# RESPONSE TO

# INDUSTRIAL ENERGY CONSUMERS OF AMERICA

# TESTIMONY BEFORE THE

# SUBCOMMITTEE ON ENERGY

# HOUSE COMMITTEE ON ENERGY AND COMMERCE

# JAN. 19, 2018

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## *Why is the Department of Energy directly involved in authorizing LNG exports?*

Under the Natural Gas Act, companies wanting to export liquefied natural gas (LNG) from the United States must receive authorization from the U.S. Department of Energy (DOE). Due to the way the law is written, companies most often submit two separate export applications, one for nations with which the United States has a free trade agreement (FTA) that includes natural gas and a second for non-FTA nations.*

- Applications for exports to FTA countries are deemed by law to be in the "public interest" and must be approved by DOE without modification or delay.
- Applications to export natural gas to non-FTA nations are subjected to an informal public interest "adjudication" and are granted unless DOE finds that the proposed exportation "would not be consistent with the public interest."

To date, DOE has approved/pending applications to export ≈51 billion cubic feet per day (Bcf/d) of domestically produced natural gas, which equates to ≈350 million metric tons per annum (mtpa) of LNG. **(Table. 1)** The applications can be broken down as follows:

- DOE has granted full (FTA + non-FTA) export authorizations to 10 large-scale and several smaller LNG projects. These authorizations total ≈21 Bcf/d.
- The 10 large projects include (1) six projects that have taken a final investment decision (FID) on all/some of their liquefaction "trains"and are under construction; and (2) four projects that have not taken FID but have received permits to proceed with construction from either the Federal Energy Regulatory Commission (FERC) or the U.S. Maritime Administration (MARAD).
- In addition, 13 other major LNG export projects are in formal FERC review or have begun the FERC pre-filing process, and will be ripe for DOE non-FTA consideration (under current policy) when they have emerged from the FERC review. (Two other major projects seek DOE non-FTA approval but have not yet entered the FERC pre-filing process and are not listed below.)

**Table 1. Current Status of Major U.S. LNG Export Projects (Projects ≤ 1.0 mtpa Excluded)**

| Project Status | Number | Bcf/d Gas | Mtpa of LNG |
|---|---|---|---|
| Operating (1) / Under Construction (5) | 6 | 10.0 | 70.9 |
| DOE Permitted—Not Under Construction | 4 | 9.7 | 68.9 |
| Under FERC / MARAD Review | 11 | 20.9 | 146.9 |
| In FERC "Pre-Filing" | 2 | 3.3 | 24.0 |

***Note:** The volume requested in the FTA and non-FTA applications are generally identical (or nearly so) and represent the project's liquefaction capacity. FTA and non-FTA applications are <u>not</u> additive (as IECA falsely alleges).

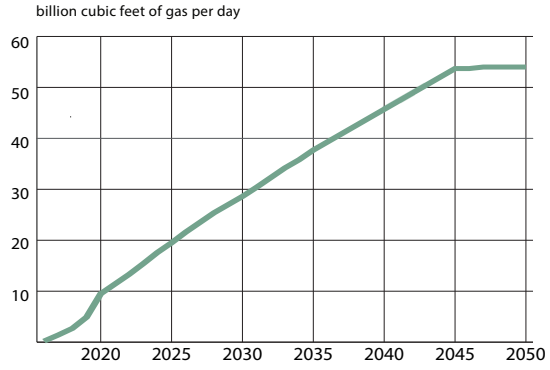
# RESPONSE TO THE IECA TESTIMONY OF JAN. 19, 2018 (REGARDING U.S. LNG EXPORTS)

The Industrial Energy Consumers of America (IECA)[1] has been trying to block U.S. LNG exports since 2010. IECA's core argument is that America doesn't have enough natural gas to support LNG exports without harming industrial, residential, and other gas consumers. Although this argument has been repeatedly rejected by federal decision-makers, IECA persists. Recently, for example, IECA testified in opposition to H.R. 4605 stating that: "The U.S. Department of Energy (DOE) has given final approval to [LNG export licenses to both non-free trade agreement and free trade agreement] countries equal to 71.2% percent of 2016 U.S. natural gas demand (or 53 billion cubic feet/day (Bcf/d)."[2] IECA goes on to argue that the level of LNG exports approved by DOE could exhaust "80% of all technically recoverable [U.S. natural gas]resources by 2050." To reach this impossible conclusion, IECA concocted a "scenario" whereby all pending LNG export projects are built (at a rate of 1.58 Bcf/d of new U.S. liquefaction capacity per year from 2020 to 2044). **(Fig. 1)** Such a scenario is totally implausible.

- No credible gas market forecaster believes that there is sufficient global LNG demand to support that level of growth.
- However, even should such demand materialize, U.S. projects would still face vigorous competition from LNG producers in Australia, Qatar, Russia, etc.
- Considering these facts, the 2018 Annual Energy Outlook[3] (AEO-2018) just released by the U.S. Energy Information Administration (EIA) estimates that U.S. LNG exports could reach 14.5 Bcf/d by 2029 under its "Reference Case" and 22.7 Bcf/d by 2043 under the "High Oil & Gas Resource and Technology Case." **(Fig. 2)**
- Corporate forecasts fall into a similar range. The 2017 Energy Outlook by BP, for example, sees global LNG demand doubling over the next two decades but predicts that U.S. LNG exports will be 19 Bcf/d in 2035.[4] (About midway between the EIA Reference Case and the High Oil & Gas Case). **(Fig. 3, Fig. 4)**

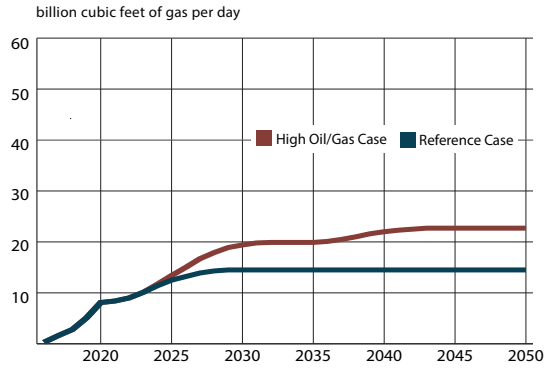
In addition to vastly overestimating U.S. LNG exports, IECA ignores U.S. natural gas supply growth, presuming that "technically recoverable natural gas resources" (EIA's estimates of proved reserves + unproved resources) in the Lower 48 will remain static at 2,200 trillion cubic feet (Tcf)[5] over the next 33 years. There are three problems with this assumption.

**Fig. 1 - U.S. LNG Export Projections to 2050 (IECA)**




Source: IECA Testimony (Jan. 19, 2018) ©LNG Allies, 2018

**Fig. 2 - U.S. LNG Export Projections to 2050**




Source: EIA Annual Energy Outlook 2018 ©LNG Allies, 2018

1. IECA is an ad hoc lobbying group of manufacturers that consume large quantities of energy.
2. IECA, *Testimony of Paul N. Cicio*, Jan. 19, 2018.
3. U.S. Energy Information Administration (EIA), *Annual Energy Outlook 2018*, Feb. 6, 2018.
4. BP, *The Effect of LNG Growth on Global Gas Markets*, 2017 Energy Outlook, Jan. 2017.
5. The volume estimated by EIA at year-end 2014.

- First, EIA's technically recoverable gas resource estimates are never static. They change year-to-year, reflecting new geological knowledge, technological advances, and changing market conditions.
- Second, EIA is not the only respected forecaster of future U.S. natural gas supplies. The Potential Gas Committee (PGC)—a group of 80 natural gas experts drawn from industry, academia, and government—has been conducting biennial surveys since 1964. The latest PGC assessment (July 17, 2017) found that the future supply of U.S. natural gas at year-end 2016 stood at 3,141 Tcf, an increase of 10% from year-end 2014.[6] **(Fig. 5)**
- Third, IECA fails to consider advances in shale gas recovery. For instance, three years ago (Jan. 2015) there were 346 natural gas drill rigs in use and "new well gas production per rig" stood at 1.66 million cubic feet per day (mmcf/d). Now (Jan. 2018) there are 182 natural gas rigs in use but new well gas production per rig has jumped to 3.57 mmcf/d.[7]

Put simply, the shale revolution is far from over. During a July 27, 2017, natural gas supply briefing on Capitol Hill, PGC executive director Dr. Alexei Miller stated that ten years ago only about 10% of the natural gas in shale reservoirs was considered "technically recoverable." Now, Miller said, it is possible to recover some 15% of the gas and the rate of recovery will keep growing.

Besides overestimating LNG exports and underestimating U.S. natural gas resource resiliency, IECA disregards the ability of the U.S. gas industry to increase production and delivery in response to market signals (e.g. increased natural gas demand). Over the last decade, U.S. gas production has grown faster than consumption and net imports of gas have been eliminated. **(Fig. 6)** There is broad consensus that this trend will continue.

- In the short-term, the International Energy Agency (IEA) predicts that U.S. gas output will grow by 2.9% per year through 2022, adding around 13.5 Bcf/d to global production. To put that in perspective, the IEA believes

**Fig. 3 - Global LNG Demand (BP)**

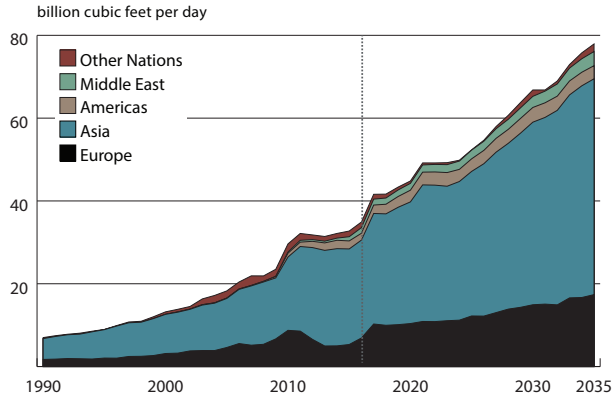



**Fig. 4 - Global LNG Supply (BP)**

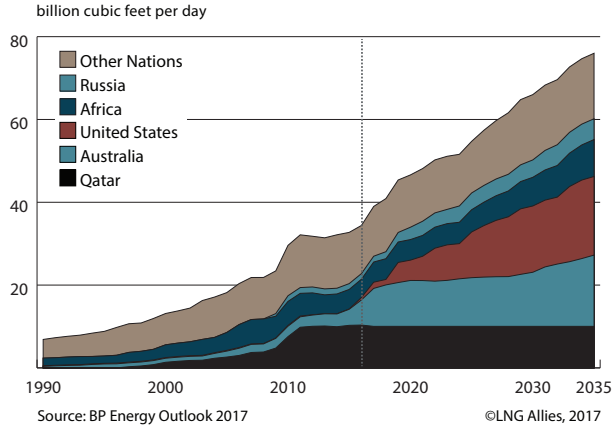
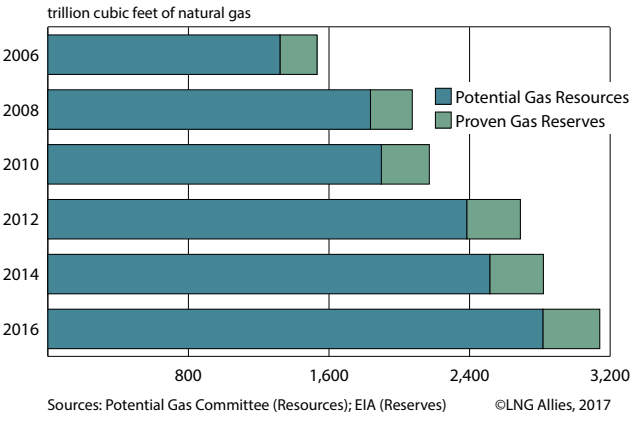



**Fig. 3 - U.S. Future Gas Supply (PGC)**




6. Potential Gas Committee, *Future Supply of Natural Gas in the United States,* July 19, 2017.
7. EIA, *Natural Gas Weekly Update and Drilling Productivity Report*, Jan. 2015 and Jan. 2018.

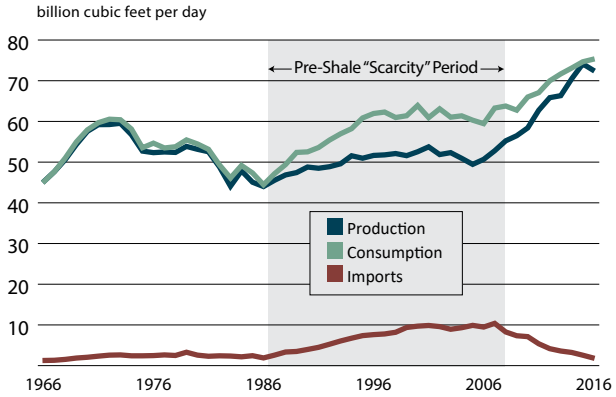
that by 2022, the United States will produce 87 Bcf/d, or some 22% of worldwide gas production.[8]

- In the just released AEO-2018 Reference Case, EIA estimates that U.S. natural gas production will rise from current levels of ≈75 Bcf/d to 92.7 Bcf/d by 2022 and to 117.8 Bcf/d by 2050. **(Fig. 7)**
- In the AEO-2018 High Oil and Gas Case, EIA estimates that U.S. natural gas production will rise to 100.2 Bcf/d by 2022 and to 151.4 Bcf/d by 2050. **(Fig 8)**

IECA knows that current/future U.S. natural gas supplies and production are, in fact, more than sufficient to meet domestic demand and LNG exports. Their true concern? IECA says that exporting U.S. LNG "increases domestic prices and reduces natural gas prices for foreign buyers of LNG."[9] IECA has been repeating this argument for eight years without providing evidence to back up their claim. Over that same time period, this matter has been studied repeatedly by DOE and independent experts. Each of these studies (except one commissioned by IECA itself) concluded that the domestic price impacts of LNG exports would be either "negligible" or "small."

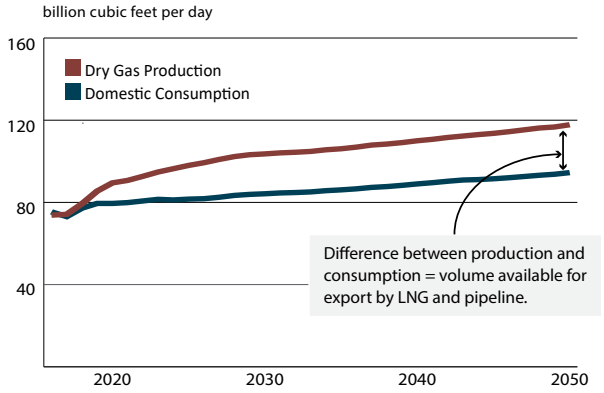
- *Effect of Increased Natural Gas Exports on Domestic Energy Markets*[10] (EIA 2012 Study): "EIA projects that U.S. natural gas prices [will] rise over the long run, even before considering the possibility of additional exports." (EIA goes on to predict a 20% to 30% increase.)
- *Macroeconomic Impacts of LNG Exports from the United States*[11] (NERA 2012 Study): "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... Natural gas price changes attributable to LNG exports remain in a relatively narrow range across the entire range of scenarios [we studied]... The largest price increases that would be observed after five years of potentially growing exports could range from $0.22 to $1.11 [per mmbtu]."

**Fig. 4 - Gas Production, Consumption, Imports**



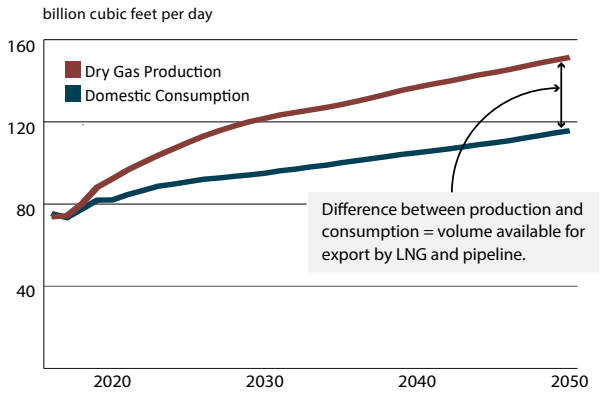

Source: EIA Monthly Energy Review (Aug. 2017) ©LNG Allies, 2017

**Fig. 7 U.S. Natural Gas Production and Consumption**




Source: EIA Annual Energy Outlook 2018 (Reference Case) ©LNG Allies, 2018

**Fig. 8 U.S. Natural Gas Production and Consumption**




Source: EIA Annual Energy Outlook 2018 (High Oil & Gas Case) ©LNG Allies, 2018

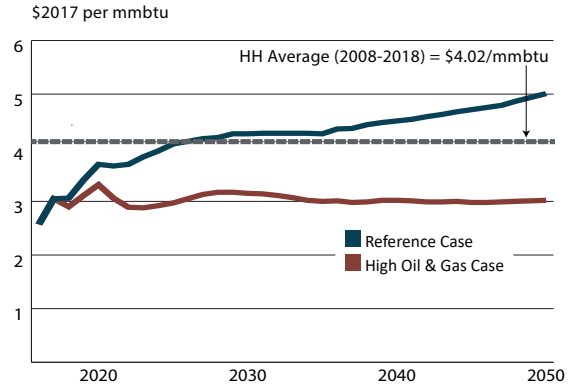
8. IEA, *Gas 2017*, July 13, 2017.
9. IECA, Letter to Sec. Rick Perry and Wilbur Ross, June 28, 2017.
10. EIA, Jan. 2012.
11. NERA Economic Consulting, Dec. 3, 2012.

- *U.S. LNG Exports: Impacts on Energy Markets and the Economy*[12] (ICF 2013): "LNG exports are expected to have moderate impacts on domestic natural gas prices of about $0.32 to $1.02 per mmbtu on average between 2016 and 2035."
- *Effect of Increased Levels of Liquefied Natural Gas Exports on U.S. Energy Markets*[13] (EIA 2014): "The impact of average Lower 48 states natural gas prices at the producer level ranges from 10% to 18% [depending on the LNG export scenario] over the 2015-40 period... [However,] the percentage change in prices that industrial and electric customers pay tends to be somewhat lower than the change in the producer price and the percentage prices that residential and commercial customers pay is significantly lower." [Emphasis added]
- *Macroeconomic Impact of Increasing U.S. LNG Exports*[14] (Baker/Oxford 2015): "The exact impact of LNG exports on the Henry Hub price depends on both domestic and international market considerations [but] the Henry Hub price is, on average, just 4.3% higher... over the period 2026–2040."
- *Impact of LNG Exports on the U.S. Economy: A Brief Update*[15] (ICF 2017): "Due primarily to larger and more price-responsive [U.S.] natural gas supplies, the projected [domestic] price impacts of LNG exports are about one-half of the levels expected in the 2013 report. We now estimate a price increase of 5 to 6 cents per mmbtu per one Bcfd of exports versus the 2013 estimate of 11 to 12 cents." [Emphasis added]

In addition to these six studies, EIA's AEO-2018 made Henry Hub natural gas price projections through 2050. According to the EIA, Henry Hub prices should remain at or below $4.25/mmbtu through 2035 in the Reference Case and slightly above/below $3.00/mmbtu in the High Oil & Gas Case, even as LNG exports increase. **(Fig. 9)** By way of reference, the monthly Henry Hub spot price averaged $4.02/mmbtu during the 120 months ending Dec. 31, 2017. **(Fig. 10)**

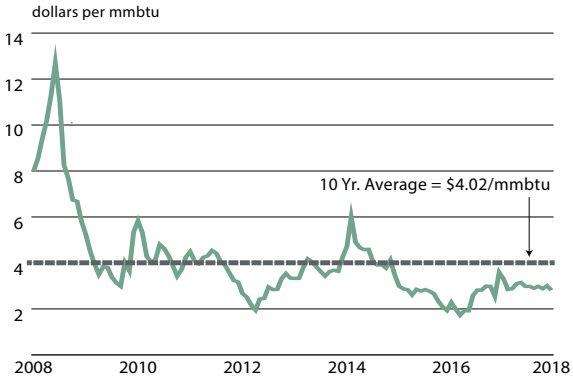
**As demonstrated herein, the United States is blessed with tremendous natural gas resources. These resources are sufficient to meet all domestic needs for a century or more and to support a robust level of natural gas exports at reasonable prices for everyone.**

**Fig. 9 U.S. Natural Gas Price Forecasts (Henry Hub)**




Source: EIA Annual Energy Outlook - 2018 ©LNG Allies, 2017

**Fig. 10 Monthly Henry Hub Spot Prices 2008-2018**




Source: EIA Nat. Gas Weekly Update (Data through Dec. 2017) ©LNG Allies, 2018

12. ICF International (for American Petroleum Institute), May 15, 2013.
13. EIA, Oct. 2014.
14. Center for Energy Studies, Baker Institute at Rice University, and Oxford Economics, Oct. 29, 2015.
15. ICF International (for American Petroleum Institute), Oct. 3, 2017.

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