States stands to gain net economic benefits from allowing LNG exports. The vast supplies of natural gas resources that are now available as a result of the shale gas revolution have fundamentally changed the energy equation, positioning the United States as an energy superpower that can provide ample, affordable supplies to the domestic market and provide for exports to strategic allies with whom a free trade agreement does not exist, including Japan and partners in Europe. Also please find attached the "Status Report and Preliminary Results :The Economic Impacts of U.S. LNG Exports", ICF International, February 22, 2013, filed in support of our comments.

Best regards,

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[1] NERA ECONOMIC CONSULTING, MACROECONOMIC IMPACTS OF LNG EXPORTS FROM THE UNITED STATES (2012) (hereinafter "NERA").

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February 25, 2013

U.S. Department of Energy (FE-34)
Office of Natural Gas Regulatory Activities
Office of Fossil Energy
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Washington, DC 20026-4375

SUBJECT: **2012 LNG Export Study – Reply Comments of the American Petroleum Institute**

These reply comments are submitted by the American Petroleum Institute (API) in response to various comments submitted during the initial comment period and in further support of the expeditious approval of pending LNG export applications by the U.S. Department of Energy (DOE). The underlying conclusion of the DOE "2012 LNG Export Study"[1] remains sound: across all scenarios, the United States stands to gain net economic benefits from allowing LNG exports. The vast supplies of natural gas resources that are now available as a result of the shale gas revolution have fundamentally changed the energy equation, positioning the United States as an energy superpower that can provide ample, affordable supplies to the domestic market and provide for exports to strategic allies with whom a free trade agreement does not exist, including Japan and partners in Europe. Furthermore, the Natural Gas Act creates a presumption that natural gas exports are in the public interest. The burden is on opponents to overcome this presumption – not the other way around. The comments from the opposition are

[1] NERA ECONOMIC CONSULTING, MACROECONOMIC IMPACTS OF LNG EXPORTS FROM THE UNITED STATES (2012) (hereinafter "NERA").

speculative and without merit, and fail to overcome the statutory presumption in favor of exports. Furthermore, each day that we delay affirmative decisions on export applications puts U.S. projects at a competitive disadvantage in the global race to construct LNG facilities. Therefore, DOE should move expeditiously toward the approval of pending LNG permits.

I. Abundant Supply and the Global LNG Market Will Serve to Effectively Constrain Prices.

A. Abundance of Natural Gas Has Led to a Demonstrated Ability to Ramp Up Production to Meet Demand.

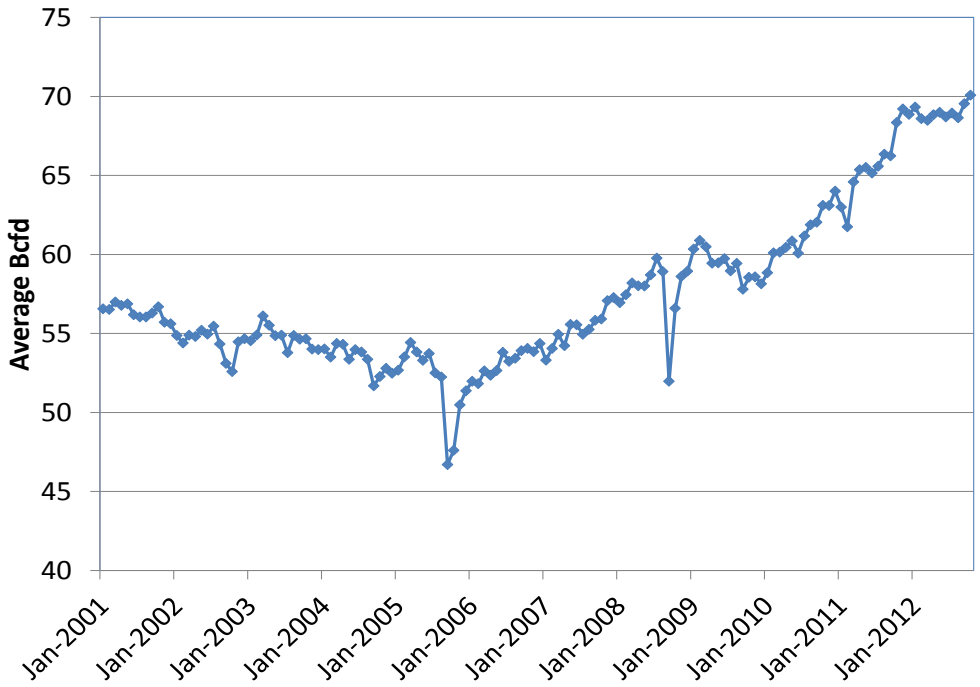
Some opponents of LNG exports have asserted that U.S. natural gas production will not be able to meet the demand of both domestic consumption and LNG exports. They argue that LNG exports will reduce the amount of natural gas available, causing domestic consumption to suffer. These fears are unfounded. With recent increases in shale gas production, the U.S. domestic natural gas industry has shown that it can ramp up natural gas production quickly. In addition, although the drilling of new development wells has declined due to market conditions, exploratory natural gas wells have increased, indicating that there is new natural gas production potential waiting to be developed without significant delays.

U.S. marketed natural gas production steadily declined through 2006. However, since that time, U.S. natural gas production trends turned and began to rapidly increase due to production from shale gas formations resulting from widespread application of two key technologies, horizontal drilling and hydraulic fracturing. For example, in the Barnett shale in Texas where these two technologies were first widely applied, the number of producing horizontal wells rose from fewer than 400 in 2004 to more than 10,000 during 2010.[2]

[2] Energy Information Administration, "Technology drives natural gas production growth from shale gas formations," *available at* http://www.eia.gov/todayinenergy/detail.cfm?id=2170 (July 21, 2011).

Fig. 1.

U.S. Natural Gas Marketed Production



Source: Energy Information Administration
Note: Temporary major declines in production are due to Gulf of Mexico hurricanes.

In early 2006, U.S. marketed natural gas production was under 52 billion cubic feet per day (Bcfd). By late 2012, U.S. marketed production grew by over 18 Bcfd to 70 Bcfd, which equates to a 36 percent increase in seven years. The growth rate for U.S. natural gas production was even greater in 2010 and 2011. From January 2010 to January 2012, U.S. production grew by over 10 Bcfd or 18 percent in just two years. These production increases are larger than many projections of the volume for LNG exports.

Growth in U.S. natural gas production moderated in 2012. This is mainly due to lack of demand markets, not necessarily production potential. Many promising areas such as the Haynesville shale in northern Louisiana and East Texas have shown significant drops in

development activity. In December 2012, the Haynesville drilling rig count stood at 18. As recently as July 2010, over 180 rigs were operating in the area.[3] Fortunately, U.S. natural gas exploration drilling increased 21 percent from 2011 to 2012 even while development drilling has declined. This is an indication that there is likely significant natural gas production potential waiting to be developed.

Table 1

U.S. Natural Gas Exploratory and Development Wells
2011 vs. 2012

U.S. Total	**2011**	**2012**	**Delta**	**Percent**
Exploratory Wells	658	793	+135	+21%
Development Wells	3,154	1,912	(1,242)	(39%)

Source: API Quarterly Completion Report Fourth Quarter 2012

B. More Recent 2013 Annual Energy Outlook Demonstrates a More Favorable Opportunity for LNG Exports.

Opponents of LNG exports have contended that higher natural gas prices from LNG exports would increase the cost of doing business in the United States, thereby reducing output and employment levels. They have argued that since the NERA study uses the Energy Information Administration's (EIA) Annual Energy Outlook (AEO) 2011 and EIA's International Energy Outlook (IEO) 2011 as the baseline to compare their various LNG export cases, the adverse impact on the gas-intensive manufacturing sectors is underestimated because

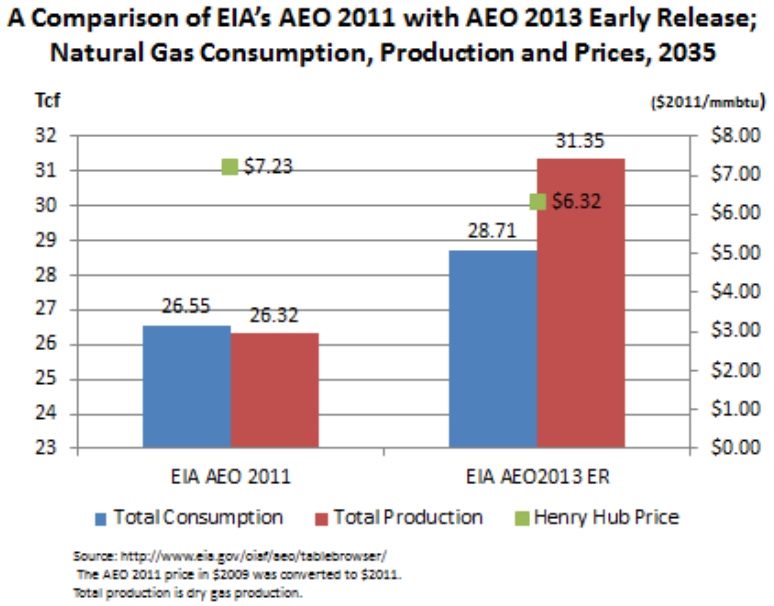
[3] Robert Huchinson, Haynesville Shale Rig Count: Unchanged at 18 (Dec. 2, 2012), *available at* http://www.haynesvilleplay.com/2012/12/haynesville-shale-rig-count-unchanged.html

the dated 2011 projection would exclude from the impact calculations the investment that gas intensive manufacturing industries have made in the U.S. to utilize low cost shale gas in 2011 and 2012.

A comparison of AEO 2011 with AEO 2013ER, the most recent EIA information available, indicates that total U.S. gas demand for 2035 is projected to be more than 2 trillion cubic feet (Tcf) higher due to increases in natural gas consumption by the power generation sector. Greater total natural gas demand for U.S. natural gas, however, does not result in higher natural gas prices in AEO 2013ER. Henry Hub natural gas prices in 2035 are projected to be *significantly lower*, at $6.32 (in 2011 dollars) in AEO 2013ER as compared to $7.23 (in 2011 dollars) in AEO 2011, because natural gas supply is much more robust in AEO 2013ER.[4] About 31.4 Tcf of dry natural gas is projected to be produced in 2035 in AEO 2013 ER, as compared to only 26.3 Tcf in AEO 2011. See Fig. 2. The net impact of both higher gas demand and much higher gas supply is lower prices, with the implication of a flatter natural gas supply curve. From this perspective, the results of the NERA study could be interpreted as being an upper bound on the adverse impacts, and using the AEO 2013ER as the baseline may generate even smaller price impacts.

[4] The $2011 price of $7.23 was calculated by multiplying the $2009 price of $7.07 by the ratio of the 2011 nominal price $4.58 to the $2009 real price of $4.48.

Fig. 2.



C. A Potential Rise in U.S. Natural Gas Prices Is Constrained by the Economics of LNG Liquefaction and Transport.

Some opponents of LNG exports have argued that limiting permits to a specific number of LNG facilities would mitigate the potential for sharp rise in domestic natural gas prices. It is crucial to recognize, however, that permitting a LNG export facility does not necessarily mean that LNG exports will actually occur or occur at the total maximum permitted volumes. That is because U.S. LNG exporters face a whole host of commercial risk, including foreign supplier risk, that serves as a market-based mechanism to balance the worldwide supply and demand of LNG. For example, the NERA study compiled costs of exporting LNG from the U.S. Gulf Coast to various demand regions around the world.[5] NERA estimates that the total LNG transport costs to Europe, Korea/Japan and China/India can range from $6.30 to $7.14 and $8.39 per

[5] NERA, at 90.

MMBtu in 2015, respectively. If U.S. Henry Hub natural gas is trading at $4, then U.S. LNG exports are economic in these consuming markets since the current prevailing LNG prices into Japan of about $16.50 per MMBtu are higher than the U.S. sourced LNG price of $11.14. If, however, as Japan adjusts further to the tsunami impact on its nuclear power sector and LNG export projects come on stream around the world, that tsunami-impacted price of $16.50 is likely to drop. If the price of LNG delivered to Japan were to drop to, say, $11.00, the incentive to export from the U.S. could disappear.

The NERA study is one of the few studies to date that has incorporated the potential supply response by foreign competing suppliers of LNG that would limit the ability of the U.S. to export volumes of LNG.[6] According to NERA, this consideration proved to be quite important since in many of the hypothetical LNG export volumes considered in the EIA study, the world market could not full absorb the export volumes due to strong international competition from foreign LNG and natural gas thereby further limiting the potential for domestic price increases. Medlock summarizes this point by stating that "the analysis herein indicates that international market response will ultimately limit the amount of LNG that the US exports as a matter of commercial rationing."[7]

D. NERA and Brookings Studies Project that Natural Gas Prices Will Remain in a Narrow, Low Range Through 2030 in All Scenarios.

The Dow Chemical Company has stated that the U.S. petrochemical industry can operate successfully only if U.S. natural gas prices remain in the $6-8 range. In testimony before the Senate Energy and Natural Resources Committee in October 2009, Dow Chemical Company Director of Energy Risk Management Edward Stone stated that "U.S. petrochemical

[6] The Deloitte study also analyzes international markets.
[7] Medlock, K.B. III, "U.S. LNG Exports: Truth and Consequence," James A. Baker III Institute for Public Policy (Aug. 10, 2012), at 32-33.

competitiveness depends on a multitude of factors, such as the relative cost of energy (including crude oil, coal, etc.), the relative cost of new facility construction, the strength of the economy in each global area, and the extent to which local industry is protected by local government policies. In general, we believe that if crude were in the $75-$100 range, and natural gas were available at a consistent $6-$8 dollar per MMBtu range, U.S. petrochemical facilities could be globally competitive."[8] If this is the case, then according to Dow Chemical Company's own recent analysis, LNG exports should not jeopardize recent petrochemical industry expansion plans. As summarized by a May 2012 Brookings report,[9] the reference natural gas price forecast for all recent major studies, projected total natural gas prices even with LNG exports are in a range from $5.10 to $7.21 per MMBtu, well within or below the $6-8 range. In the NERA study, all of NERA's reference case core scenarios projected prices below $7.50 per Mcf. NERA's unconstrained LNG export case, which reached an export level of over 15 Bcfd, projected a natural gas price as high as $7.50 per Mcf, but only in 2030 or at the end of the forecast projection. Therefore, recent studies projecting natural gas prices, even with very high and unconstrained LNG export levels, do not forecast natural gas prices that jeopardize planned petrochemical industry investment.

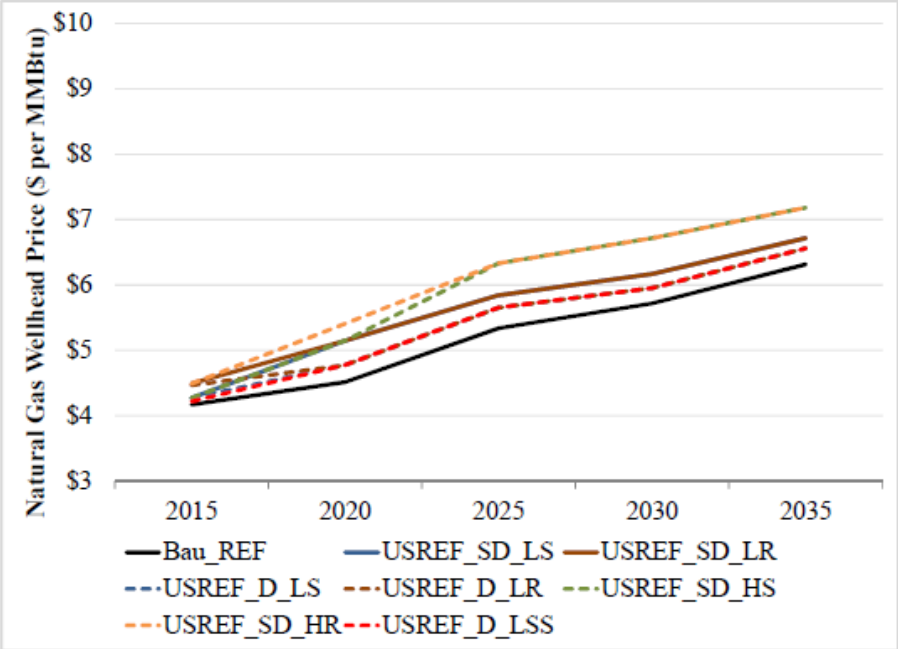
[8] *The Role of Natural Gas in Mitigating Climate Change: Hearing Before the S. Comm. on Energy and Natural Resources*, 111th Cong. (2009).
[9] Brookings Institution, "Liquid Markets and Assessing the Case for U.S. Exports of Liquefied Natural Gas" (2012), at 33.

Brookings' Study-by-study comparison of the Average Price Impact from 2015-2035 of 6 bcf/day of LNG exports (unless otherwise noted)

Study	Average Price without Exports ($/MMBtu)	Average Price with Exports ($/MMBtu)	Average Price Increase (%)
EIA*	$5.28	$5.78	9%
Deloitte	$7.09	$7.21	2%
Navigant (2010)** (2 bcf/day of exports)	$4.75	$5.10	7%
Navigant (2012)***	$5.67	$6.01	6%
ICF International***	$5.81	$6.45	11%

* Price impact figure for EIA study reflects the reference case, low-slow export scenario.
** The Navigant study did not analyze exports of 6 bcf/day.
*** Navigant (2010 and 2012) and ICF International studies are based on Henry Hub price.
Source: EIA, Deloitte, Navigant, ICF Internationa l.

NERA Wellhead Natural Gas Price for Core Scenarios[10]



[10] NERA, at 50.

II. Positive Benefits of LNG Exports to the Public Outweigh Potential Negative Impacts.

A. LNG Exports Will Drive Employment Gains.

LNG exports will create jobs in the oil and natural gas industry, as well as the industries supplying the oil and natural gas sector with materials, equipment, and labor. These jobs would be created by the activities associated with the construction and maintenance of liquefaction facilities and increased natural gas production that would be required to support export markets.

Virtually all studies concur that natural gas production will increase to support export volumes. The NERA study finds that in all three baseline scenarios, natural gas production increases.[11] The EIA has estimated that 60 to 70 percent of LNG exports will be from increased production, with about 75 percent of the increased production coming from shale gas.[12] The production of additional unconventional natural gas will support the creation of many new jobs as highlighted by the series of studies recently released by IHS. For example, an IHS report estimated that in 2012, 36 Bcfd of unconventional natural gas production already supports over 900,000 jobs.[13]

A preliminary report by ICF International that modeled the impacts of LNG exports on the macro economy finds that there is a net gain in overall employment with LNG exports and that the jobs impact are larger the greater the export volumes.[14] For example, in the mid-export case, where LNG export volumes reach about 8 Bcfd by 2035, approximately 213,000 jobs are created every year on average for the 2015 to 2035 period.

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[11] NERA, at 51-52.
[12] Energy Information Administration, "Effects of Increased Natural Gas Exports on Domestic Energy Markets," Report prepared for the Office of Fossil Energy, Department of Energy (Jan. 2012), at 6.
[13] IHS, "America's New Energy Future: The Unconventional Oil and Gas Revolution and the U.S. Economy, Volume 1: National Economic Contributions" (Oct. 2012).
[14] ICF International, "The Impacts of U.S. LNG Exports," PowerPoint Presentation (Feb. 22, 2013).

The preliminary report by ICF International shows that even in the manufacturing sector there is a net increase in jobs because potential losses are offset by gains related to building and supplying LNG and olefin plants with equipment, building and supplying of materials and equipment for oil and gas production and processing, and general economic growth. According to the preliminary ICF International report, in the mid-export case, where LNG export volumes reach about 8 bcfd by 2035, manufacturing job growth averaged 24,000 per year for the 2015 to 2035 period.

Other studies that have analyzed the employment impact of increased LNG exports conclude that the gains in jobs are greater than the losses. For example, in summarizing the employment of LNG exports, Levi concludes "The bottom line … is robust: job gains in directly affected markets are highly likely to be greater than job losses in markets hurt by higher natural gas prices."[15] In addition, Levi noted that "Most jobs supported by exports will be in gas production and in its supplies – including in energy intensive areas like steel and cement. My study estimates that those jobs will be roughly an order of magnitude larger than the jobs lost due to higher natural gas prices."[16]

Many of these job gains will be in the oil and gas industry exploration and production sector. According to PriceWaterhouseCoopers, total employment in the oil and gas industry was more than 2.5 million jobs in 2011.[17] In the upstream sector alone, the oil and gas industry employed more than 1.1 million people. This is in stark contrast to the claim made by Dow Chemical Company that total employment in the oil and gas industry was 171,000 in 2011.

[15] Levi, M., "A Strategy for U.S. Natural Gas Exports," The Hamilton Project Discussion Paper 2012-0 (June 2012), at 15.
[16] *See* http://blogs.cfr.org/levi/2012/07/20/rebutting-the-ieca-attack-on-my-natural-gas-exports-study/.
[17] PriceWaterhouseCoopers, "Economic Impacts of the Oil and Natural Gas Industry on the US Economy in 2011" (Dec. 19, 2012).

The NERA report "does not address questions of how rapidly the economy will recover from the recession and generally assumes that aggregate unemployment rates remain the same in all cases."[18] Thus, the NERA study does not capture the increased employment that is likely to come from investment in LNG exporting facilities and additional upstream gas production that could help the U.S. reach full employment faster than without exports.

B. The Chemical Industry Will Directly Benefit from Increased Ethane and Other NGL Production

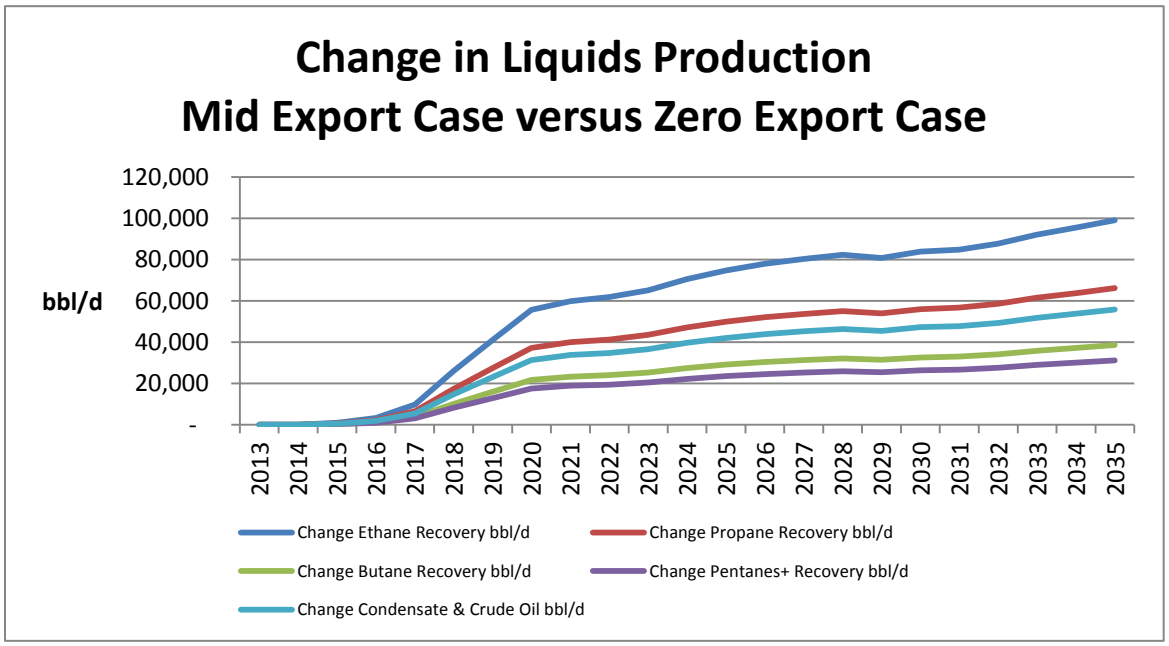
While Dow Chemical Company asserts that LNG exports will hurt the chemical industry, it neglects to mention a major benefit to its industry from LNG exports: increased ethane and other NGL production. This is an important omission since incremental LNG exports are likely to increase the supply of ethane and other associated NGLs. The production of ethane, "which comprises approximately half of all NGLs"[19], is projected to benefit the most because it is highly likely that the majority of ethane will be stripped out of natural gas prior to export and sold in the domestic market since "there are strict limits in quality provisions of pipeline tariffs on how much ethane can be left in the natural gas stream."[20] NGLs (including ethane) are generally removed from natural gas to reduce the gas stream's calorific value not only to meet U.S. pipeline specifications but also to avoid excess liquids that may condense and cause problems in transmission. The recovered NGLs are then processed into their saleable hydrocarbon components – most notably ethane. Thus, the emergence of an LNG export market should not only stimulate more ethane production that is associated with increased natural gas production, but should also result in a greater abundance of domestic ethane supply than would occur in the

[18] *See* NERA, at 5-6.
[19] National Petroleum Council, "Prudent Development: Realizing the Potential of North America's Abundant Natural Gas and Oil Resources" (Sept. 2011), at 315.
[20] *Id*.

absence of an LNG export market. As observed by the American Chemistry Council, ethane is difficult to transport, and "it is unlikely that the majority of excess ethane supply would be exported out of the United States. As a result, it is also reasonable to assume that the additional ethane supply will be consumed domestically by the petrochemical sector to produce ethylene."[21]

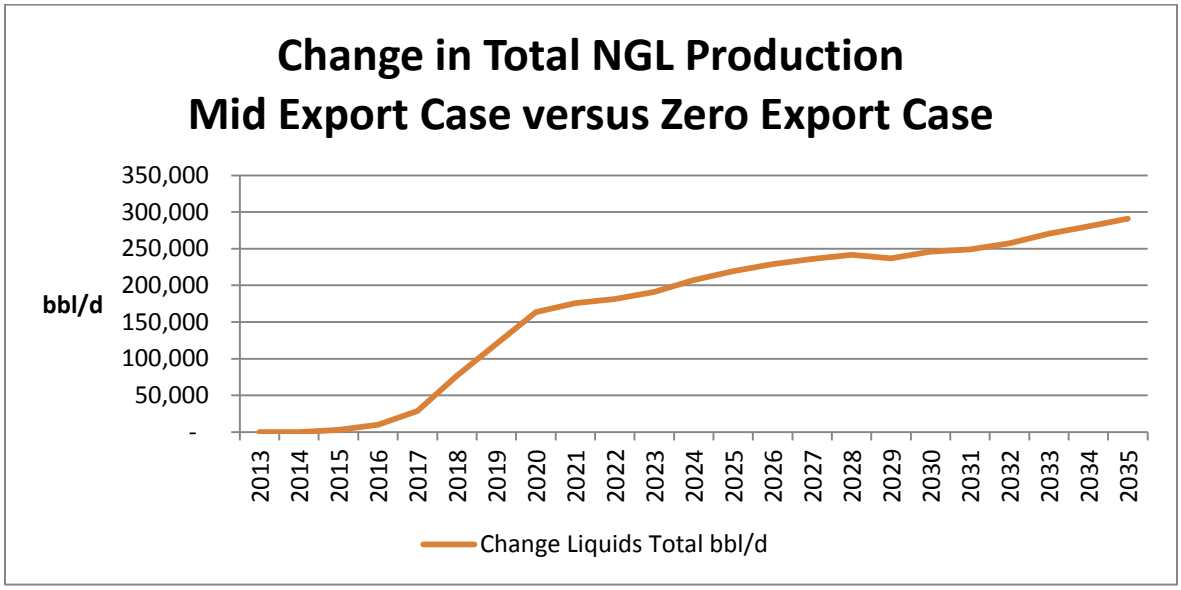
According to a preliminary report by ICF International, increasing LNG exports to approximately 8 bcfd by 2035 from a case with no LNG exports will cause more ethane to be produced so that by 2035, approximately 100,000 bbl/d of additional ethane would be available for domestic consumption.[22] In 2011, about 338 million barrels or 926,000 bbl/d of ethane was produced.[23] Other NGLs would experience growth as well so that by 2035, approximately 300,000 bbl/d of additional NGLs would be produced. See Figs. 3 and 4.

Fig. 3.



[21] American Chemistry Council, "Shale Gas and New Petrochemicals Investment: Benefits for the Economy, Jobs, and US Manufacturing" (March 2011), at 7.
[22] *Id.*
[23] http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=METFPUS1&f=A

Fig. 4.



The National Petroleum Council in 2011 estimated that to accommodate increasing levels of ethane production related to the growth in natural gas production, increased investment by the chemical industry would be required. A survey of public announcements by ICF International indicates that by the 2017 to 2020 time frame, approximately 12 new ethylene plants could be built that would have the capacity to consume at least 767,000 bbls/d of ethane. Whether all of these plants actually get built is an open question. Similar to LNG export facilities that are awaiting permit approvals from the DOE, first mover advantage in this market may limit the total number of new ethylene plants that actually get built from this planned list. The American Chemistry Council recently estimated that if ethane supply increased by 25 percent, this would result in $16 billion in capital investment by the chemical industry and generate 17,000 new jobs in the U.S. chemical industry and 395,000 additional jobs outside the chemical industry and increase U.S. economic output by $132 billion.[24]

[24] *See supra* note 21.

An added benefit of increased ethane production is that it would give North American chemical producers a competitive advantage over their international counterparts. North American and Middle Eastern manufacturers of ethylene use mostly ethane, while Asian and European petrochemical manufacturers use oil-based naphtha as feedstock. Since naphtha prices are correlated to oil prices while ethane prices are correlated to natural gas prices, the combination of increased NGL production because of increased natural gas production to support export markets and projected divergence between oil and natural gas prices will give North American petrochemical manufacturers a competitive edge over their Asian and European counterparts.[25]

C. Higher gross calorific value natural gas requirements in LNG consuming markets would not force U.S. producers to limit ethane extraction

Opponents of LNG exports have argued that since some LNG importing countries, such as Japan, require "rich" natural gas with a relatively higher Btu content, U.S. LNG exporters will also export NGLs, such as ethane, along with U.S. "lean" natural gas supplies for LNG destined for these markets. Consequently, NGL availability will be reduced for domestic consumption. As stated above, the majority of the NGLs need to be removed to meet U.S. pipeline quality specifications before reaching the LNG export terminal. Therefore, for markets like Japan that may require "hotter" natural gas than the U.S., there are basically two options: the Japanese importer can accept the lean LNG from the U.S. and make it hotter at the regasification terminal by mixing it with rich gas from other sources; or U.S. LNG exporters can use ethane, propane, butane, or any combination of these NGLs to spike U.S. natural gas before liquefaction.

[25] *See* AEO 2013ER for projections of continued divergence between oil prices and natural gas prices.

Since NGLs in the U.S. have their own markets, the choice to add NGLs to LNG will depend upon its availability and upon the relative prices of ethane, propane, butane, and the heating value their addition would add to LNG. Some proposed export terminals, such as those on the U.S. East Coast, may not have readily available source of NGLs. On the importer's side, if higher Btu gas is required to meet quality specifications, it may be more economical to blend lean LNG with higher Btu LNG supplies rather than go through the expense of purchasing ethane at the prevailing prices at the LNG liquefaction terminal. A recent announcement by Tokyo Electric Power Company (TEPCO) to enhance and overhaul their regasification infrastructure to accept both "lean" and "rich" LNG from multiple sources indicates the direction that Japan may be heading.[26]

D. A Price Link to Oil in LNG Consuming Markets Is Not a Threat to U.S. Markets

Critics of LNG exports have argued that increasing U.S. LNG exports to markets that have traditionally depended upon oil-linked LNG contracts will cause U.S. natural gas prices to rise to levels associated with significantly higher oil prices. However, this view demonstrates a clear lack of understanding of current LNG markets on a global scale.

First, the NERA study specifically addressed this issue and concluded that "the global market limits how high U.S. natural gas prices can rise under pressure of LNG exports because importers will not purchase U.S. exports if U.S. wellhead price rises above the cost of competing supplies. In particular, the U.S. natural gas price does not become linked to oil prices in any of the cases examined."[27]

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[26] *See* http://www.icis.com/heren/articles/2013/02/07/9638766/japans-tepco-partners-with-mitsui-and-mitsubishi-for-us.html

[27] NERA, at 2.

Second, according to many studies, the international market is already exerting pressures to begin forcing a de-link from oil prices in the natural gas market. For example, Medlock observes that "this has presented consumers in Europe with an alternative to Russian and North African pipeline supplies, and it is exerting pressure on the status quo of indexing gas sales to the price of petroleum products. In fact, Russia has already accepted lower prices for its natural gas and is even allowing a portion of its sales in Europe to be indexed to spot natural gas markets, or regional market hubs, rather than oil prices. This change in pricing terms signals a major paradigm shift in Europe, and could be the harbinger that oil-indexation will eventually become a thing of the past. In fact, as natural gas becomes an increasingly fungible commodity, which would be the case as the volume of global natural gas trade increases, the paradigm of oil indexation will come under increasing pressure. This is an important factor when considering the current profit margin available to potential LNG exports."[28] This observation vitiates Dow arguments that U.S. LNG exports would not respond to and be constrained by international market signals.

Similarly, Deloitte has observed that, "U.S. LNG exports could hasten the transition away from oil price indexation of gas supply contracts. Decoupling from oil-indexed prices is already occurring in some European markets and might happen in Asian markets, especially with the projected growth in Australian LNG. If Asian markets decouple from oil-indexed prices, their prices could drop sharply over the next several years."[29]

Deloitte also points out that, "There is widespread expectation that European and possibly Asian markets will eventually delink from oil-indexed prices, but the real question is

[28] Medlock, K.B. III, "US LNG Exports: truth and Consequence," James A. Baker III Institute for Public Policy (Aug. 10, 2012), at 7.
[29] Deloitte, "Exporting the American Renaissance Global Impacts of LNG Exports from the United States: A Report by the Deloitte Center for Energy Solutions and Deloitte MarketPoint LLC" (Jan. 2013), at 2.

how quickly this transition will occur. U.S. LNG exports might hasten this transition by applying competitive pressures on all gas suppliers. The timing of transition will depend partially on how gas exporters price their supplies to markets, which is difficult to gauge."[30]

E. The Global Competition for the Construction of LNG Facilities and the Export of Natural Gas Will Effectively Serve to Prevent "Unfettered" or "Unlimited" Exports

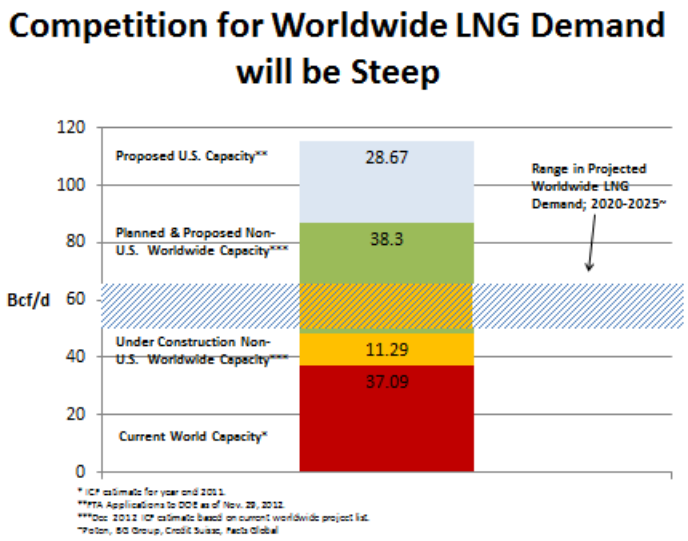
The U.S. has the opportunity to continue to demonstrate its strength as a global energy leader by participating in the global LNG export market. Flexibility to export product in times of market imbalance would effectively allow the industry to operate efficiently and maintain production levels, thereby enhancing overall energy security. Furthermore, approval of LNG exports would allow the U.S. to provide support to strategic allies such as Japan.

However, DOE must move judiciously and without delay because U.S. projects are currently competing against international projects and there is a limited amount of global demand for LNG. According to ICF International, the current world LNG liquefaction capacity is estimated to be approximately 37 Bcfd.[31] A survey of under construction, planned, and proposed facilities around the world indicates approximately 49.6 Bcfd of new liquefaction capacity could come online by 2025 outside of the U.S.[32] Approximately 11.3 bcfd of capacity is currently under construction in Australia, Indonesia, Algeria and Angola. Add to that the fact that approximately 28.7 Bcfd of U.S. liquefaction capacity could come online if all FTA applications in the U.S. Department of Energy Docket as of November 21, 2012, become operational and you get a potential total world LNG capacity of 115 Bcfd. The expected worldwide demand for LNG falls far short of that potential supply. Various projections show

[30] *Id.* at 8.
[31] ICF estimate for year end 2011 figure.
[32] ICF estimate as of Dec. 2012 based on current project list.

that expected world demand for LNG will be in the range of approximately 50 Bcfd to 65 Bcfd by the year 2025.[33] A significant share of the proposed liquefaction capacity may not be built (*i.e.*, of the 45 proposed LNG import facilities for construction in the United States, only 7 were actually built). It is thus imperative that DOE move without delay to approve the pending applications before it, so that the proposed U.S. projects can effectively compete against projects around the world for the incremental growth in worldwide LNG export capacity. There will not be, as some opponents have claimed, "unfettered" or "unlimited" exports of natural gas from the United States. LNG exports from the United States will be limited by the global market.

Fig. 6.



F. Increased LNG exports will not increase natural gas price volatility

Increased LNG exports will not increase natural gas price volatility. In fact, many factors associated with increasing deliverability and making exports possible in recent years will work to decrease price volatility. Natural gas price volatility is a short run phenomenon where supply

[33] Poten, BG Group, Credit Suisse, Facts Global.

constraints or unexpected surges in demand cause temporary disequilibrium in natural gas markets causing prices to spike. Recent developments in natural gas markets, such as the tremendous increase in the size of the resource base, improvements in deliverability through the building of storage and pipeline infrastructure, and the ability to rapidly increase production from shale resources all work to reduce price volatility. As we have noted above, LNG exports will be relatively small compared to size of U.S. supply. The contracted volumes will be well known in advance and so the market will not be surprised by unexpected surges in demand. Moreover, since all of the facilities and all of the liquefaction trains at each facility will be built in sequence, a market buffer is created where supply grows incrementally and supply shocks are not created in the market. For example, FERC is planning to approve the individual trains incrementally at each proposed export facility, and the nature of the approval process for trains will help ensure that the overall impact is limited. The high cost of LNG transportation means that regional gas markets (European versus North American versus Asian) will only be partially connected. Regional prices will be determined by the regional supply demand balance and volatility in one regional market will not flow to another regional market. During peak periods, the market has additional flexibility to contain exports and keep the supplies in the United States. Therefore, developing the supply capacity to export, in fact, has a greater potential to ***decrease*** volatility.

G. The statement that "Industrial manufacturing creates $8 of value in the larger economy for every $1 of natural gas consumed"[34] is misleading

Even though this statement by Dow Chemical Company may not be technically false, it is highly misleading. It is more appropriate to use a total "value added" multiplier that calculates

[34] *Opportunities and Challenges for Natural Gas: Hearing Before the S. Comm. on Energy and Natural Resources*, 113th Cong. 3 (2013) (statement of Mr. Andrew Liveris, President and CEO, The Dow Chemical Company).

the GDP impact of an additional per unit sales of the industry.[35] "Multipliers" based on supplier inputs to an industry are mostly an indication of the size of the input in the particular industry's supply chain. Ironically, the smaller or less significant an input the higher the calculated "multiplier". According to DOW (Dow comments on NERA report page 28), the manufacturing sector consumes one tenth the amount of coal relative to natural gas on a barrels of oil equivalent basis. If the above Dow statement is correct, this would imply that the "industrial manufacturing creates $80 of value in the larger economy for every $1 of coal consumed". Which may be roughly correct, but it does not necessarily provide any useful information.

If the statement is an attempt to imply that $1 of gas consumed in another sector of the economy or exported as LNG causes a loss of $8 to the economy, this implication is clearly false. Natural gas supply and exports is not a zero sum game. The U.S. natural resource base is vast. If the U.S. market demands more quantities of natural gas whether for domestic consumption or LNG exports, U.S. production will increase to meet the demand.

H. The Multiplier for the Manufacturing Sector is Similar to the Multiplier for Other Sectors

The manufacturing sector is critical to a healthy U.S. economy. However, the following statement inflates the multiplier effect for the manufacturing sector: "The manufacturing sector contributes a higher value added multiplier to the economy than any other sector or any other use of natural gas."[36] If the above statement is referring to a "total GDP value added multiplier",

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[35] MIG, The controlled vocabulary of IMPLAN specific terms, Definition "Multipliers", "Total production requirements within the Study Area for every unit of production sold to Final Demand. Total production will vary depending on whether Induced Effects are included and the method of inclusion. Multipliers may be constructed for output, employment, and every component of Value Added." http://implan.com/V4/index.php?option=com_glossary&task=list&glossid=13&letter=M&Itemid=57

[36] *Opportunities and Challenges for Natural Gas: Hearing Before the S. Comm. on Energy and Natural Resources*, 113th Cong. 3 (2013) (statement of Mr. Andrew Liveris), *available at* http://www.energy.senate.gov/public/index.cfm/files/serve?File_id=100c46f6-fac8-4b9f-85cf-bd5c6683992e at 3.

contribution to GDP per unit of sales, this statement is incorrect. According to the 2010 IMPLAN[37] multipliers database, for every $1 of output or sales in the manufacturing sector, GDP is increased by a range of 74 cents to $1.63 depending on the manufacturing sector. Manufacturing is an important contributor to the U.S. economy, but its impact per unit of sales is essentially similar to other sectors of the economy. A multiplier of less than 1.0 can occur in industries where parts of the supply chain extend outside of the United States. For example, secondary smelting and alloying of aluminum has a multiplier of 0.74. Some high technology manufacturing industries such as "Propulsion units and parts for space vehicles and guided missiles manufacturing" have multipliers as high as 1.6. The U.S. petrochemical manufacturing has a multiplier of 0.96, so for every $1 of additional sales in the petrochemical industry, U.S. GDP is increased by an estimated 96 cents.

I. LNG Exports Will Benefit the Large Share of Americans Who Invest in Oil and Natural Gas

For years, opponents of the oil and natural gas industry have falsely suggested that oil and natural gas companies are owned by a small group of insiders. Additionally, opponents suggest that any benefits from investment in the industry would accrue only to those within that small group of individual investors or corporate insiders. In reality, studies have consistently shown that ownership of industry shares is broadly middle class. A 2011 study by Sonecon, LLC, found that "nearly half of the shares of U.S. based oil and natural gas companies are held by public and private pension and retirement plans, including 401(k)s and IRAs."[38] Not only does this show that ownership is not primarily based in the hands of a small cadre of wealthy

[37] IMPLAN (IMpacts for PLANing), Version 3.0.17.2, Minnesota IMPLAN Group Inc., 2010 Database.
[38] Robert J. Shapiro and Nam D. Pham, "Who Owns America's Oil and Natural Gas Companies," October 2011. available at http://www.sonecon.com/docs/studies/Who_Owns_America's_Oil_and_Natural_Gas_Companies-Shapiro-Pham.pdf

insiders, but that nearly half of the shares are owned by retired Americans who may be dependent solely on their retirement funds or pensions for income.

Using the information from the Sonecon study and the 2011 American Community Survey performed by the U.S. Census Bureau, it is easy to quantify just how widespread ownership of the oil and natural gas industry is in America. According to the data, 21 percent of oil and natural gas shares are held in mutual funds, and 45 percent of households own mutual funds; 18 percent of oil and natural gas shares are held through IRAs, and 42 percent of households own IRAs; 31 percent of oil and natural gas shares are owned by public or private pension plans, including 401(k)s – assets that are managed on behalf of 52 percent of households.[39]

Furthermore, a second Sonecon study showed that in addition to being widely held, the oil and natural gas stock performance has provided strong returns for teachers, firefighters, police officers, and other public pension retirees. In public pension funds, oil and natural gas stocks have far outperformed other public pension holdings, supporting the pension funds and enabling payment of those pensions to their beneficiaries.[40] A third study found similar results when analyzing college and university endowment funds. The study found that oil and natural gas stocks were among the highest performers in those funds – helping provide quality education for students.[41] It is clear that through widespread ownership that is broadly middle-class, investment benefits from the oil and natural gas industry accrue to all Americans. Finally, as the

[39] *Id.*
[40] Robert J. Shapiro and Nam D. Pham, "The Financial Contribution of Oil and Natural Gas Company Investments to Major Public Pension Plans in Seventeen States, Fiscal Years 2005-2009," June 2011. Available at http://www.api.org/news-and-media/news/newsitems/2011/jun-2011/~/media/Files/News/2011/Report_Public_Pension_Funds_in_17states.ashx
[41] Robert J. Shapiro and Nam D. Pham, "The Financial Returns from Oil and Natural Gas Company Stocks Held by American College and University Endowments," December 2012. Available at http://www.api.org/news-and-media/news/newsitems/2013/jan-2013/~/media/Files/News/2012/12-December/API-report-industry-returns-for-college-university-endowments.pdf

Sonecon study notes, broad ownership, like that found in the oil and natural gas industry, "promotes social progress, by enabling large numbers of people to benefit from the strong returns generated in an efficient, productive and growing economy."[42]

J. The Nation as a Whole Will Realize Positive Benefits

There is abroad consensus among all of the studies in terms of GDP impact of increased LNG exports.[43] The NERA study found that: "Across all scenarios, the U.S. was projected to gain net economic benefits from allowing LNG exports. Moreover, for every one of the market scenarios examined, net economic benefits increased as the level of LNG exports increased. In particular, scenarios with unlimited exports always had higher net economic benefits than corresponding cases with limited exports."[44] The NERA study concludes that U.S. gross domestic product (GDP) would increase as a result of LNG exports, rising by $5 billion to $20 billion under the reference case U.S. resource base cases with LNG exports. Based on this finding, NERA concluded that "This is exactly the outcome that economic theory describes when barriers to trade are removed."[45] The NERA study concludes that "…the effects of higher prices

[42] Shapiro and Pham, October 2011.

[43] One study that was recently published by Purdue University, however, found that increasing LNG exports had a small negative impact on the economy. Tyner, W. E., and Kemal Sarica, " Comparison of Analysis of Natural Gas Export Impacts from Studies Done by NERA Economic Consultants and Purdue University," January 14, 2013. This is the only study published to date that finds a net negative result. A close examination of the Purdue study, however, indicates that the conclusions of the study are invalid and the main results are driven largely by initial assumptions. The Purdue study asserts that, "Any time trade policy questions are raised, it is often not so much about net gains as about winners and losers…Perhaps a more important question is should the nation accept the economic losses in many key economic sectors to provide wealth transfers to natural gas resource owners?" *Id.* This incorrect view clearly assumes a zero sum game *a priori* and the potential for both LNG exports and a growing domestic natural gas market are not within the study's production possibilities frontier, belying the nation's vast natural gas resources and the findings of all other studies to date. With LNG exports, the Purdue study finds that in 2035, the domestic share for natural gas as a percent of total energy consumed falls from 25 to 22 percent. Such a large change in natural gas consumption in 2035 as a result of moderate levels of LNG exports volumes indicates that the model used in the Purdue study is not adequately capturing and projecting changes in natural gas supply. Since detailed documentation in the Purdue study is not provided, it is difficult to make an accurate assessment.

[44] *Id.*; NERA, at 1.

[45] *Id.*

do not offset the positive impacts from wealth transfers and result in higher GDP over the model horizon in all scenarios."[46]

The preliminary ICF International report reaches the same conclusion as the NERA report. That is, net GDP impacts of increased LNG exports are positive and that higher the volume of LNG exports, the greater the GDP impacts. The draft ICF report found that in the middle export case, where LNG exports reach approximately 8 Bcfd by 2035, GDP is $57.4 billion higher than the zero export case in 2035 and for the entire 2015-2035 period, GDP is $723 billion higher than the zero export case.

III. Increased Production is Grounded in a Framework of Safe and Responsible Operations, Combined with Effective State Regulation.

Certain commenters who have suggested that "gas production will come with significant environmental costs"[47] fail to recognize the protections in place through proven technologies, the robust regulatory framework and the sound practices in place to ensure safe and environmentally responsible operations. In fact, the DOE recognized both hydraulic fracturing and horizontal drilling as advanced technologies that provide environmental benefits in a 1999 report entitled "Environmental Benefits of Advanced Oil and Gas Production Technology." According to DOE, hydraulic fracturing was first introduced in 1947 and "quickly became the most commonly used technique to stimulate oil and gas wells…. By 1988, fracturing had already been applied nearly a million times. Each year, approximately 25,000 gas and oil wells are hydraulically fractured."[48] Since the release of that report, hundreds of thousands of additional wells have been hydraulically fractured. The report explains hydraulic fracturing results in optimized

[46] NERA, p. 56.
[47] Sierra Club, Initial Comments to the U.S. Department of Energy on 2012 LNG Export Study (Jan. 24, 2013).
[48] Environmental Benefits of Advanced Oil and Gas Production Technology, Hydraulic Fracturing Fact Sheet, p. 8, U.S. Department of Energy,.

recovery of oil and gas resources, protection of groundwater resources, and less waste requiring disposal, while horizontal drilling results in less impact in environmentally sensitive areas, fewer wells needed to achieve desired level of reserve additions, less produced water and less drilling waste. Beyond the application of proven technologies, there are robust regulations and sound standards and best practices in place for safe and environmentally responsible operations.

A. Robust Regulatory Framework for Oil and Gas Operations.

A comprehensive set of federal and state laws and regulations address nearly every aspect of oil and gas exploration and production, including horizontal drilling and hydraulic fracturing. These regulations span the "life cycle" of the process, including well design, well construction, water sourcing, produced fluid handling, waste management and disposal, transportation pipelines, air emissions, surface impacts, health, safety, surface location, spacing, and operations. In short, hydraulic fracturing is only one component of an entire production process that is rigorously regulated.

In addition to the considerable state oil and gas regulations, operators also comply with numerous federal regulations covering air emissions, produced water (*i.e.*, formation and flowback process water) disposal, storm water management, wildlife/endangered species impacts, etc., on federal, state and privately owned land. On federally owned land, the Bureau of Land Management and the U.S. Forest Service manage oil and natural gas development activity; however, operators also must comply with the laws of the states in which the federal land is located.

States own the responsibility for their resources and citizens and have created robust, effective regulations in place to manage energy development. Although additional federal

regulations would be redundant and unnecessary, at least ten federal agencies are currently examining various aspects of hydraulic fracturing.

State regulation of oil and gas activities predates many federal environmental statues and the states remain the primary regulators of unconventional development activities, including the use of horizontal drilling and hydraulic fracturing. However, many federal laws also govern:

- The Clean Water Act (CWA) applies to oil and gas operations. It protects water resources (including wetlands) during well construction as well as throughout drilling, completion, production, and restoration by establishing permitting, surface discharge monitoring and reporting requirements, as well as spill reporting, prevention and control measures. The CWA also established the National Pollution Discharge Elimination System (NPDES), which regulates how companies manage surface water during their operations and applies to a wide variety of operations (including oil and gas). The NPDES also requires permits for any discharges of wastewater, although states have often been assigned the authority to issue those discharge permits by the EPA.
- The Safe Drinking Water Act (SDWA) governs, among other things, the underground injection control (UIC) programs used for the underground disposal of liquid wastes and the reinjection of production waters. Here again, states have the option of establishing "primacy" for injection programs based on the demonstrated effectiveness of state oil and gas UIC programs. There are over 150,000 permitted wastewater disposal wells permitted for oil and gas operations under this program.
- The Clean Air Act (CAA) pertains to many industries, including oil and gas operations. Federal regulations that address emissions include New Source Performance Standards (NSPS) like Standards of Performance for Stationary Compression Ignition

and Spark Ignition Internal Combustion Engines or National Emission Standards for Hazardous Air Pollutants (NESHAPs) like Reciprocating Internal Combustion Engines (RICE). New EPA regulations mandating Reduced Emissions Completions or Green Completions, will further minimize air emissions on a consistent basis.

- The National Environmental Policy Act (NEPA) requires environmental analyses to be conducted before oil and gas operations can take place on federal surfaces or minerals. The Emergency Planning and Community Right to Know Act (EPCRA) applies to hazardous substance reporting from oil and gas activities and requires operators to provide all release and chemical hazard information to emergency responders.
- The Occupational Safety and Health Act (OSHA) governs worker safety and operations at all well sites.
- The Endangered Species Act (ESA) requires an environmental analysis similar to that of NEPA wherever a protected species might occur. This requirement applies equally to public and private lands.

B. Industry Has a Commitment to Excellence in Operations.

Furthermore, the industry's commitment to excellence and continuous improvement in hydraulic fracturing operations is evident in its work to develop best practices for oil and gas operations. More than 65 of API's standards and recommended practices for completion of wells apply to hydraulic fracturing operations. And over the past several years, API has developed three additional new guidance documents uniquely tailored to hydraulic fracturing in order to offer additional guidance to operators. The API standards process, its work applicable to hydraulic fracturing operations, and recent outreach efforts are described below.

1. API's Standards Program.

API's standards program has been a recognized leader in the development and dissemination of industry standards since 1924. New API standards, certifications, and practices are developed through a broad-based, formal consensus process that allows companies, regulators, organizations, and other stakeholders to participate in an interactive dialogue, addressing both cutting-edge issues and regulatory needs.

In part because of this openness and consistency, API's standards are the most widely cited in the petroleum and natural gas industries. More than 100 standards have been cited 270 times in U.S. federal regulations and 184 standards have been cited more than 3,300 times in U.S. state regulations. Without specific codification in state or federal legislation, the standards are not mandatory; however, they are widely respected indicators of strong operations and therefore routinely mandated by companies, service providers, and their insurers even where compliance is not legally required.

API's standards are evergreen and reviewed a minimum of once every five years. Announcements of upcoming standards work programs such as formalizing the current hydraulic fracturing guidance are made in the U.S. Federal Register[49] through an agreement with the U.S. National Institute of Standards and Technology, as well as API's own Web site to encourage diverse participation. API's process is open and API corporate membership is not a requirement to serve on API's consensus standards committees.

[49] *See* http://www.gpo.gov/fdsys/pkg/FR-2013-02-21/pdf/2013-03988.pdf.

2. Work Applicable to Hydraulic Fracturing.

The industry understands that the integrity of wells and effective wastewater management is central to producing natural gas safely and responsibly. API's existing body of rigorous, internationally recognized good practice supplements the extensive federal, state, and local regulation governing virtually every aspect of resource extraction. More than 65 of API's existing standards and recommended practices for completion of wells apply to hydraulic fracturing operations. They address topics ranging from planning and design of wells to post-production reclamation.

a. Hydraulic Fracturing Operations—Well Construction and Integrity Guidelines.

API HF1 (currently undergoing revision as RP 100-1) addresses casing, pressure testing, and cement job evaluation (including cement bond logs on a selective basis). Safe and responsible development begins with strong wells, these standards and practices include, but are not limited to, pressure testing of cemented casing, cement bond logging, and inspections beyond those required by local permitting procedures. API HF1 incorporates existing API guidance such as API Specification 5CT (9th Edition, July 2011, pertaining to the design, manufacturing, testing, and transportation of casing and tubing) and API Standard 65 Part 2 Isolating Potential Flow Zones During Well Construction (2nd Edition, December 2010, covering best practices to isolate potential flow of hydrocarbons and other fluids throughout the hydraulic fracturing process). API HF1 speaks extensively about the variables operators should consider in planning and completing wells. These include local considerations (e.g., regional geology, pressure differentials, and temperature variations that affect cement slurry composition), as well as advances in technology.

It is important to note that constantly evolving data collection, analysis, and monitoring techniques offer operators access to an ever-improving array of real-time information about well activities. API HF1 emphasizes that wholly isolated, solidly constructed wells and conscientious monitoring are essential elements to responsible development.

b. Water Management Associated with Hydraulic Fracturing.

API HF2 (currently under revision as RP 100-2) identifies practices used to minimize the environmental and societal impacts from the acquisition, use, management, treatment, and disposal of water and other fluids used in hydraulic fracturing. This document focuses primarily on issues associated with hydraulic fracturing in deep shale gas development; however, its guidance also extends to many other applications of hydraulic fracturing technology, including shale oil development. In an attempt to address the development-related issues stemming from the increasingly urban nature of shale gas development and competing uses, API HF2 recommends that water quality be evaluated on a regional level throughout the planning and completion process. It also acknowledges opportunities for creative water use strategies (e.g., companies that have used treatment facilities to make water from non-potable aquifers appropriate for fracturing) and the continuously evolving possibilities for greener fracturing additives (e.g., stimulants like propane or ultraviolet antibacterial agents). API HF2 strongly encourages companies to conduct baseline water quality testing, and to continue periodic water quality testing throughout the fracturing process. Careful water management in fracturing can often help companies reduce costs, while protecting the environment. For example, on-site storage facilities and pipelines can help minimize truck traffic, thereby lowering the greenhouse gas footprint of the extraction process. Similarly, treating and recycling water for future fracturing projects can help eliminate community concerns about releasing treated produced water for public consumption while also reducing operator costs. Disposal options—whether

through underground well injection or treatment at specially accredited facilities—vary according to region; however, the overarching theme of this document is that responsible operators are careful planners who consider the regional, state, and local environmental implications of every decision in the water use lifecycle.

c. Practices for Mitigating Surface Impacts Associated with Hydraulic Fracturing.

API HF3 (currently under revision as RP 100-2) summarizes the strategies to protect surface water, soil, wildlife, other surface ecosystems, and nearby communities. One of the great benefits of hydraulic fracturing is that a multi-well production site the size of a two-car garage regularly contains as many as five wells that can produce gas for up to 40 years. This is one of the most compact footprints of any large-scale energy source. That being said, however, careful planning for on-site storage and stormwater management, as well as continuous site inspections of both equipment and liners can minimize the risk of any inadvertent surface discharge. Baseline water samples and advanced disclosure about the additives used in fracturing fluids can also help increase community comfort with operational activities. HF3 draws heavily on API Recommended Practice 51R.

d. General Environmental Considerations.

API RP 51R – Environmental Protection for Onshore Oil® and Gas Operations and Leases, covers diverse operational areas, including the design and construction of access roads, the placement of well locations, and practices for restoring sites after production has ceased. Notably, Annex A of Recommended Practice 51R focuses on "Good Neighbor Guidance" and encourages operators to be proactive in protecting public safety and the environment, while respecting the property rights of all neighbors (e.g., the landowner, the surface user, and adjoining landowners) and communicating effectively with community stakeholders.

These documents are available to pubic online at www.api.org/oil-and-natural-gasoverview/exploration-and-production/hydraulic-fracturing.aspx and focus on some of the most pressing water management issues in hydraulic fracturing (e.g., baseline water quality sampling, and regional water planning).

Additionally, they are currently being expanded thanks to additional input from industry and other stakeholders (including regulators) as they progress through API's open, ANSI-accredited standards review process.

3. Stakeholder Outreach.

The task of improving the industry's ability to respond to public concerns and to address issues important to communities and regions where shale gas development is occurring continues through efforts at the state, county and local levels. Toward that end, API is willing to work with local and regional governments to identify and publicize recommended practices for community engagement toward prevention, mitigation and remediation of surface impacts and effects upon communities from exploration and production activities. API has already engaged in outreach to various county governments to address specific issues brought to the attention of API by the county representatives.

In October 2011, API and its sister trade associations held the first in a series of technical workshops specifically devoted to analyzing and promoting industry guidance documents on hydraulic fracturing operations. The workshop was held in Pittsburgh and was open to industry members, community stakeholders, environmentalists, state and federal regulators, and journalists. Registration fees were reduced for nonprofits and community members to encourage participation. More than 250 individuals attended and contributed to active discussions throughout the workshop.

Based on the success of this model, API offered over 15 additional regional one-day workshops throughout 2012. These workshops offered a valuable opportunity to understand and address regional concerns, as well as educate regulators and the public about the considerable safety measures accompanying hydraulic fracturing operations.

These workshops were only one element of the ongoing dialogue that industry has with regulators about continually evolving good practices and effective regulations. Discussions occur regularly on a state-specific basis, as well as through organizations like the Interstate Oil and Gas Compact Commission (IOGCC) and the State Review of Oil and Natural Gas Environmental Regulations (STRONGER). STRONGER is an organization that specializes in recommending improvements to state regulatory frameworks.

At a variety of meetings, industry has shared existing good practices with state regulators, and discussed where improvements to state regulations could effectively provide additional safeguards for local communities and their water sources. These briefings have occurred in Ohio, Pennsylvania, West Virginia, and Michigan and will continue in these and other states, as long as regulators want to learn more about industry practices.

Building on momentum from previous recent efforts, API is also planning to continue outreach to both industry and regulators to foster a dialogue of collaboration and continuous improvement. Industry and government together must meet the challenge of developing our nation's shale gas endowment in a sustainable way over time in ways that protect the environment, respect other uses of lands and waters in the vicinity and that are appropriately tailored to the character and context of the regions in which shale gas development occurs.

With conventional well technology, development of shale energy would have been prohibitively expensive. However, horizontal drilling and hydraulic fracturing not only make

harvesting shale resources commercially viable – they allow it to be done with remarkably decreased surface impacts.

Sound industry best practices, comprehensive state law and regulation, and broad federal protections have resulted in recurrent confirmations that the risks associated operations are effectively managed to minimize any potential impacts to the public and the environment.

IV. Increased Production and Use of Natural Gas Has Led to a Decrease in Carbon Emissions.

The environmental benefits of increased production of natural gas are no more clear that in recent, dramatic declines in carbon-related emissions, which have fallen to mid-1990s levels. William Press, the president of the American Association for the Advancement of Science and a member of the president's Council of Advisors on Science and Technology recently asserted that the climate goals of President Obama can be achieved by "wide-scale" hydraulic fracturing.[50] Press stated that "Rising use of natural gas has already had a major effect. Our carbon emissions have been cut back to their 1994 level…."[51] LNG exports can continue to contribute to this positive trend by providing excess U.S. natural gas to other parts of the world for power generation purposes.

V. DOE Should Remain Focused on Impacts of LNG; the Process Should Not Be Delayed to Address Upstream Impacts that Are Grounded in Strong Operational Frameworks and Not Directly or Indirectly Linked to LNG Export Projects.

API strongly cautions against any further delays, as suggested by various critics, because each potential delay will serve to preclude the opportunity for construction of these important

[50] The Guardian, "Fracking is the only way to achieve Obama climate change goals, says senior scientist"(Feb. 16, 2013).
[51] *Id.*

facilities here in the United States. The focus of the DOE should remain on LNG exports, rather than attenuated activities that have already been considered by state and federal regulators.

As API noted briefly in its Initial Comments, the Natural Gas Act (NGA) creates a rebuttable presumption that a request for authorization to export LNG to non-FTA countries is in the public interest.[52] This is a well-settled principle and is not subject to debate. DOE has confirmed that "in order to overcome the rebuttable presumption favoring export authorizations, opponents of an export license must make an affirmative showing of inconsistency with the public interest."[53] The burden, therefore, is on the party opposing any application to show that the application is *not* consistent with the public interest, not the reverse, as Senator Wyden,[54] the American Iron and Steel Institute,[55] the Delaware Riverkeeper Network,[56] and others have erroneously claimed in their initial comments on the 2012 LNG Export Study. These parties repeatedly try to conflate the legal test that DOE must apply when evaluating LNG exports, asserting that DOE must affirmatively prove that LNG exports are consistent with the public interest. This is simply not the case. Moreover, as was demonstrated in API's Initial Comments and will be further shown in these reply comments, none of the parties that are seeking to limit or ban LNG exports have been able to demonstrate that LNG exports are not consistent with the public interest. DOE should apply the clear directives of the NGA as written in considering and acting on the pending LNG export applications.

[52] 15 U.S.C. § 717b, § 3(a).
[53] *Sabine Pass Liquefaction, LLC*, DOE/FE Order No. 2961, at 28 n.38 (May 20, 2011), citing *Phillips Alaska Natural Gas Corporation and Marathon Oil Company*, 2 FE ¶ 70,317, Order No. 1473, and *Panhandle Producers and Royalty Owners Association* v. *ERA*, 822 F.2d 1105, 1111 (DC Cir. 1987).
[54] Letter from Senator Ron Wyden on NERA Study, to Secretary of Energy Steven Chu, Initial Comments at p. 5 (submitted Jan. 10, 2013).
[55] American Iron and Steel Institute, Initial Comments at p. 4 (submitted Jan. 24, 2013).
[56] Maya van Rossen, Delaware Riverkeeper Network, Initial Comments on behalf of 87 individuals at p. 4 (submitted Jan. 24, 2013).

Regardless, even if DOE were to conduct an affirmative assessment of whether each LNG export proposal is consistent with the public interest, ample evidence was presented to DOE by API and many other interested commenters in the initial comments. In the face of this evidence, opponents cannot meet their burden of proof necessary to overcome the rebuttable presumption set forth in Section 3(a) of the NGA that the proposed LNG exports to non-FTA countries are in the public interest.

A. API's Comments in Response to the Initial Comments Calling for DOE Consideration of Alleged Upstream Environmental Harm.

In their initial comments in response to the 2012 LNG Export Study, several parties including the Sierra Club,[57] the Natural Resources Defense Council (NRDC),[58] the Environmental Working Group (EWG),[59] Cascadia Wildlands,[60] the Delaware Riverkeeper Network,[61] and individual citizens through form letters asserted that if DOE grants the requested authorizations to export LNG to non-FTA countries, such authorizations will induce additional natural gas production, including production from shale formations using hydraulic fracturing, which these commenters allege causes environmental impacts. Most of these initial comments make general assertions without citing any substantial evidence or legal principles to support their positions. Sierra Club, however, argues more specifically that DOE is not fulfilling its obligations under NEPA because (1) its environmental review of a proposed LNG export project under NEPA does not take the alleged upstream environmental impacts into account, and (2) DOE should prepare a Programmatic Environmental Impact Statement (PEIS) to assess the

[57] Sierra Club Environment Law Program, Initial Comments at pp. 26-52 (submitted Jan. 24, 2013).
[58] Natural Resources Defense Council, Initial Comments at p.5 (submitted Jan. 24, 2013) (herein, NRDC Initial Comments).
[59] Environmental Working Group, Initial Comments (submitted Jan. 24, 2013).
[60] Cascadia Wildlands, Initial Comments at pp. 3-5 (submitted Jan. 24, 2013).
[61] Maya van Rossen, Delaware Riverkeeper Network, Initial Comments on behalf of 87 individuals at p. 3 (submitted Jan. 24, 2013).

cumulative impacts of all pending export proposals.[62] As a legal matter, these arguments are incorrect and DOE should reject them as inconsistent with well-established law and policy.

In order to properly respond to the general and more specific assertions contained in numerous initial comments, including the Sierra Club's, about the scope of DOE's legal obligations under NEPA to assess the environmental impacts of granting an LNG export authorization, API must address the legal arguments that underlie these assertions. These arguments are principally contained in the protests that Sierra Club has made in the same LNG export proceedings over the last 18 months in which DOE has lodged the NERA report.[63] API appreciates DOE's directive that reply comments focus on the arguments made in initial comments and respectfully submits that it cannot properly respond to the above-cited arguments made in various commenters' initial comments without referencing the legal arguments that underlie these assertions and which Sierra Club has made in multiple forums and proceedings. The sections that follow demonstrate that these arguments are unsupported by the law, including the law that the Sierra Club itself cites.

B. Under NEPA, DOE is Not Required to Consider the Alleged Upstream Environmental Impacts Because They Are Not Indirect Effects of an Individual DOE Export Authorization.

[62] Sierra Club, Initial Comments at n.9. *See also* Maya van Rossen, Delaware Riverkeeper Network, Initial Comments on behalf of 87 individuals at p. 5 (arguing that DOE's EIS "include shale gas developmental impacts such as drilling, fracking, pipelines, compressor stations, wastewater, water withdrawals, and other associated impacts it will induce, encourage, support and mandate, presently or in the foreseeable future").

[63] *See, e.g.,* Sierra Club's Motion to Intervene, Comment, and Protest, *Gulf LNG Liquefaction Company, LLC,* FE Docket No. 12-101-LNG, at 26 (filed Jan. 4, 2013). Sierra Club also filed a similar protest in each of the following DOE LNG export application dockets: *Cameron LNG, LLC,* FE Docket No. 11-162-LNG; *Cheniere Marketing, LLC,* FE Docket No. 12-97-LNG; *Dominion Cove Point LNG, LP,* FE Docket No. 11-128-LNG; *Freeport LNG Expansion, L.P. and FLNG Liquefaction, LLC,* FE Docket No. 11-161-LNG; *Gulf Coast LNG Export, LLC,* FE Docket No. 12-05-LNG; *Jordan Cove Energy Project, L.P.,* FE Docket No. 12-32-LNG; *LNG Development Company, LLC (d/b/a Oregon LNG),* FE Docket No. 12-77-LNG; *Sabine Pass Liquefaction LLC,* FE Docket No. 10-111-LNG; *Southern LNG Company, L.L.C.,* FE Docket No. 12-100-LNG.

The above noted parties asserted in their initial comments on the 2012 LNG Export Study that DOE must consider "the environmental effects of induced production" in its analysis under NEPA and the NGA when it analyzes applications seeking LNG export authorization because such alleged environmental impacts would be indirect effects of DOE's action.[64] Despite these parties' initial comments and as set forth in greater detail below, NEPA does not require DOE to consider the alleged upstream environmental impacts because these alleged impacts are neither direct nor indirect effects of DOE's proposed action, as those terms are defined in the Council on Environmental Quality's (CEQ) regulations implementing NEPA.[65]

Under NEPA, a federal agency must prepare an EIS if it will engage in a major federal action that significantly affects the quality of the human environment.[66] A "major federal action," as defined in CEQ's regulations, "includ[es] actions with effects that may be major and which are potentially subject to Federal control and responsibility."[67] In turn, "effects" include: "(a) Direct effects, which are caused by the action and occur at the same time and place,"[68] and "(b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable."[69]

The alleged environmental impacts clearly cannot be the direct effects of DOE's grant of export authorization because they do not occur at the same time and place as the LNG export. Sierra Club's legal argument instead is that these alleged effects are "upstream," indicating that they would not occur in the same time and place as the export and admitting that they are the

[64] Sierra Club, Initial Comments at n.9; Maya van Rossen, Delaware Riverkeeper Network, Initial Comments on behalf of 87 individuals at p. 5.
[65] 40 C.F.R. §§ 1500, *et seq.*
[66] 42 U.S.C. § 4332(2)(C).
[67] 40 C.F.R. § 1508.18.
[68] 40 C.F.R. § 1508.8(a).
[69] 40 C.F.R. § 1508.8(b).

"indirect effects of the proposed action."[70] Therefore, these comments focus only on whether the alleged environmental effects are "indirect effects" of DOE's granting an individual LNG export authorization under the NGA.

The CEQ definition of indirect effects states that to qualify as an "indirect effect" under NEPA an effect must be both (1) caused by the agency's action and (2) reasonably foreseeable.[71] Both elements have been considered and affirmed by multiple courts, including in cases cited by Sierra Club.[72] Analysis of this case law makes clear that DOE is not required under NEPA to consider the alleged environmental effects of unconventional natural gas production because DOE's authorization of LNG exports is not the legally relevant cause of these alleged effects and the "induced upstream production" resulting from individual export authorizations is not reasonably foreseeable.

1. DOE's Grant of an LNG Export Authorization Is Not the Legally Relevant Cause of the Alleged Upstream Environmental Impacts and Therefore the Alleged Impacts Cannot Be the Indirect Effect of DOE's Action.

The determination of whether NEPA requires analysis of a certain effect involves a fact-specific inquiry. The U.S. Supreme Court recently provided guidance on the causation element of the NEPA indirect effects analysis in *Department of Transportation v. Public Citizen*,[73] holding "that where an agency has no ability to prevent a certain effect due to its limited

[70] *See, e.g.*, Sierra Club's Motion to Intervene, Comment, and Protest, *Gulf LNG Liquefaction Company, LLC*, FE Docket No. 12-101-LNG, at p. 26 (filed Jan. 4, 2013).
[71] 40 C.F.R. § 1508.8.
[72] *See, e.g., City of Shoreacres v. Waterworth*, 420 F.3d 440, 452-54 (5th Cir. 2005) (explaining that court does not reach the issue of whether the agency's action is the legally relevant cause of the effect because the relevant effect is not reasonably foreseeable); and *Border Power Plant Working Group v. Dep't of Energy*, 260 F. Supp. 2d 997, 1016-17 (S.D. Cal. 2003) (finding that although it was reasonably foreseeable that two turbines would use transmission line at issue, only one turbine was the effect of DOE's approval of transmission line and, therefore, DOE only was required to evaluate the environmental effects of that turbine in its NEPA analysis). Sierra Club cites both of these cases to support its argument that DOE must assess the alleged environmental impacts in its NEPA analysis. However, Sierra Club fails to acknowledge the causation element required by courts interpreting what is an "indirect effect" for purposes of NEPA. As discussed in greater detail below, DOE should reject Sierra Club's flawed interpretations of the case law it cites.
[73] 541 U.S. 752 (2004).

statutory authority over the relevant actions, the agency cannot be considered a legally relevant 'cause' of the effect."[74] The Court further explained that "NEPA requires 'a reasonably close causal relationship' between the environmental effect and the alleged cause," which will not be satisfied by a "but for" causal relationship.[75] Rather, "[t]he Court analogized this requirement to the 'familiar doctrine of proximate cause from tort law.'"[76]

In light of the Supreme Court's analogy to tort law, there are two possible ways to analyze whether DOE is the legally relevant cause of the alleged environmental effects under NEPA: (1) to assess whether DOE's action is the proximate cause of the alleged effects, or (2) to assess whether DOE has the ability to prevent the alleged effects. As set forth in greater detail below, DOE is neither the proximate cause of the alleged effects nor does it have the statutory authority to prevent them, to the extent they exist at all.

a. DOE's actions are not the proximate cause of the alleged environmental impacts and, therefore, the alleged impacts are not the indirect effects of DOE's grant of an LNG export authorization under NEPA.

The causal link necessary to establish causation under the CEQ definition of "indirect effects" is proximate cause—the Supreme Court has made clear that simple "but-for" causation is not sufficient under NEPA. DOE cannot even be said to be the but-for cause, let alone the proximate cause, of the alleged environmental effects that parties claim in their initial comments will occur if an LNG export project is authorized.

[74] *Public Citizen*, 541 U.S. at 770.
[75] *Id.* at 767 (citing *Metropolitan Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 774 (1983)).
[76] *Id.*

Proximate cause is generally accepted to be "a cause that *directly produces* an event and without which the event would not have occurred."[77] In describing proximate cause, Prosser and Keeton have explained:

> In a philosophical sense, the consequences of an act go forward to eternity, and the causes of an event go back to the dawn of human events, and beyond. But any attempt to impose responsibility upon such a basis would result in infinite liability for all wrongful acts, and would "set society on edge and fill the courts with endless litigation." As a practical matter, legal responsibility must be limited to those causes which are so closely connected with the result and of such significance that the law is justified in imposing liability. Some boundary must be set to liability for the consequences of any act, upon the basis of some social idea of justice or policy.[78]

According to the Supreme Court, the same must be true in the indirect effects analysis federal agencies undertake under NEPA. Without some boundary, it would be possible to say that there are an infinite number of effects from an action by an agency, making it impossible for the agency to consider all such effects and for the applicant to mitigate against all such effects. A boundary must be set, and the Supreme Court has said that boundary is proximate cause.

The facts in *Border Power Plant Working Group v. Department of Energy*,[79] a case that Sierra Club cites in its legal argument, show that the agency's action cannot be the legally relevant cause when the claimed indirect effect would exist regardless. The facts of *Border Power*, as well as distinguishing case law, are relevant to *Border Power*'s application in the LNG export context, as is the fact that it preceded the Supreme Court's opinion in *Public Citizen*. In *Border Power*, the district court examined whether DOE was required to consider the

[77] BLACK'S LAW DICTIONARY (9th ed. 2009) (emphasis added).
[78] W. Page Keeton, et al., *Prosser and Keeton on Torts* § 41, at 264 (5th ed. 1984) (citing *North v. Johnson*, 58 Minn. 242 (1894)).
[79] 260 F. Supp. 2d 997 (S.D. Cal. 2003).

environmental impacts of four turbines at a natural gas generation facility in Mexico when it issued a Presidential Permit that allowed Baja California Power to construct a power line ("BCP line") to provide transmission service from Mexico to the United States.[80] The court concluded that the BCP line was not the but-for cause of the construction of three of the four turbines because they would have been built regardless of the BCP line. DOE therefore was *not* required to consider the alleged upstream environmental effects of these natural gas power plants serving the BCP line.[81] The district court's rationale is informative in the situation DOE now faces.

The record in *Border Power* showed that two of these three turbines ("EAX Mexico turbines") were designed exclusively to produce power for sale in Mexico, although it was possible under limited circumstances that these turbines could provide power to the United States using the BCP line.[82] Therefore, the BCP line was not the but-for cause of these the EAX Mexico turbines. Additionally, DOE was not required to consider the environmental effects of the third turbine ("EAX export turbine") because, while anticipated to produce power exclusively for export to the United States using the BCP line, the power it produced *could* also be transported to the United States via an alternate connection.[83] The court reasoned, "the EAX export turbine would be built regardless of whether the BCP line is permitted," and therefore concluded that "because the record makes clear that the EAX export turbine has an alternative to the BCP line to export its power, the BCP line cannot be considered the but-for cause of the EAX export turbine's operation. . . . [f]or this reason, the EAX turbine is also not an effect of the action."[84]

[80] *Border Power*, 260 F. Supp. 2d at 1017.
[81] *Id.*
[82] *Id.*
[83] *Id.*
[84] *Id.*

The only turbine for which DOE was required to consider upstream environmental effects was the fourth turbine ("EBC turbine"). The district court found that the record established that the EBC turbine was licensed and configured *only* to sell power to the United States using the BCP line and had no other outlet for its generated power.[85] Therefore, the court found that the BCP line was the but-for cause of the EBC turbine because the EBC turbine would not have been constructed without the BCP line.[86]

As noted above, the Supreme Court explained in *Public Citizen* that a finding of proximate cause is necessary to establish the requisite causal relationship between an agency's action and an indirect effect under NEPA. In contrast to the proximate cause test, but-for causation is a significantly easier test to satisfy and is generally defined simply as "the cause without which the event could not have occurred."[87] The fact that the EBC turbine in *Border Power* satisfied the lower test of but-for cause is not persuasive evidence, as Sierra Club's reliance in its legal argument would seem to suggest, that it would have constituted proximate cause as well. Rather, *Border Power* stands for the principle that an agency's action cannot be the but-for cause when there is an alternative reason for the existence of alleged indirect effects. If agency action is not the but-for cause of an alleged impact, it cannot be the proximate cause of that alleged impact, and the agency need not consider the alleged impact in its indirect effects NEPA analysis.

Distinguishing *Border Power* and applying the proper causation element of the NEPA indirect effects analysis under *Public Citizen*, at least one federal court has recently held that agency permitting actions are not the legally relevant cause of alleged upstream environmental

[85] *Id.*
[86] *Id.*
[87] BLACK'S LAW DICTIONARY (9th ed. 2009).

impacts of oil and gas development. In *Sierra Club v. Clinton*,[88] the court considered whether the Department of State (DOS) was required to assess the trans-boundary impacts associated with the development of Canadian oil sands in its NEPA analysis when it issued a permit that enabled construction of the Alberta Clipper Pipeline ("AC Pipeline").[89] The AC Pipeline was designed to transport crude oil produced from Canadian oil sands to the United States.[90] Sierra Club filed suit, alleging that DOS's NEPA analysis was insufficient because it did not take into account the alleged environmental impacts of the Canadian oil sands development.[91] Citing the standard established by the Supreme Court in *Public Citizen*, the court found that DOS's actions were not the legally relevant cause of the environmental effects alleged by Sierra Club. It explained that the record in the case established that the AC Pipeline was not the *only* pipeline that would transport Canadian oil sands and, therefore, the AC Pipeline could not be the proximate cause of Sierra Club's allegations.[92] The court in *Clinton* also pointed out that "[t]he administrative record demonstrates that the Canadian [oil] sands are being developed independently from the AC Pipeline project."[93] It explained

> Canadian oil sands will be extracted and utilized regardless of the Alberta Clipper pipeline. The clearest evidence of this is that Alberta oil sands production has been increasing for years even though the Alberta Clipper pipeline has not be constructed. Production of oil from the oil sands is driven by global market demand for oil and the price of oil, not be [*sic*] whether one more or one less pipeline exists to transport that oil to the United States. Were the Albert Clipper pipeline not built, the oil produced in

[88] 746 F. Supp. 2d 1025 (D. Minn. 2010). The court distinguishes the case before it from that in *Border Power*. *Border Power*, 260 F. Supp. 2d 997 (S.D. Cal. 2003). Although the facts in *Clinton* are closer to the facts at hand and the case provides important analysis of the holding in *Border Power*, Sierra Club completely omits *Clinton* from its arguments. Parties cannot ignore the law simply because it does not suit their case.
[89] *Clinton*, 746 F. Supp. 2d at 1028-30.
[90] *Id.*
[91] *Id.*
[92] *Id.* at 1045-46 & n.11.
[93] *Id.* at 1043.

> Albert would simply find another outlet through which to meet the global demand for that oil.[94]

The record here, including the NERA Study as well as myriad comments filed with DOE during the initial comment period, demonstrates that unconventional natural gas production will continue, regardless of whether DOE grants LNG export authorizations. This conclusion is supported by the multiple studies filed with DOE in LNG export project dockets. Like the EAX turbines in *Border Power*, and the Canadian oil sands in *Clinton*, there is ample evidence here to support the fact that unconventional production currently is occurring and will continue to grow to meet the multiple competing demands for natural gas resources in North America independent of LNG exports.[95] In the future, natural gas also can be increasingly used to fuel cars, trucks, locomotives, and marine vessels. Furthermore, as NERA pointed out in its study, the uses for unconventional gas will depend on the then-prevailing domestic and global market prices[96] and not "whether one more or one less" LNG export terminal exists.[97]

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[94] *Id.* (quoting the App. of Admin. Record Materials for the Alberta Clipper Pipeline at 15774).

[95] In fact, while some of the strongest opposition to LNG exports has come from a handful of interests in the chemical and manufacturing sectors, those same opponents publicly praise the development of the domestic unconventional natural gas resources and strongly encourage its continued development as a means of furthering economic growth in the United States. *See, e.g.*, http://www.americasenergyadvantage.org.

[96] NERA ECONOMIC CONSULTING, MACROECONOMIC IMPACTS OF LNG EXPORTS FROM THE UNITED STATES, at pp. 1 and 6 (2012).

[97] In applying the *Public Citizen* standard, the Fifth Circuit in *City of Shoreacres v. Waterworth*, 420 F.3d 440 (5th Cir. 2005), a case that Sierra Club also cites to support its own argument, explained that "it is doubtful that an environmental effect may be considered proximately caused by the action of a particular federal regulator if that effect is directly caused by the action of another government entity over which the regulator has no control." *Id.* at 452. In that case, the court analyzed whether the U.S. Army Corps of Engineers, when issuing a dredge and fill permit to the Port Authority for a terminal project, was required under NEPA to consider the possibility that the Houston Ship Channel might have to be deepened at some point in the future to accommodate larger vessels. Appellants in that case argued that future vessels that would use the terminal facilities at issue would be larger than vessels then in use in the Houston Ship Channel. Of importance, the Houston Ship Channel can only be deepened by an Act of Congress. While the court's decision turned on the fact that deepening the channel was not reasonably foreseeable under NEPA, as discussed in Section 2 below, it explained that "[i]f the rational of Public Citizen is applicable, the deepening of the Houston Ship Channel, if it ever occurs, would not be treated as a 'indirect effect' 'caused' by the Corps' decision to grant a dredge and fill permit to the Port." *Id.* In reaching its conclusion, the court relied on the fact that an Act of Congress was necessary before the channel could be deepened. With respect to natural gas development, a permit from a state agency or the federal Bureau of Land Management is required before any onshore natural gas well can be drilled. Thus, like the EAX turbines in *Border Power*, the AC Pipeline in *Clinton*, and the terminal project in *City of Shoreacres*, LNG exports cannot be the proximate cause of speculative

Recent production data shows that 15.4 trillion cubic feet of natural gas was produced in 2011 from unconventional U.S. sources.[98] Yet, the LNG export projects that Sierra Club, NRDC, and others blame in their initial comments for "causing" the alleged environmental impacts from unconventional production will not come online for years, if at all. The legal outcome is clear: even in the absence of LNG exports, which may not even necessarily rely on unconventional production, there is more than sufficient demand to warrant the continued development of U.S. natural gas resources. Additionally, standing alone the future development of natural gas, even if some of that natural gas is used for exports, is not enough to make an individual DOE permitting decision the proximate cause of unconventional natural gas production.

Because DOE is not the proximate cause of the upstream alleged environmental effects, DOE is not required under NEPA to evaluate the alleged environmental effects.

b. DOE has no ability to prevent any alleged environmental effects and, therefore, is not the legally relevant cause of the alleged effects under NEPA.

As noted above, there are two possible ways to analyze under *Public Citizen* whether DOE is the legally relevant cause of the alleged environmental effects under NEPA: (1) to assess whether DOE's action is the proximate cause of the alleged effects or (2) to assess whether DOE has the ability to prevent the alleged effects. We now turn to the analysis of DOE's ability to prevent the alleged effects.

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environmental impacts of unconventional natural gas production because no drilling of any well can be "caused" by the mere issuance of an export authorization.

[98] Annual Energy Outlook 2013 Early Release, Oil and Gas Supply U.S. Energy Information Administration (Released December 5, 2012) (Unconventional sources include tight gas, shale gas and coalbed methane.)

As a preliminary matter, in its legal arguments, Sierra Club completely ignores the Supreme Court's indirect effects analysis in *Public Citizen* and therefore does not put forth an argument on the causation element. Rather, in a clear effort to evade the relevant jurisprudence, the Sierra Club loosely asserts that DOE's potential grant of an LNG export authorization is somehow the cause of some unknown, unproven, alleged environmental effects that may occur at some unknown geographical point upstream, and that a moratorium on DOE's authorizations or a lengthy programmatic EIS will somehow eliminate or otherwise mitigate those alleged, uncertain impacts. This position is factually and legally infirm as DOE has no ability or authority to affect or mitigate these alleged environmental effects. Moreover, in making its argument, Sierra Club fails to cite, discuss, or apply *Public Citizen*, the controlling Supreme Court jurisprudence on the matter. *Public Citizen* was decided after nearly all of the cases Sierra Club cites. As noted above, Sierra Club also fails to acknowledge distinguishing, on-point case law. DOE should not be persuaded by Sierra Club's analysis that cherry-picks only those cases – the validity of which are questionable at best following *Public Citizen* – that support its preferred policy position. The courts have pointed out that "NEPA is not a paper tiger, but neither is it a straightjacket."[99] Sierra Club's incomplete recitation of the law in this area, if adopted, would lead to an overly broad application of NEPA, placing a proverbial straightjacket on DOE's ability to carry out its statutory obligations under Section 3 of the Natural Gas Act. It is this incomplete recitation of the law that gives false teeth to the assertions that Sierra Club, NRDC, EWG, and others make in their initial comments on the 2012 LNG Export Study.

[99] *Scientists' Inst. for Pub. Info. v. Atomic Energy Comm'n*, 481 F.2d 1079, 1091-92 (D.C. Cir. 1973) (citing *Calvert Cliffs' Coordinating Comm. v. USAEC*, 449 F.2d 1109, 1114 (D.C. Cir. 1971) and *Natural Res. Def. Council v. Morton*, 458 F.2d 827, 837 (D.C. Cir. 1972)).

In *Public Citizen*, the Court analyzed whether the Federal Motor Carrier Safety Administration (FMCSA), when it promulgated regulations related to the application form and safety requirements applicable to Mexican-domiciled motor carriers, was required to evaluate the environmental effects of those cross-border motor carrier operations.[100] Of particular relevance, a Presidential moratorium barring authorizations for Mexican motor carriers to enter the United States was in place. Under the statute, the FMCSA was required to certify any motor carrier that showed it was willing and able to comply with the safety and financial requirements set forth in the Department of Transportation's regulations.[101] In addition, Congress had frozen funding for the review and processing of applications by Mexican motor carriers to operate in the United States until the FMCSA had implemented specific application and safety requirements for Mexican motor carriers.[102]

After the FMCSA issued its regulations, various unions and environmental groups filed suit arguing that the FMCSA had violated NEPA by failing to consider the environmental effects of the cross-border motor carrier operations. The Court found that the FMCSA had not erred because "the legally relevant cause of the entry of Mexican trucks is *not* FMCSA's action, but instead the actions of the President in lifting the moratorium and those of Congress in granting the President this authority while simultaneously limiting FMCSA's discretion."[103] The Court reasoned that since the FMCSA lacked the authority to prevent the cross-border operations, "the environmental impacts of cross-border operations would have no effect on FMCSA's decision-

[100] *Public Citizen*, 541 U.S. at 759-61.
[101] *Id.* at 766.
[102] *Id.* at 760-61.
[103] *Id.* at 769.

making – FMCSA simply lacks the power to act on whatever information might be contained in the EIS."[104]

Here, the legally relevant cause of the alleged environmental impacts of unconventional production is *not* the grant of an LNG export license by DOE. Production will occur regardless. Rather, the actions of other agencies with oversight over natural gas production, state and federal, are the legally relevant cause of any alleged impacts under NEPA. Like the FMCSA, DOE has no ability to prevent the alleged environmental impacts of upstream production alleged in various commenters' initial comments for two reasons. First, the NGA does not provide DOE with any authority to exercise jurisdiction over the production of natural gas. Second, it is the receipt of a permit from the relevant state regulatory body or the Bureau of Land Management ("BLM") that enables natural gas production to occur. Therefore, DOE is not the legally relevant cause of the alleged environmental impacts and NEPA does not require DOE to evaluate those alleged effects.

i. The NGA does not provide DOE with authority to regulate natural gas production or gathering, and therefore DOE has no ability to prevent the alleged environmental impacts and cannot be the legally relevant cause of the alleged impacts.

In *Public Citizen*, the Court explained that "'courts must look to the underlying policies or legislative intent in order to draw a manageable line between those causal changes that may make an actor responsible for an effect and those that do not.'"[105] DOE derives its authority to grant authorizations for the import and export of the LNG commodity from the NGA.[106] Section

[104] *Id.* at 768.
[105] *Id.* at 767 (citing *Metropolitan Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 774 (1983)).
[106] 15 U.S.C. § 717b.

1(b) of the NGA explicitly provides that the NGA shall *not* apply to the production or gathering of natural gas.[107]

In *Sierra Club v. Mainella*,[108] the court examined whether the National Park Service ("NPS"), when granting an exemption from NPS oversight, was required to evaluate the environmental effects of surface drilling activities outside park boundaries that, because the drilling was directional, resulted in subsurface drilling within a park.[109] Under the NPS's organic act, the agency had the authority to regulate such directional drilling. Under its regulations, however, the Regional Director had the authority to exempt such activities from NPS oversight where it found that the activities would not pose a significant threat of damage to park resources. The court distinguished the facts in *Public Citizen* and found that NPS was required to consider the effects of the surface activities because its organic act provided it with the "ability – which it has exercised – to consider the impacts from surface activities in making the impairment determination. . . ."[110] As compared to *Public Citizen*, where the Court found the FMCSA lacked the requisite statutory authority over the relevant action,[111] NPS was only constrained from regulating the relevant surface activities by its own regulations. The court deemed this self-imposed restriction insufficient to warrant a finding that NPS had no ability to prevent the environmental effects.[112]

Unlike FPS, as noted above Section 1(b) of the NGA expressly excludes from DOE's jurisdiction authority over the activities that the Sierra Club asserts lead to the alleged effects. In fact, FERC, which derives its authority over LNG export facilities from the NGA, has already

[107] 15 U.S.C. § 717(b).
[108] *Sierra Club v. Mainella*, 459 F. Supp. 2d 76 (D.D.C. 2006).
[109] *Id.* at 78.
[110] *Id.* at 105.
[111] *Public Citizen*, 541 U.S. at 770.
[112] *Mainella*, 459 F. Supp. 2d. at 105.

explained that the NGA does not provide jurisdiction over the permitting, siting, construction, and operation of natural gas wells.[113] Accordingly, like the FMCSA, DOE lacks the necessary statutory authority over the alleged effects from unconventional production for its authorization of LNG exports to be deemed the legally relevant cause under NEPA. Therefore, like in *Public Citizen*, DOE is not required under NEPA to evaluate the alleged environmental effects of upstream production.

ii. DOE has no ability to regulate the alleged environmental impacts because unconventional production cannot occur without a state or BLM permit, and therefore DOE is not the legally relevant cause of the alleged environmental impacts.

Generally, natural gas production is regulated by the states. When drilling occurs on federal lands, the BLM has authority over well permitting under the Mineral Leasing Act[114] and the Federal Land Policy and Management Act of 1976.[115] BLM, as well as the states, require well operators to obtain a permit before drilling operations may commence. The permitting process is comprehensive, and has evolved and is continuing to evolve to keep pace with new developments in horizontal drilling and hydraulic fracturing.[116] As noted above, the court in *City*

[113] *Sabine Pass Liquefaction, LLC*, 140 FERC ¶ 61,076, at P 10 (2012).
[114] 30 U.S.C. §§ 181 *et seq.*
[115] 43 U.S.C. §§ 1701 *et seq.*
[116] To use just one example, Pennsylvania, which has significant shale gas resources, has a strong, comprehensive framework regulating hydraulic fracturing that has been amended numerous times over the past several years to keep pace with development of the Marcellus Shale. Pennsylvania regulates substantially all aspects of well siting; construction; mechanical integrity; abandonment and plugging; monitoring; recordkeeping; reporting; and financial responsibility, among many other activities. *See, e.g.*, 58 Pa. Cons. Stat. §§ 3212-3212.1 (well permitting); *id.* §§ 3215 (well siting restrictions); *id.* § 3217, 25 Pa. Code §§ 78.73, 81-87 (well construction standards); 78.88-89 (mechanical integrity standards); 58 Pa. Cons. Stat. §§ 3222(b)-(d), 25 Pa. Code §§ 78.122-123 (well completion and log reporting requirements and data retention); 58 Pa. Cons. Stat. § 3220, 25 Pa. Code §§ 78. 91-98, 124 (well plugging and certification requirements); 58 Pa. Cons. Stat. § 3225, 25 Pa. Code § 78.301-314 (bonding requirements); 58 Pa. Cons. Stat. §§ 3218, 3218.1, 3219.1 (response to incidences of potential well contamination, including rebuttable presumption of responsibility for operators). These provisions also include requirements for operators to perform pre-drilling and pre-well stimulation testing of underground sources of drinking water, *see* 58 Pa. Cons. Stat. § 3218(e), and detailed disclosure requirements for hydraulic fracturing fluid. *Id.* § 3222.1.17. Other states that have recently amended and strengthened already robust oil and gas regulatory regimes include Arkansas, Colorado, Montana, New Mexico, North Dakota, Texas, West Virginia, and Wyoming, while the BLM is also currently revising its rules governing permitting of wells and hydraulic fracturing.

of Shoreacres explained that "it is doubtful that an environmental effect may be considered proximately caused by the action of a particular federal regulator if that effect is directly caused by the action of another government entity over which the regulator has no control." The effects here, the alleged upstream environmental impacts,[117] would be directly caused by the action of the states and BLM in granting an operator a permit to drill.

The Court in *Public Citizen* reasoned that "FMCSA has no ability to countermand the Presidential lifting of the moratorium or otherwise categorically to exclude Mexican motor carriers from operating within the U.S."[118] DOE similarly has no ability to countermand the application or lifting of a state or federal moratorium, were it to exist, on natural gas production, or the state or the BLM's decision to grant or deny a drilling permit. Furthermore, the Ninth Circuit has recently explained that "the Natural Gas Act, though extending federal regulation, had no purpose or effect, to cut down state power. On the contrary, perhaps its primary purpose was to aid in making state regulation effective, by adding the weight of federal regulation to supplement and reinforce the gap created by prior decisions."[119]

Cases applying *Public Citizen* shed additional light on this issue. For example, the court in *Mainella* relied in part on the fact that the surface drilling activities that started outside the park were "functionally inseparable from the downhole drilling activities [which, because of directional drilling, were inside the Park boundaries], which may not take place until NPS grants the operator access through the Preserve."[120] Put another way, the agency action and the relevant effect were "functionally inseparable" because if NPS were to deny an operator access to the

[117] Although not fundamental to these comments, API challenges the veracity of claims set forth in parties' initial comments regarding the alleged effects.
[118] *Public Citizen*, 541 U.S. at 766.
[119] *South Coast Air Quality Mgmt. v. FERC*, 621 F.3d 1085, 1091 (9th Cir. 2010).
[120] *Mainella*, 459 F. Supp. 2d. at 105.

Preserve, the operator would be unable to engage in the relevant surface drilling activities outside the park. Unlike the surface drilling operations in *Mainella*, natural gas production is authorized to and does occur wholly independent of DOE's decision to authorize LNG exports. As noted, unconventional production is already occurring in the United States and none of the LNG export projects that Sierra Club, NRDC, EWG, and others challenge have come online to date, nor will they for several years. The alleged upstream environmental impacts put forward by these initial commenters are functionally separable from and are not "caused" by DOE's authorization of LNG exports.

Further articulating this principle, the court in *Humane Society v. Johanns*[121] noted that there was an "intervening link" in *Public Citizen* between the FMCSA regulation and the entry of Mexican trucks into the United States, which prevented the FMCSA from having the authority over the relevant actions.[122] That intervening link was the lifting of the Presidential moratorium on the licensing of Mexican trucks to enter the United States.[123] The court in *Johanns* applied this principle to the facts before it, where the agency had promulgated regulations related to the inspection of horses prior to slaughter whose meat was used for consumption abroad, in zoos, and in research facilities.[124] Congress had frozen the funds available to pay salaries of horse inspectors in an effort to prohibit the slaughter of horses for human consumption.[125] Several slaughter facility operators filed a petition with the U.S. Department of Agriculture requesting an emergency rulemaking to create a fee-for-service inspection program for horse inspections prior to slaughter. In response, the Food and Safety Inspection Service (FSIS) published an amendment to its regulations "to provide for a voluntary fee-for-service program under which

[121] *Humane Society v. Johanns*, 520 F. Supp. 2d 8 (D.D.C. 2007).
[122] *Id.* at 26.
[123] *Id.*
[124] *Id.* at 12.
[125] *Id.* at 13.

official establishments that slaughter horses will be able to apply for and pay for ante-mortem inspection."[126] FSIS explained that "if FSIS does not establish a means for official establishments that slaughter horses to obtain an anti-mortem inspection, these establishments will not be able to operate and presumably will be forced out of business."[127] In distinguishing these facts from the intervening link, the court explained that FSIS was required to take the environmental impacts of horse slaughter operations into account under NEPA when it issued its regulations because the interim final rule was the *only* action that enabled horse slaughter operations to continue.[128] Unlike in *Public Citizen*, where the lifting of the Presidential moratorium was an intervening link that stood between the FMCSA regulation and the entry of Mexican trucks into the United States, nothing stood between the continuation of the operations at issue and the FSIS regulations.

In DOE's case, like in *Public Citizen*, there is an intervening link between the alleged upstream environmental impacts and DOE's grant of LNG export authorization – the receipt of a permit from the relevant state regulatory body or BLM. Unlike the horse slaughter operations in *Johanns*, and as discussed above, the action that enables upstream natural gas operations to occur is the receipt of a permit from the relevant state regulatory body or BLM, not from DOE. Therefore, DOE has no ability to prevent the alleged effects and cannot be deemed to be the legally relevant cause of the alleged effects. As such, contrary to the claims of numerous individual citizens, NRDC, and others in their initial comments,[129] DOE is not required under NEPA to evaluate the alleged effects.

[126] *Id.* (citing 71 Fed. Reg. 6337, 6337 (Feb. 8, 2006)).
[127] *Id.* (citing 71 Fed. Reg. at 6340).
[128] *Id.* at 13.
[129] *See, e.g.,* NRDC Initial Comments at p. 2.

c. The alleged upstream environmental impacts are not reasonably foreseeable under NEPA and, therefore, cannot be the indirect effects of DOE's action as defined under NEPA.

Under NEPA, to qualify as an "indirect effect," an effect must be both caused by the agency action and reasonably foreseeable.[130] DOE need not assess the alleged environmental effects because not only are those effects not caused by DOE's actions, as set forth above, but because those alleged effects also are not reasonably foreseeable under NEPA. CEQ has explained that the purpose of requiring an agency in preparing an EIS to focus on the reasonably foreseeable impacts was to "generate information and discussion on those consequences of greatest concern to the public and of greatest relevance to the agency's decision,"[131] not to "distort[] the decisionmaking process by overemphasizing highly speculative harms."[132]

In its legal arguments, Sierra Club cites several cases that expound upon this issue, though examination of the facts of those cases proves them to be distinguishable from the facts DOE is confronting in each of the LNG export proposals before the agency. First, in arguing that induced production is a reasonably foreseeable effect of DOE's authorization of LNG exports, Sierra Club has cited[133] *Northern Plains v. Surface Transportation Board*,[134] in which the court held that the Surface Transportation Board (STB) was required to consider the environmental effects of certain coal bed methane wells when it approved applications to construct railroads that would haul coal.[135] While the Sierra Club is correct that STB was required to consider the impacts of production in that case, it oversimplifies the court's holdings and misconstrues the relevant principles of law.

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[130] 40 C.F.R. § 1508.8.
[131] 50 Fed. Reg. 32237 (1985).
[132] *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 356 (1989).
[133] *See e.g., Cameron LNG, LLC*, "Sierra Club's Motion to Intervene, Protest, and Comments," at p. 55, FE Docket No. 11-162-LNG (filed Apr. 23, 2012).
[134] 668 F.3d 1067 (9th Cir. 2012).
[135] *Id.* at 1080-81.

In *Northern Plains*, the court explained that the coal bed methane wells were reasonably foreseeable because STB had incorporated BLM and the State of Montana's programmatic EIS evaluating the future impacts of coal bed methane in the Powder River Basin, which "contained actual numbers, broken down by counties, about development over the next 20 years."[136] Furthermore, in that case the coal bed methane wells either were under consideration or had been approved. The STB had sufficiently specific information before it about the location and duration of coal bed methane production.

Despite Sierra Club's argument to the contrary in its initial comments,[137] and in contrast to *Northern Plains*, the location, timing, duration, and potential environmental effects of unconventional production that might be used to supply a capacity holder at an LNG export terminal several years in the future is too speculative to be considered reasonably foreseeable under NEPA. This speculative nature is compounded by the fact that the interstate pipeline system in the United States is highly interconnected and natural gas molecules are fungible. For example, FERC explained in the Sabine Pass proceeding,

> Here, the pipeline interconnects that will provide natural gas to the Liquefaction Project cross both shale and conventional gas fields. Specifically, Sabine Pass will receive natural gas at its interconnection with the Creole Trail Pipeline, which interconnects with other pipelines in the interstate grid. These interconnecting pipeline systems span from Texas to Illinois to Pennsylvania and New Jersey, and cross multiple shale gas plays, as well as conventional gas plays. In addition, each of these interconnecting pipeline systems has a developed network of interconnects with other gas transmission pipeline companies that may cross additional gas plays. We also noted [in the April 16 Order] that the Liquefaction Project does not depend on additional shale gas production which may occur for reasons unrelated to the project, and over which the Commission has no control because it has no

[136] *Id.* at 1079.
[137] Sierra Club Initial Comments at pp. 39-40.

> jurisdiction over the permitting, siting, construction or operation of natural gas wells.[138]

This statement is true for each and every proposed LNG export project.

The level of information that the agency had in *Northern Plains* is similar to the level of information the agency had in *Mid States Coalition for Progress v. Surface Transportation Board,*[139] which Sierra Club cites but also fails to fully explain or acknowledge later cases that distinguish its holding. In *Mid States,* the court examined whether the STB was required to consider the impacts on air quality that would result from an increase in low-sulfur coal used for generation when it approved a railroad project that would be used to reach coal mines in the Powder River Basin and transport coal to market.[140] The court found that the environmental effects from increased availability of low-sulfur coal were a reasonably foreseeable result of the railroad project approval, explaining in part that "[t]he increased availability of inexpensive coal will at the very least make coal a more attractive option to future entrants into the utility market when compared with other potential fuel sources. . . . it will most assuredly affect the nation's long-term demand for coal as the comments to the DEIS explained."[141] The court held that while the extent of the environmental effects were speculative, their nature was not, reasoning "it is almost certainly true – that the proposed project will increase the long-term demand for coal and any adverse effects that result from burning coal."[142] The court also found it "significant" that the STB stated, when defining the scope of the EIS that its Section of Environmental Analysis

[138] *Sabine Pass Liquefaction, LLC*, 140 FERC ¶ 61,076 at P 10 (2012).
[139] 345 F.3d 520 (8th Cir. 2003).
[140] *Id.* at 548.
[141] *Id.* at 549.
[142] *Id.*

"would 'evaluate the potential air quality impacts associated with the increased availability and utilization of Power River Basin Coal.'"[143]

In *Mid States*, the coal at issue came from one source, the Powder River Basin. By contrast, as explained above, natural gas in the United States comes from a multitude of sources and, because of the fungible nature of natural gas, it is impossible to know the origin of any single molecule. Thus, it is impossible to have the same meaningful analysis of alleged impacts of unconventional natural gas production or "generate information and discussion on those consequences . . . of greatest relevance to the agency's decision,"[144] which is one of the purposes CEQ ascribes to the reasonable foreseeability element of the NEPA indirect effects analysis.

In distinguishing *Mid States*, the court in *Habitat Education Center v. U.S. Forest Service*[145] reached the same conclusion. In *Habitat*, the court examined whether the U.S. Forest Service, when it proposed the "Twentymile" timber sale project, was required under NEPA to describe the effects of another proposed timber sale, known as the Twin Ghost project.[146] The court concluded that the Forest Service was not required to consider the cumulative impacts of the Twin Ghost project "because of the lack of information about the nature and scope of the Twin Ghost project."[147] Citing to its sister circuits,[148] the court explained "an agency decision

[143] *Id.* at 550.
[144] *Supra* note 130.
[145] 609 F.3d 897 (7th Cir. 2010).
[146] *Id.* at 898-99.
[147] *Id.* at 903.
[148] The Seventh Circuit explains:

> The Forest Service, in contrast, relies on *Environmental Protection Information Center v. United States Forest Service (EPIC)*, 451 F.3d 1005 (9th Cir. 2006). In EPIC, the Ninth Circuit held that "although it is not appropriate to defer consideration of cumulative impacts to a future date when meaningful consideration can be given now, if not enough information is available to give meaningful consideration now, an agency decision may not be invalidated based on the failure to discuss an inchoate, yet contemplated, project." *Id.* at 1014. Several other circuits have similarly suggested that a project is not "reasonably foreseeable" if not enough is known to provide a meaningful basis for assessing its impact. *See Town of Marshfield v. FAA*, 552 F.3d 1, 4-5 (1st Cir. 2008) (discussion of cumulative impacts of future action not required where "some ... action was

may not be reversed for failure to mention a project not capable of meaningful discussion."[149]

Then, directly distinguishing *Mid States*, the court clarified,

> It may well be that where, as in *Mid States*, the challenged cumulative effects are predictable, even if their extent is not, they may be more likely to be capable of meaningful discussion than in a case where the challenged omission is a future project so nebulous that the agency cannot forecast its likely effects. In any event, an agency does not fail to give a project a "hard look" simply because it omits from discussion a future project so speculative that it can say nothing meaningful about its cumulative effects. To hold otherwise would either create an empty technicality – a requirement that agencies explicitly state that they lack knowledge about the details of potential future projects – *or paralyze agencies by preventing them from acting until inchoate future projects take shape (by which time, presumably, new inchoate projects would loom on the horizon).* This unreasonable result would replace the "tyranny of small decisions" with the impossible requirement that all agency action be comprehensive.[150]

Like the Twin Ghost project in *Habitat*, the contours of unconventional natural gas development are subject to significant uncertainty. Regulations concerning well development in many states are still being crafted, refined, and revisited. Entities with drilling permits do not always develop their permitted wells immediately. The natural gas that is ultimately exported from an LNG terminal may not even come from an unconventional source. Moreover, for the reasons already discussed, the LNG terminal capacity holder has no way of knowing the source of its export commodity.

> foreseeable but one could only speculate as to which ... measures would be implemented"); *City of Oxford v. FAA*, 428 F.3d 1346, 1353 (11th Cir. 2005) ("An agency must consider the cumulative impacts of future actions only if doing so would further the informational purposes of NEPA"); *Society Hill Towers Owners' Ass'n v. Rendell*, 210 F.3d 168, 182 (3d Cir. 2000) ("[P]rojects that the city has merely proposed in planning documents are not sufficiently concrete to warrant inclusion in the [environmental analysis] for the ... project at issue here."). We agree with our sister circuits.

Habitat, 609 F.3d at 902.

[149] *Id.* at 903.

[150] *Id.* at 902-03 (emphasis added).

Next, Sierra Club cites *City of Shoreacres* for the legal principle that "an impact is 'reasonably foreseeable' if it is 'sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision.'"[151] While it aptly cites the black letter law, Sierra Club does not provide any analysis of this case nor does it even deign to provide the simple facts of the case – likely because recitation of the facts and the court's analysis do not weigh in Sierra Club's favor.

The facts of *City of Shoreacre* are provided in Section 1 above. Simply stated, in that case the court analyzed whether the U.S. Army Corps of Engineers had violated NEPA when it issued a dredge and fill permit for construction of a shipping terminal but did not evaluate the environmental impacts associated with deepening of the Houston Ship Channel, which appellants claimed was reasonably foreseeable because "the cargo ships of the future will be too large to use the Houston Ship Channel at its current depth."[152] The court concluded that the Army Corps had not erred because the administrative record demonstrated that the deepening of the Houston Ship Channel was too speculative.[153] In assessing appellants' claim, the court explained that "for a number of reasons it is impossible to know whether the channel will ever be deepened."[154] Among other evidence, the court pointed out that

> Rather than explain how the Corps erroneously interpreted the evidence in the administrative record, [appellants] simply recite the platitude that mere uncertainty does not equal a lack of reasonable foreseeability. While this is true, indeed obvious, in a sense, such proposition does not mean that it was an abuse of discretion for the Corps to treat deepening of the Houston Ship Channel as too

[151] *City of Shoreacres v. Waterworth*, 420 F.3d. 440, 453 (5th Cir. 2005) (citing *Sierra Club v. Marsh*, 976 F.2d 763, 767 (1st Cir. 1992)).
[152] *Id.* at 451.
[153] *Id.* at 453-54.
[154] *Id.* at 453.

> speculative to warrant consideration as a cumulative impact of the Port's dredge and fill permit.[155]

If appellants' empty platitudes in *City of Shoreacres* sound familiar, it is because Sierra Club's legal argument is heavily laden with them. In prior filings, Sierra Club has insinuated that DOE is in some way "'shirk[ing] their responsibilities under NEPA by labeling any and all discussions of future environmental impacts as a 'crystal ball inquiry.'"[156] However, in quoting *Scientists' Institute*, Sierra Club again brushes over the facts. In that case the Court of Appeals for the D.C. Circuit was considering whether the Atomic Energy Commission (AEC) should have prepared an EIS for its Liquid Metal Fast Breeder Reactor (LMFBR) Program Plan even though the LMFBR Program was still in the planning stages.[157] In reaching its conclusion, the court explained,

> To begin with, commercial implementation of LMFBR technology is far from speculative. The massive amounts of money being pumped into this program by Congress and the Presidential Energy Policy statement … both indicate widespread confidence that the program will succeed in its twin goals of demonstrating the commercial feasibility of the breeder reactor and producing an industrial infrastructure ready, willing, and able to construct such reactors on a commercial basis. The Commission also has a great deal of confidence in the program.[158]

The court went on to explain that "the Commission's own documents indicate that there already exists much meaningful information on the reasonably foreseeable environmental impact of

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[155] *Id.* at 453-54.
[156] *See e.g., Southern LNG Company, L.L.C.*, "Sierra Club's Motion to Intervene, Protest, and Comments," FE Docket No. 12-100-LNG, at p. 30 (filed Dec. 17, 2012), citing *Scientists' Inst. for Pub. Info. v. Atomic Energy Comm'n*, 481 F.2d 1079, 1091-92 (D.C. Cir. 1973).
[157] *Scientists' Inst.*, 481 F.2d at 1083-84.
[158] *Id.* at 1096 (citing AEC, DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY, LIQUID METAL FAST BREEDER REACTOR PROGRAM PLAN, Vol. 1 at ii (1968); and AEC Authorizing Legislation, Fiscal Year 1972, Hearings on Civilian Nuclear Power Program before Joint Committee on Atomic Energy, 92nd Cong., 1st Sess., March 4, 1971, Part 2, at 672).

development of LMFBR technology."[159] It cites an impact statement prepared for a prior demonstration plant that included "detailed estimates of the radioactive wastes produced annually by a single commercial-scale LMFBR electrical power plant" and estimates of land necessary for waste storage, as well as other studies the Commission had completed that "contain reasonable estimates of the expected deployment of LMFBR power plants through the year 2000 if the program proceeds on schedule."[160]

In contrast, as FERC aptly pointed out in its order issuing the certificate of public convenience and necessity for construction and operation of the Central New York Oil and Gas Company's MARC I Project, "as of October 2010 PADEP issued thousands of well permits, and continues to do so today. However, it is unknown if, or when, any of these wells will be drilled, much less what the associated infrastructure and related facilities may be for those wells ultimately drilled."[161] In addition, the development of a well is necessarily dependent on "acquisition of mineral rights, well permits, and approvals of associated processing, gathering, and NGA-exempt transportation facilities,"[162] which require state authorization. The level of regulation in each state is a moving target at this point, "as state legislatures have reviewed and revised regulations governing further development."[163] DOE is not attempting to shirk its responsibilities under NEPA – it is merely applying the principles of the law to the facts before it. Not enough is known about when, where, and to what extent unconventional development will occur for it to be reasonably foreseeable with regard to any LNG export project. Moreover, DOE, the terminal capacity holders, and the project developers cannot know the origin of the

[159] *Id.*
[160] *Id.*
[161] *Central New York Oil and Gas Company, LLC*, 137 FERC ¶ 61,121, at P 96 (2011).
[162] *Texas Eastern Transmission, LP, Algonquin Gas Transmission, LP*, 141 FERC ¶ 61,043 at P 38 (2012).
[163] *Id.*

LNG that is ultimately exported because of our nation's interconnected interstate pipeline grid and the fungible nature of natural gas.

For the reasons set forth above, the alleged environmental effects of unconventional natural gas production are not the reasonably foreseeable result of DOE's grant of an LNG export authorization. Therefore, the alleged environmental impacts that Sierra Club, NRDC and other initial commenters assert are not the indirect effects of DOE's actions and DOE is not required under NEPA to consider the alleged effects when it considers an application to export LNG.

C. DOE Is Not Required to Prepare a Programmatic EIS.

Sierra Club asserts that DOE must perform a programmatic EIS to assess the cumulative impacts of all proposed LNG export projects.[164] However, DOE has not proposed an action that would warrant a programmatic EIS and its case-by-case analysis of projects will provide more robust environmental information regarding the projects within the scope of DOE's authority.

The CEQ regulations provide that agencies must prepare a single EIS when "[p]roposals or parts of proposals [] are related to each other closely enough to be, in effect, a single course of action. . . ."[165] A single EIS is appropriate, for example, when an agency takes "broad Federal actions such as the adoption of new agency programs or regulation."[166] The applications for authorization to export LNG pending at DOE propose exports from terminals at various sites across the country, each of which pose unique environmental issues. These applications cannot be said to be parts of a proposal that are so closely related to each other that they comprise a single course of action.

[164] Sierra Club Initial Comments at n.9.
[165] 40 C.F.R. § 1502.4(a).
[166] 40 C.F.R. § 1502.4(b).

Furthermore, DOE has not proposed a new program nor does it propose new regulations. In *Kleppe v. Sierra Club*,[167] the U.S. Supreme Court held that the Department of the Interior and other federal agencies "responsible for issuing coal leases, approving mining plans, and taking other actions to enable private companies and public to develop coal reserves on federally owned or controlled land"[168] were not required to issue a programmatic EIS for the entire Northern Great Plains region. The Court found that the agencies had not proposed a regional plan and further explained,

> Even if environmental interrelationships could be shown conclusively to extend across basins and drainage areas, practical considerations of feasibility might well necessitate restricting the scope of comprehensive statements. In sum, respondents' contention as to the relationships between all proposed coal-related projects in the Northern Great Plains region does not require that petitioners prepare one comprehensive impact statement covering all before proceeding to approve specific pending applications.[169]

Similarly, in *National Wildlife Federation v. Appalachian Regional Commission*,[170] the D.C. Circuit explained "a programmatic EIS reflects the broad environmental consequences attendant upon a wide-ranging federal program."[171] In *National Wildlife*, the court examined whether the agency was required to prepare a programmatic EIS "for an ongoing, but mostly completed, federally assisted highway development project."[172] The court noted that a "multi-phase federal program like a major highway development is a probable candidate for a programmatic EIS,"[173] but found that a programmatic EIS was not required because "preparation of site-specific EISs in connection with the Appalachian highways, as the system currently stands, is sufficient

[167] 427 U.S. 390 (1976).
[168] *Id.* at 393.
[169] *Id.* at 414-15.
[170] 677 F.2d 883 (D.C. Cir. 1981).
[171] *Id.* at 888.
[172] *Id.* at 884.
[173] *Id.* at 888.

compliance with NEPA."[174] In its analysis, the court suggested two questions when evaluating whether an agency should prepare a programmatic EIS: (1) "could the programmatic EIS be sufficiently forward looking to contribute to the [agency's] basic planning of the overall program? … [and (2)] does the [agency] purport to 'segment' the overall program, thereby unreasonably constricting the scope of . . . environmental evaluation?."[175]

In *Piedmont Environmental Council v. Federal Energy Regulatory Commission*,[176] the Fourth Circuit applied the *National Wildlife* test to FERC's decision not to prepare a programmatic EIS when implementing a new provision of the Federal Power Act, which provided FERC with "jurisdiction in certain circumstances to issue permits for construction or modification of electric transmission facilities. . . ." [177] The court found that FERC was not required to issue a programmatic EIS because its regulations met neither of the two elements of the test enunciated in *National Wildlife*. In reaching its decision, the court explained that the programmatic EIS would not be sufficiently forward-looking to contribute to FERC's basic planning of the overall program,

> [b]ecause permit applications will come in from private parties, [therefore] FERC cannot now identify projects that are likely to be sited and permitted. By the same token, FERC does not have information about the ultimate geographic footprint of the permitting program. Without such information a programmatic EIS would not present a credible forward look and would therefore not be a useful tool for basic program planning.[178]

DOE's actions related to LNG and natural gas imports and exports—the subject of its Natural Gas Act authority—are not a program, as discussed above. Like FERC, DOE receives

[174] *Id.* at 891.
[175] *Id.* at 889.
[176] 558 F.3d 304 (4th Cir. 2009).
[177] *Id.* at 310.
[178] *Id.* at 316.

applications from private parties for individual, specific projects and has no way of identifying projects that are likely to be sited, permitted, and actually constructed. Thus DOE has no ability to know what projects may be on the horizon.

Next, the court found that because FERC's regulations, like DOE's, require an application for each individual project, its regulations "are not designed to segment the overall program in order to constrict environmental evaluation." The court further explained, "[s]eparate and detailed permit applications for each project should facilitate, not impede, adequate environmental assessment."[179] Similarly, DOE's separate assessment of each individual application would assist in providing greater environmental information than could be accomplished in a programmatic EIS because the proposed LNG export terminals are located across multiple regions of the United States and each site has its own environmental issues, which are best examined and addressed through individual environmental reviews. DOE is not required to prepare a programmatic EIS related to its grant of individual LNG export authorizations because it has not proposed a new program or new regulations to do so and its case-by-case analysis of individual LNG export projects will best assist in facilitating adequate environmental assessment.

For all of the reasons stated above, those initial comments that argue for a limit or outright ban of LNG exports have not been able to demonstrate that LNG exports are not consistent with the public interest and as a result DOE should not be diverted from its legal obligations under the NGA to review and authorize LNG exports.

VI. Denial of Export Authorizations to Non-FTA Countries Would Be Inconsistent with World Trade Organization Rules on Export Restrictions.

[179] *Id.*

In its Initial Comments, Dow Chemical Company argues that "neither the NERA Report nor any other economic analysis can be decisive on the range of factors that should bear on decision-making regarding U.S. LNG export policy."[180] As API has extensively documented already, and as the DOE has recently confirmed,[181] the NGA creates a rebuttable presumption that a request for authorization to export LNG to non-FTA countries is in the public interest. This is plainly the mandate of Congress and not subject to serious debate. Nevertheless, Dow Chemical Company argues that certain extra-statutory factors should be considered by DOE, among them "U.S. foreign policy and other international considerations, including consistency with U.S. obligations under international trade rules[.]"[182] Notwithstanding the fact that LNG exports are presumed to be in the public interest, we agree. However, Dow Chemical Company omitted the most pertinent extra-statutory factors in its arguments: the denial of export authorizations to non-FTA countries would be inconsistent with World Trade Organization (WTO) rules on export restrictions, significantly undercut the United States' ability to argue against trade restrictions before the WTO and among our international trading partners, and run directly counter to long-standing U.S. interests in promoting and protecting a global energy market.

It should go without saying that the United States has benefited greatly and continues to benefit from internationally traded energy products, including natural gas. Indeed, safeguarding global trade in energy commodities has been a key U.S. security interest for decades. Although the United States has historically been a net importer of energy, in particular crude oil, we now have an unprecedented opportunity to meet all of our domestic consumption needs for natural

[180] Dow Initial Comments at 7.
[181] *Sabine Pass Liquefaction, LLC*, DOE/FE Order No. 2961, at p. 28 (May 20, 2011).
[182] Dow Chemical Company, Initial Comments at p. 7 (submitted Jan. 24, 2013).

gas while at the same time exporting this valuable energy resource without significantly affecting the price of gas at home. In raising the notion that DOE should consider "international trade rules" when considering whether to grant LNG export authorizations, Dow Chemical Company defeats its own arguments that international trade in natural gas should be tightly controlled principally for the benefit of a handful of domestic business interests.

A. WTO Obligations Impose Broad Prohibitions on Export Restrictions, Including a Discretionary Licensing System for Natural Gas Sought by Dow Chemical Company.

Since 1992, the NGA has obligated DOE to approve all authorizations for LNG exports to countries with which the United States has a FTA requiring the non-discriminatory treatment of trade in natural gas; the statute directs the agency to find that natural gas exports to such countries are in the public interest without modification or delay. With respect to authorizations to non-FTA counties, API believes the denial of such authorizations would be inconsistent with WTO rules on export restrictions, as reflected in Article XI:1 of the General Agreement on Tariffs and Trade (GATT). Article XI:1 of the GATT 1994, entitled "General Elimination of Quantitative Restrictions," represents a broad prohibition on various forms of import and export restrictions, including export licenses. The provision states:

> No prohibitions or restrictions other than duties, taxes or other charges, whether made effective through quotas, import or export licences or other measures, shall be instituted or maintained by any contracting party . . . on the exportation or sale for export of any product destined for the territory of any other contracting party.

Article XI is recognized as "one of the cornerstones" of the multilateral trade system, given the historical importance of quantitative restrictions on trade and the success of the GATT

and WTO in reducing the incidence of such measures.[183] As interpreted by one WTO panel, Article XI eventually "foresees the elimination of import or export restrictions or prohibitions."[184] The policy basis for the rule is clear: restrictions on exports, in particular, often operate as a subsidy to domestic industry—a subsidy far less transparent than a tariff or duty. There should be little doubt at this point that in opposing free trade in natural gas, Dow Chemical Company and others are seeking just that: a U.S. government subsidy for their domestic operations, hidden from view by the public at large.

WTO panels have taken a broad view of what constitutes a "restriction" on importation or exportation, finding *de facto* restrictions to be within the scope of Article XI.[185] As a result, Article XI:1 is understood to apply even to policy measures that impose restrictions or conditions that create disincentives to export—such as by creating uncertainty about investment plans, or by increasing transaction costs for exports to prohibitive levels.[186] This basic prohibition, like other fundamental WTO norms, serves to protect competitive opportunities.[187]

As applied to export licenses, which the text expressly covers, Article XI:1 distinguishes between automatic and non-automatic systems. If a government, for statistical or record-keeping purposes, establishes an automatic licensing system in which all applications are approved, that system does not restrict exports and thus is consistent with Article XI:1. Discretionary systems, by contrast, do restrict trade. In reviewing quantitative import restrictions in India, one panel found "that a discretionary or non-automatic import licensing requirement is a restriction

[183] *See* Panel Report, *Turkey – Textiles*, WTO Doc. WT/DS34/R, para. 9.63. (Nov. 19, 2009).
[184] Panel Report, *Colombia –Ports of Entry*, WTO Doc. WT/DS366/R, para. 7.225 (Apr. 27, 2009).
[185] *See* Panel Report, *Argentina – Leather*, WTO Doc. WT/DS155/R, para. 11.17 (Dec. 19, 2000), (noting, in a case regarding alleged export restrictions, that "[t]here can be no doubt, in our view, that the disciplines of Article XI:1 extend to restrictions of a *de facto* nature").
[186] *See Colombia – Ports of Entry*, para. 7.227 (noting that "WTO panels have . . . concluded that the language 'other measures' in Article XI:1 is meant to encompass a 'broad residual category'" and that Article XI:1 "covers any measures that result in 'any form of limitation imposed *on*, or *in relation to* importation'").
[187] *See Colombia – Ports of Entry*, para. 7.236 & n.463 (discussing WTO and GATT cases).

prohibited by Article XI:1" because "discretionary or non-automatic licensing systems by their very nature operate as limitations on action since certain imports may not be permitted."[188] The same logic applies to exports. A GATT panel concluded in 1988 that delays of up to three months in Japan's issuance of export licenses for semi-conductors made its system "non-automatic and constituted restrictions on the exportation of such products inconsistent with Article XI:1."[189] When the United States recently challenged China's licensing of raw materials exports, the panel explained "that if a licensing system is designed such that a licensing agency has discretion to grant or deny a licence based on unspecified criteria, this would not meet the test . . . under Article XI:1."[190] With "[t]he possibility to deny the licence . . . ever present . . . , the system by its very nature would always have a restrictive or limiting effect," even if a license is granted in particular cases.[191]

With respect to FTA countries, the U.S. licensing system for LNG exports is automatic and thus consistent with Article XI:1. With respect to non-FTA countries, however, Dow Chemical Company is urging the DOE to exercise discretion to approve or deny export authorizations based on a parochial understanding of the public interest. Under WTO case law, such a licensing system would be deemed to restrict the exportation of natural gas to WTO members that have no FTA with the United States. Given the recent surge in production of shale gas, the system is not a temporary measure to prevent or relieve a critical shortage of natural gas under Article XI:2. It is thus possible that a WTO panel could find that a DOE export licensing system for non-FTA countries that is substantially different from the automatic system for FTA

[188] *See* Panel Report, *India – Quantitative Restrictions on Imports of Agricultural, Textile and Industrial Products*, WTO Doc. WT/DS90/R, para. 5.129 (Apr. 6, 1999),
[189] *See* GATT Panel Report, *Japan – Trade in Semi-Conductors*, L/6309 - 35S/116, para. 118 (May 4, 1988).
[190] Panel Report, *China – Measures Related to the Exportation of Various Raw Materials*, WTO Doc. WT/DS394/R, para. 7.921 (July 5, 2011).
[191] *Id.*

countries violates Article XI:1. Indeed, if DOE were to deny any pending applications, there would be a stronger argument that the licensing system, as applied in those cases, is inconsistent with Article XI:1.[192]

Article XIII:1 of the GATT 1994 imposes additional discipline on the administration of export restrictions among WTO members. It states that no prohibition or restriction on exports shall be applied "unless . . . the exportation of the like product to all third countries is similarly prohibited or restricted." Even if the DOE licensing system were consistent with Article XI:1, DOE would need to administer it in a manner that respects the non-discrimination obligation of Article XIII:1.[193] Thus, any discrimination in the treatment of FTA versus non-FTA countries could also expose the United States to claims based on Article XIII:1.

Dow Chemical Company may argue that Article XX of the GATT 1994 provides a limited number of policy-based exceptions that may enable a WTO member to maintain a measure that otherwise violates WTO rules. A WTO member raising an Article XX defense bears the burden of establishing (1) that the challenged measure falls within the scope of a particular Article XX exception; and (2) that the measure has been applied in a non-abusive manner, consistent with the requirements of the *chapeau*—or introductory paragraph—of Article XX.[194] According to the *chapeau*, the measure must "not be applied in a manner which would

[192] Moreover, if Congress were to impose an outright ban on LNG exports, as Rep. Markey proposed to do last year in H.R. 4024, the North American Natural Gas Security and Consumer Protection Act, a *prima facie* violation of Article XI:1 would be unambiguous.
[193] *See* Appellate Body Report, *EC – Bananas (Art. 21.5)*, WTO Doc. WT/DS27/AB/RW2/ECU, para. 334 (Nov. 26, 2008).
[194] *See* Appellate Body Report, *US – Shrimp*, WTO Doc. WT/DS58/AB/R, paras. 118-119 (Oct. 12, 1998).

constitute arbitrary or unjustifiable discrimination between countries where the same conditions prevail or a disguised restriction on international trade."[195]

However, the DOE licensing system sought by Dow Chemical Company does not appear to fall within the scope of any Article XX exception. Article XX(g) provides an exception for measures "relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption."[196] Even if natural gas is considered an exhaustible natural resource as that term is defined in the WTO case law, for a DOE system to qualify as "relating to" conservation, the United States would have to show that the system is "primarily aimed at" conservation, or that there is a means-ends relationship between the design and structure of the measures and the conservation objective.[197] Given the breadth of criteria that Dow Chemical Company wants DOE to consider, it would likely be difficult if not impossible to demonstrate that conservationist objectives are central. Moreover, to show that the measures are "made effective in conjunction with restrictions on domestic production or consumption," the United States would need to present evidence that it has measures in place that burden domestic producers and consumers of natural gas. Equality of treatment is not required, but there must be evidence of even-handedness when one compares the domestic and international impact of the measures.[198] Given the recent and projected surge in domestic production of shale gas, this again would likely be difficult if not impossible for the United States to demonstrate.

[195] GATT 1994, art. XX.
[196] *Id.*, art. XX(g).
[197] *See* Appellate Body Report, *US – Gasoline*, WTO Doc. WT/DS2/AB/R, pp. 16, 18-19 (Apr. 29, 1996); Appellate Body Report, *US – Shrimp*, para. 141.
[198] *See* Appellate Body Report, *US – Gasoline*, pp. 20-21; Appellate Body Report, *US – Shrimp*, paras. 144-45.

Other GATT exceptions appear even less promising. Article XX(i) allows restrictions on exports "necessary to ensure essential quantities of such materials to a domestic processing industry during periods when the domestic price of such materials is held below the world price as part of a governmental stabilization plan." Because the U.S. government does not impose controls on natural gas prices and has no stabilization plan in place, this exception does not apply. Article XX(j) allows measures "essential to the acquisition or distribution of products in general or local short supply," but there is no evidence that natural gas in the United States is currently in short supply. Also inapplicable is the separate national security exception of GATT Article XXI, which permits measures that a WTO member "considers necessary for the protection of its essential security interests . . . taken in time of war or other emergency in international relations."

Even if the United States were able to demonstrate that the DOE system sought by Dow Chemical Company falls within an Article XX exception, it would need to show that the DOE's administration of the system is consistent with the *chapeau*. The Appellate Body has noted that this burden represents "a heavier task than that involved in showing that an exception . . . encompasses the measure at issue."[199] In various WTO cases, a measure found to be provisionally justified as within the scope of an exception nonetheless has been denied protection under Article XX as a whole because it is discriminatory or operates as a disguised restriction on trade.[200] Here, there would be no occasion to address the requirements of the *chapeau* if, as appears likely, the DOE system did not fall within the scope of an Article XX exception at the outset.

[199] Appellate Body Report, *US – Gasoline*, p. 23.

[200] *See, e.g.*, Appellate Body Report, *US – Gasoline*, pp. 28-29 (finding measure provisionally justified under Article XX(g), but inconsistent with requirements of the Article XX *chapeau*); Panel Report, *Argentina – Leather*, para. 12.5 (finding measure within scope of Article XX(d), but inconsistent with *chapeau*); Appellate Body Report, *US – Shrimp*, paras. 186-87 (finding measure provisionally justified under Article XX(g), but inconsistent with *chapeau*).

In sum, the kinds of restrictions Dow Chemical Company wishes to impose on U.S. exports of natural gas are inconsistent with U.S. obligations as a member of the WTO. Specifically, the proposed discretionary licensing system for exports to non-FTA countries is a restriction on exportation prohibited by Article XI:1 of the GATT. If the DOE were to deny approval of exports to a non-FTA member of the WTO, or if Congress or other Administration policy were to impose a blanket ban on such exports, the United States could become the target of a complaint in the WTO dispute settlement system. Just as the U.S. government has challenged Chinese restrictions on exports of raw materials and rare earths in separate WTO cases, China or other countries could challenge U.S. restrictions on exports of natural gas. A ruling of violation could subject the United States to retaliatory trade sanctions, if no steps were taken to bring the challenged measures into compliance with WTO rules.

B. Restricting Exports Would Seriously Undermine U.S. Efforts to Combat Foreign Export Restraints.

At a broader level, the positions advanced by Dow Chemical Company and others would portray the United States in an unflattering or even hypocritical light on the world stage as it argues against unilateral trade restrictions in a variety of other contexts. The United States currently imports hydrocarbons, including natural gas, from dozens of different countries all across the globe, including Algeria, Angola, Brazil, Ecuador, Canada, Chad, Colombia, Egypt, Equatorial Guinea, Gabon, Iraq, Kuwait, Mexico, Nigeria, Norway, Russia, Saudi Arabia, Trinidad and Tobago, the United Kingdom, and Venezuela. The U.S. benefits greatly from, and even depends on, a largely unencumbered global energy trade. Across a range of goods, the U.S. government has campaigned against foreign export restraints. For example, the United States has recently initiated high-profile WTO cases against China's restrictions on the exportation of raw materials and rare earths, and against India's subsidization of its domestic solar energy

industry. Restricting U.S. exports of LNG would dramatically undercut our credibility to argue for the open trade system that serves our economic, energy, and national security interests.

VII. Conclusion – U.S. Leadership as a Global Energy Power Must Include the Authorization by DOE of LNG Exports Without Unreasonable Delay or Restriction.

The emergence of the United States as a global energy leader cannot be overstated. This change in the global energy equation is due largely to technological advances in the extraction of natural gas and oil from shale formations. These technologies are driving America's 21st century energy renaissance and have the potential to benefit our nation well beyond traditional energy policy.

In the words of Pulitzer Prize winning author Dan Yergin, "[this is] … the most important energy innovation so far of the 21st century."

Recent research shows that in the upstream segment of the oil and natural gas industry alone, unconventional natural gas production supports 1.7 million jobs. That number is expected to grow to 2.5 million jobs by 2015; 3 million jobs by 2020 and 3.5 million jobs by 2035. According to the Bureau of Labor Statistics, jobs in the oil and natural gas exploration and production sector pay on average more than $100,000 per year, more than twice the national average. Currently, the entire natural gas and oil industry supports 9.2 million U.S. jobs; accounts for 7.7 percent of the U.S. economy and delivers $86 million per day in revenue to our government.

In addition to job creation, unconventional natural gas and oil paid $62 billion in local, state and federal government taxes in 2011. By 2020, this number is expected to grow to $111

billion. On a cumulative basis, unconventional natural gas and oil activity is projected to generate more than $2.5 trillion in tax revenues between 2012 and 2035.

And we should remember this is not happening in a vacuum. The world is watching and understands that our decisions could alter the geopolitical energy equation for generations. LNG exports, which will create thousands of U.S. jobs, generate billions of dollars in revenue, improve our trade deficit, spur major investment in infrastructure, and strengthen our energy security, are the case in point. However, these benefits can only be realized if the DOE moves forward without unreasonable delay or restriction. API therefore urges the DOE to move forward to expeditiously process and approve pending LNG export applications, as required under the presumption set forth in favor of exports in the Natural Gas Act.

Respectfully submitted,

Status Report and Preliminary Results : The Economic Impacts of U.S. LNG Exports

Presented to:
The American Petroleum Institute

Presented by:
Harry Vidas
Vice President

February 22, 2013

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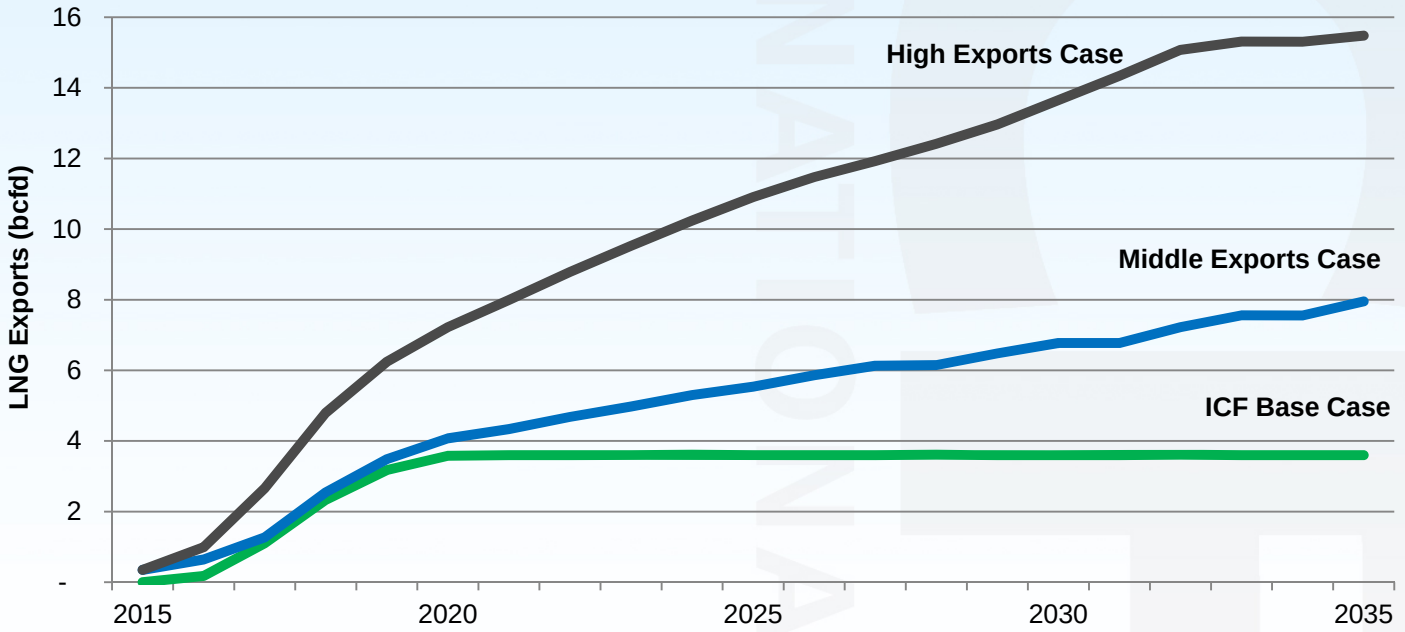
Study Scope

The study is estimating the total economic impacts of three LNG export scenarios relative to a zero LNG export baseline.

Total LNG Exports – Three Cases



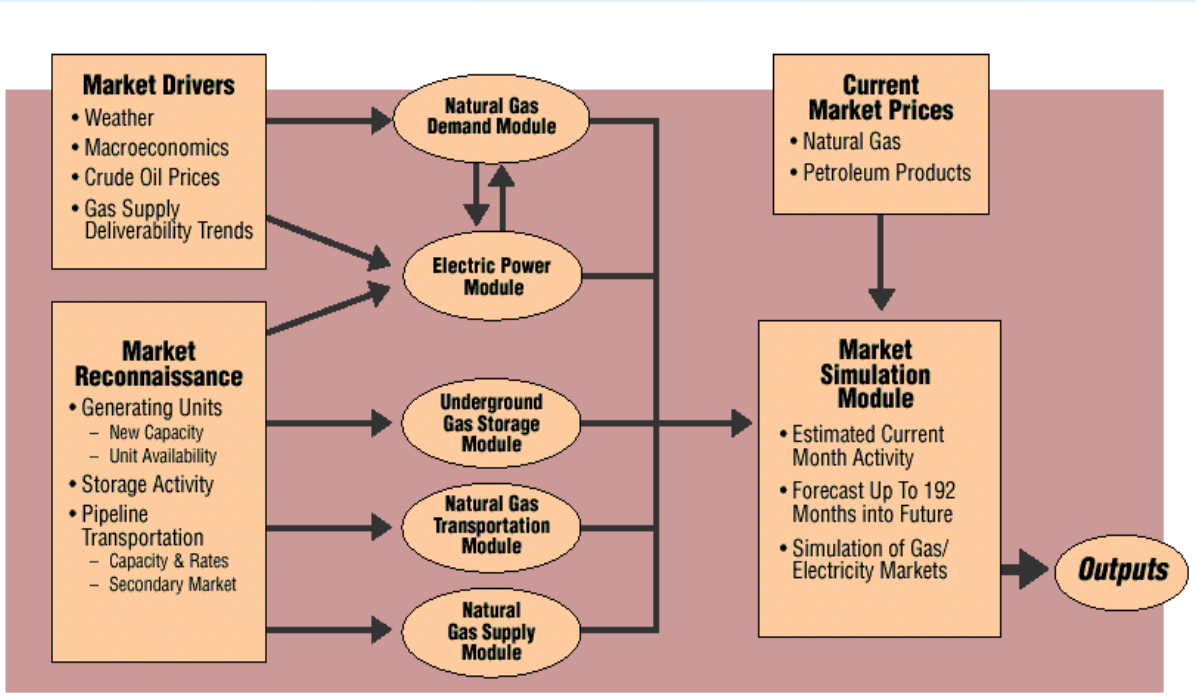
Study Methodology: Overview

Two-step methodology:

- Gas Market Model: Determines natural gas and liquids supply and pricing for each LNG export case

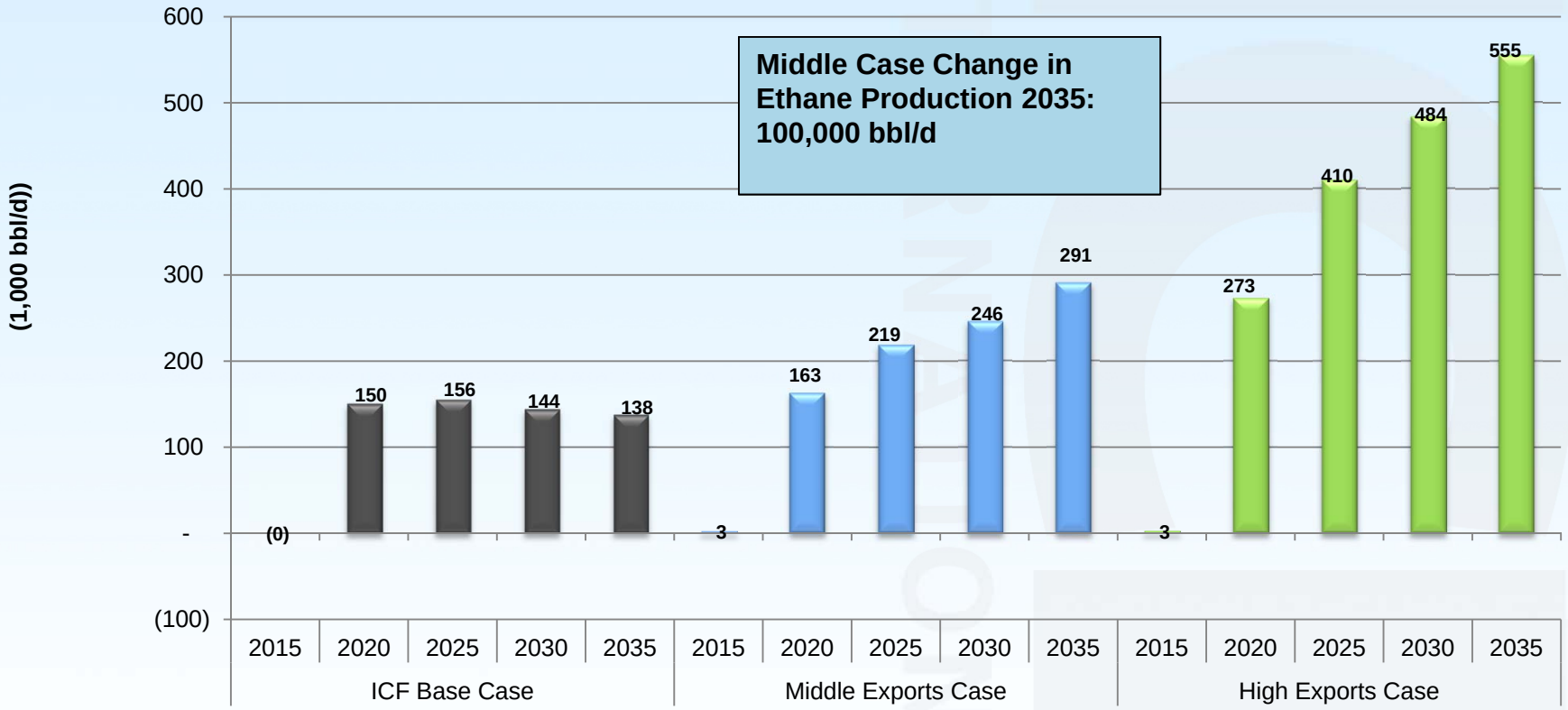
- Input-Output Model: Determines economic impacts associated with the change in natural gas and liquids supply and pricing for each case

GMM Structure



Incremental Gas Production Will Increase US Liquids Production, Providing Added Olefin Feedstocks

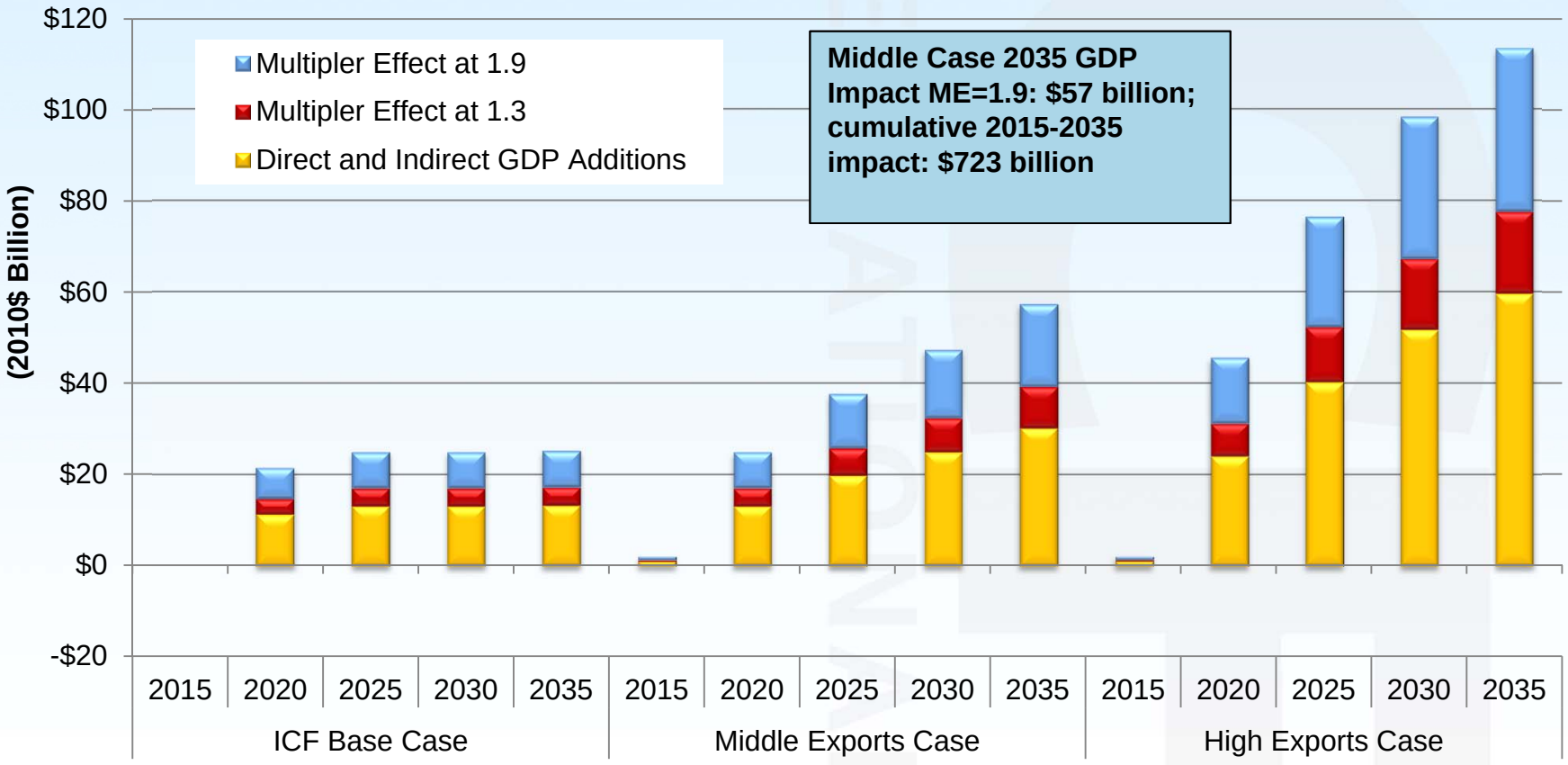
Natural Gas Liquids Volume Changes



Liquids include: Condensate/crude oil, ethane (100% of production assumed to go into ethylene production), propane (25% of production assumed to go into propylene production), butane, pentanes+

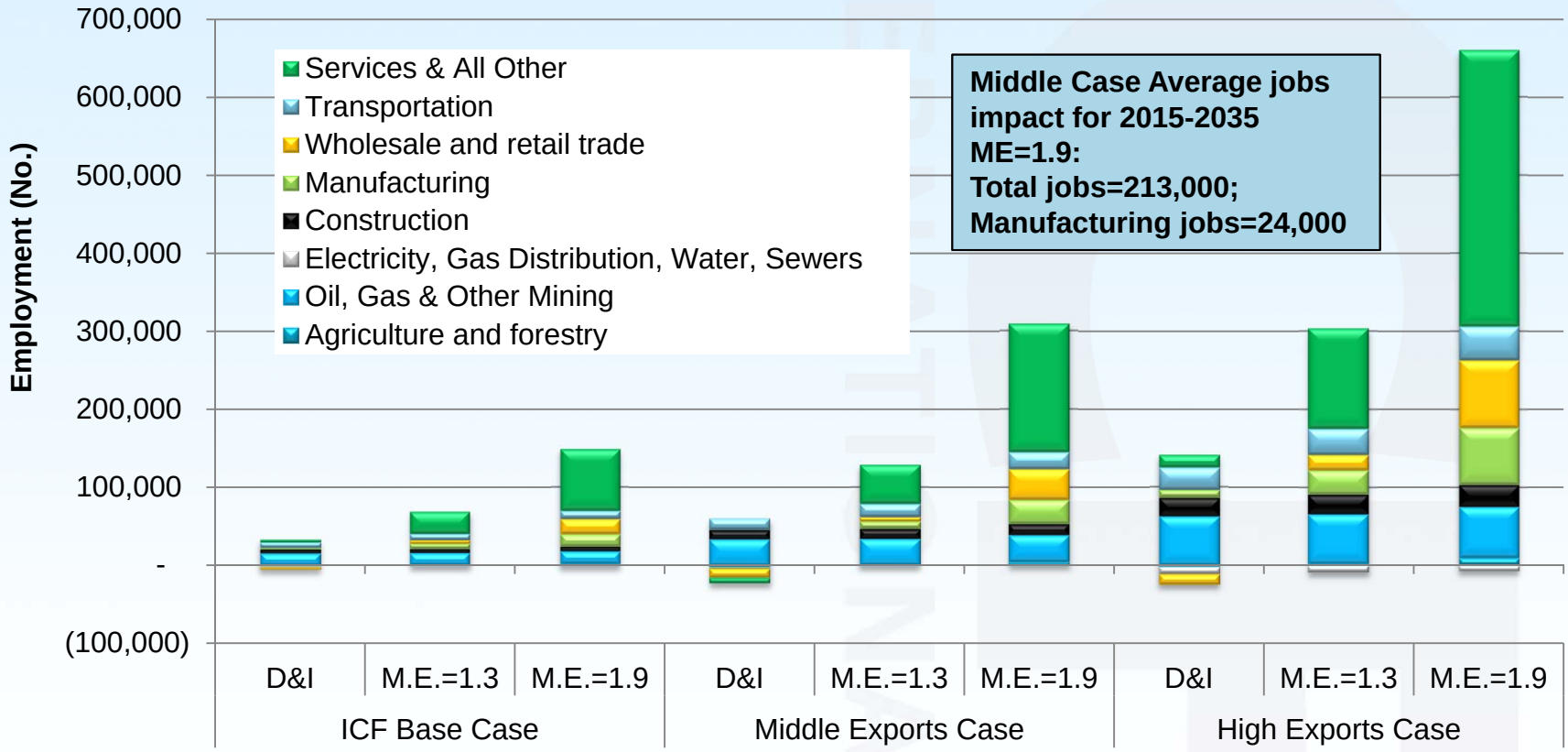
Overall GDP Impact of LNG Exports is Very Positive

Change in Total Economic Impacts



Manufacturing Jobs are Increased by LNG Exports

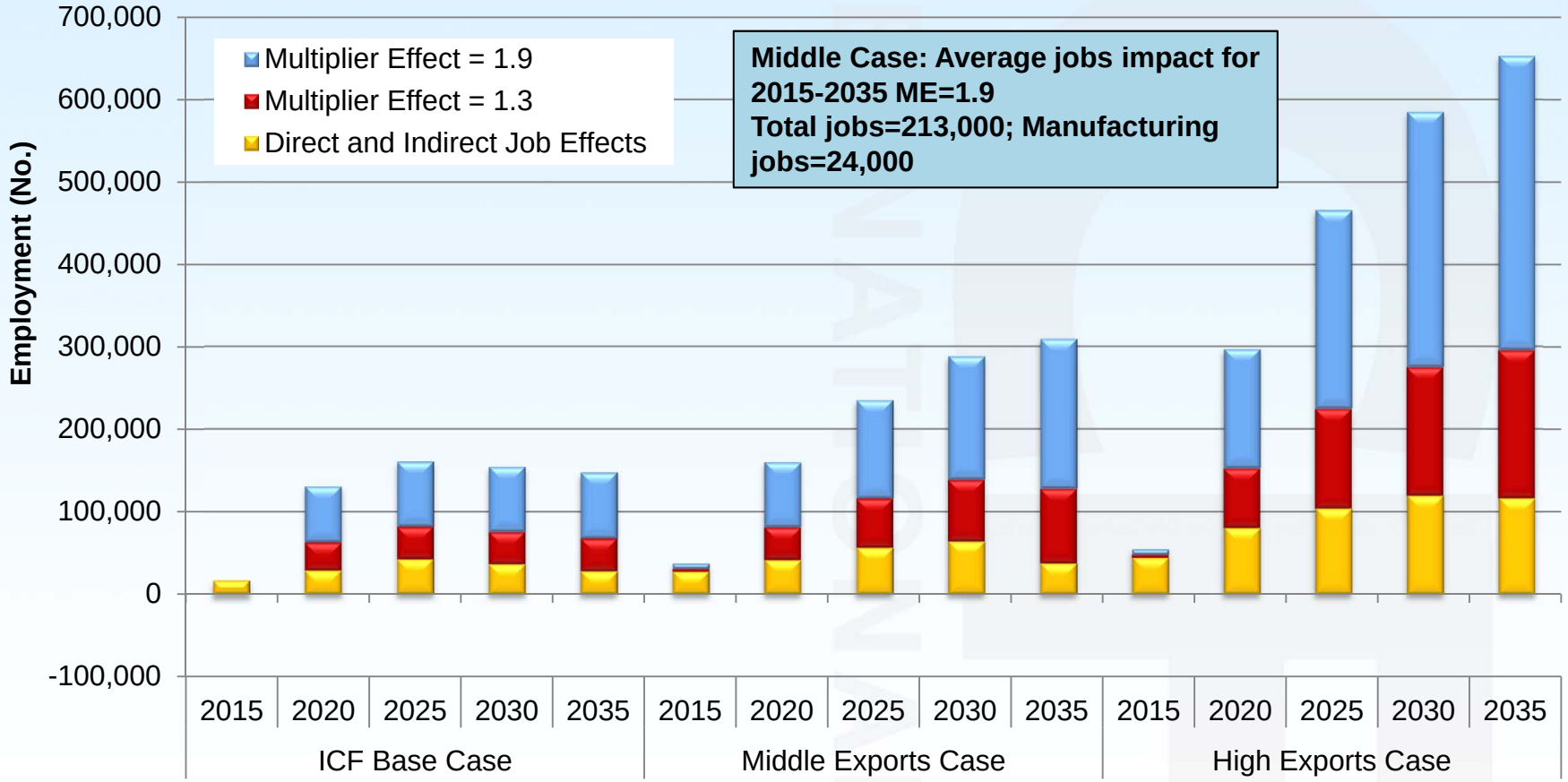
Changes in Direct, Indirect and Induced Employment by Sector (2035)



Note: D&I signifies Direct and Indirect

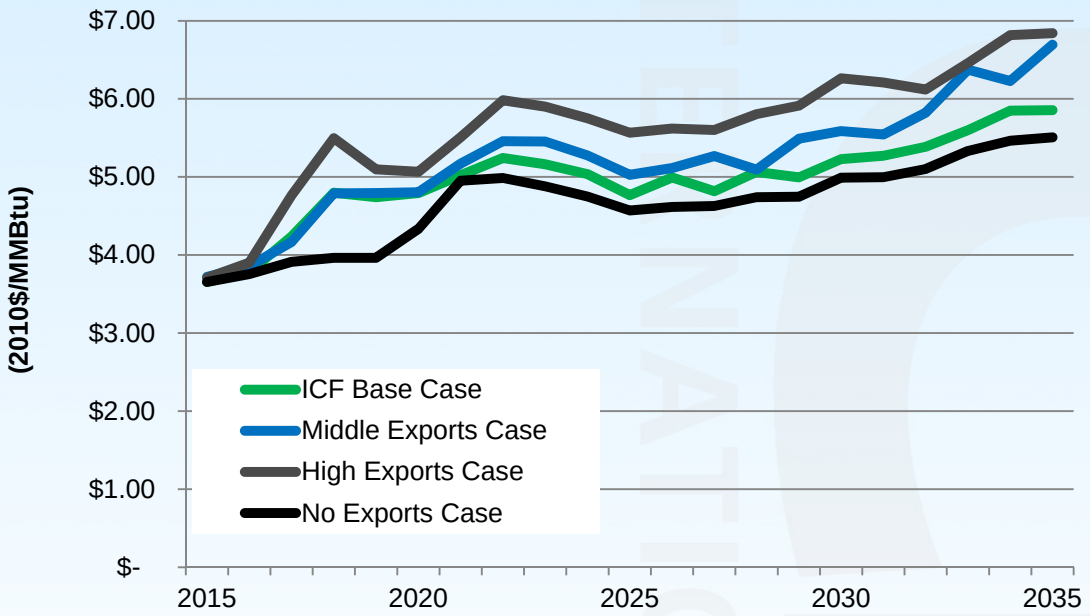
Total Employment Increases by 150,000 to 650,000 (with full multiplier effect)

Total Changes in Employment Impacts



Price Impacts: ICF Analysis

Henry Hub Prices (2010$/MMBtu)



Average Price Changes relative to Zero Export Case	ICF Base Case	Middle Exports Case	High Exports Case
Natural Gas Price at Henry Hub ($2010's per MMBtu)	$ 0.31	$ 0.57	$ 0.98
Average Price Delta weighted average by consumption	$ 0.26	$ 0.48	$ 0.86

Conclusion

- Volume Impacts: Dry gas production increases between 3.1-12.3 Bcfd for LNG export cases, resulting in between 138,000-555,000 barrels/day in additional liquids production.
- Economic Impacts: LNG exports result in direct and indirect annual GDP additions of $20b-$60b in 2035.
- Employment Impacts: By 2035, LNG exports result in between 28,000-116,000 direct and indirect annual job additions, as well as up to 120,000-540,000 in annual induced employment. Direct and indirect employment gains are concentrated in the oil and gas, construction, and manufacturing sectors, while induced employment is concentrated in services (i.e., consumer spending-oriented) sectors.
- Price Impacts: LNG exports result in Henry Hub natural gas price increases of $0.35/MMBtu in the ICF Base Case to over $1.30/MMBtu in the High Exports Case in 2035. Consumer price increases are lower.