HEARING TO EXAMINE THE ROLE OF U.S. LNG IN MEETING EUROPEAN ENERGY DEMAND

SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

SEPTEMBER 13, 2018

FOR THE RECORD

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SUMMARY POINTS

1. **It is NOT in the public interest to approve LNG export volumes to levels which will connect domestic prices to global LNG market prices, like crude oil is today and which increases U.S. gasoline prices. The U.S. Department of Energy (DOE) has not given this concern any consideration.**

If we do, demand by countries, not domestic supply and demand, will determine U.S. prices. We will have lost our national advantage and our citizens will no longer benefit from these valuable non-renewable resources.

2. **Shipments of U.S. LNG to the EU reduces U.S. manufacturing sector competitiveness relative to the EU manufacturing sector.**

The EU wants access to U.S. natural gas but does not want to give U.S. manufacturing products access to their markets. The U.S. should NOT surrender our competitiveness and to EU demands to remove the Natural Gas Act (NGA) public interest.

3. **The NGA and its non-free trade agreement (NFTA) public interest provision has not been a deterrent to LNG exports going to the EU or anywhere else.**

The DOE has already approved 11 LNG export terminals with nameplate export capacity of 21.4 Bcf/day, an equivalent of almost 29 percent of U.S. demand. Export terminal volume with pending approval is another 32.7 Bcf/d or 44 percent of U.S. demand. Of concern to consumers is that DOE has never declined an export application that has completed the Federal Energy Regulatory Commission (FERC) NEPA process.

4. **The U.S. delivered LNG price to the EU sets a price ceiling for Russia, Qatar, and Norway from which to reduce their price and ensure their market shares. Their costs are lower.**

5. **Although ample EU LNG import capacity already exists, the EU has purchased only 10.6 percent of all cargos from the U.S.**

6. **Availability of U.S. LNG export capacity gives the EU (our allies) the assurances of supply without the obligation to purchase.**

Chairwoman Murkowski, Ranking Member Cantwell, and members of the Senate Committee on Energy and Natural Resources, thank you for this opportunity to provide comments for the record on this important and timely issue.

It is important that the voice of the industrial consumer is heard on this timely public policy debate which negatively impacts our competitiveness long-term. IECA supports exports of LNG as long as export volumes do not connect U.S. prices to global LNG prices. This is what has happened in Australia. Even though they have an abundant supply of natural gas, consumers are paying the net back global LNG price. Prices there were historically in the $3.50 to $4.00/GJ price range and are now $9.00/GJ and suddenly becoming $10.00, $11.00 or $12.00.[1] Australian manufacturing jobs have decreased by almost 17 percent, since Australia started exporting LNG (see figure 1 in the appendix).

What is especially unique about LNG exports is that decisions made today regarding the approval of LNG export terminals will not impact the U.S. for several years out. This is why the U.S. should NOT overcommit on how many terminals are approved. Commitments by the DOE to approve LNG export terminals for 20 to 30 years adds significant financial risk to manufacturers that can impact U.S. investment decisions. It is low-cost shale gas that saved us and has resulted in tremendous investment and job creation and it would be irresponsible public policy to give that competitive advantage away, thereby harming the manufacturing sector.

The U.S. manufacturing sector is in competition with the world's manufacturing complex. And, U.S. production of shale natural gas, natural gas feedstock, and natural gas-fired electric generation is a competitive advantage. The U.S. manufacturing sector consumes 29 and 25 percent of U.S. natural gas and electricity, respectively. According to the Energy Information Administration (EIA), 90 percent of U.S. manufacturing does not have the ability to switch from natural gas, as the dependency upon gas continues to increase (see figures 2 and 3).

IECA member companies are mostly from energy-intensive trade-exposed (EITE) industries. According to EIA, EITE industries consume upward of 80 percent of U.S. manufacturing energy consumption. They are energy price sensitive and produce much of the products that are used by other industries to produce essentially all of the products that consumers use daily.

The Industrial Energy Consumers of America is a nonpartisan association of leading manufacturing companies with $1.0 trillion in annual sales and with more than 1.7 million employees. IECA membership represents a diverse set of industries including: chemicals, plastics, steel, iron ore, aluminum, paper, food processing, fertilizer, insulation, glass, industrial gases, building products, automotive, independent oil refining, and cement.

[1] Australia Financial Review. "Renewed threat of LNG export curbs as CEOs face fresh grilling. August 30, 2018

COMMENTS FOR THE RECORD

1. **It is NOT in the public interest to approve LNG export volumes to levels which will connect domestic prices to global LNG market prices, like crude oil is today. The U.S. Department of Energy (DOE) has not given this concern any consideration.**

Crude oil provides an important lesson for policymakers on what NOT to do with U.S. LNG export policy. The U.S. has an abundant supply of crude oil. Production continues to increase yet consumers are hurting from the high cost of crude oil and resulting high gasoline prices. U.S. consumers are no longer benefiting from the vast crude oil resources.

The reason is that the domestic price of crude oil is connected to global prices. As global crude oil demand increases from countries across the globe, even though domestic production is increasing, U.S. prices rise. We also import price volatility driven by global political, military, and economic upheavals. And, the LNG market that is even more troublesome.

First, the global LNG market is not a real market. The U.S. natural gas market is a real market. U.S. prices are determined by domestic supply versus demand. Suppliers are publicly owned-companies with shareholders and transparency versus several global LNG suppliers are state owned enterprises. U.S. prices are transparent on exchanges, hubs, or pricing basis points throughout the country, which gives all buyers and sellers equal access to market and price information from which decisions are made. There are lots of sellers and buyers. No one has market power and federal agencies provide market oversight to prevent manipulation. There is no manipulation of price or tying agreements to the price of other commodities. There are no memorandums of understanding between large groups of buyers to work together to purchase at lower prices as there is in the global LNG market.

Second, global LNG buyers are countries, not companies like a manufacturer that are accountable for a profit or loss and no automatic cost pass through. The entities who purchase the LNG are either state-owned enterprises (SOEs) or fully regulated utilities with automatic cost pass-through. This will be especially troublesome longer term when we shift from an oversupply of global LNG capacity to a short fall of capacity because these entities have the capability to pay any price, no matter how high, to purchase LNG to keep their country's lights on and manufacturing humming. They operate with the full backing of their governments.

As these global LNG buyers pull on U.S. supply of natural gas, U.S. prices of natural gas and electricity will increase. The same effect that global demand on crude oil is having on gasoline prices. This will be especially troublesome in the winter. The majority of LNG dependent countries have winters when we do. In some countries, natural gas is government subsidized so that the high global LNG market price is never fully passed onto their manufacturing and electric generation companies. So, while our domestic price would increase, others may not.

Given the above, manufacturers have every reason to be concerned that the DOE will wrongfully accept an approach of letting markets determine the levels of approved LNG

exports, rather than limiting approval of applications to export in order to ensure that U.S. domestic prices will not be connected to global prices.

This is the approach taken in the DOE's most recent LNG export study entitled, "Macroeconomic Outcomes of Market Determined Levels of U.S. LNG Exports."[2] We can only assume that this study will be used to justify approval of more LNG export terminals.

Based upon what has happened with the crude oil/gasoline markets and the realities of the global LNG market, letting the market determine the levels of U.S. LNG exports is a recipe for economic failure. A public policy failure. A failure of the DOE to live up to the responsibilities it has under the NGA, which states to put the public interest first. U.S. policymakers should not relinquish control of our natural gas resources to government-controlled state-owned enterprises and utilities.

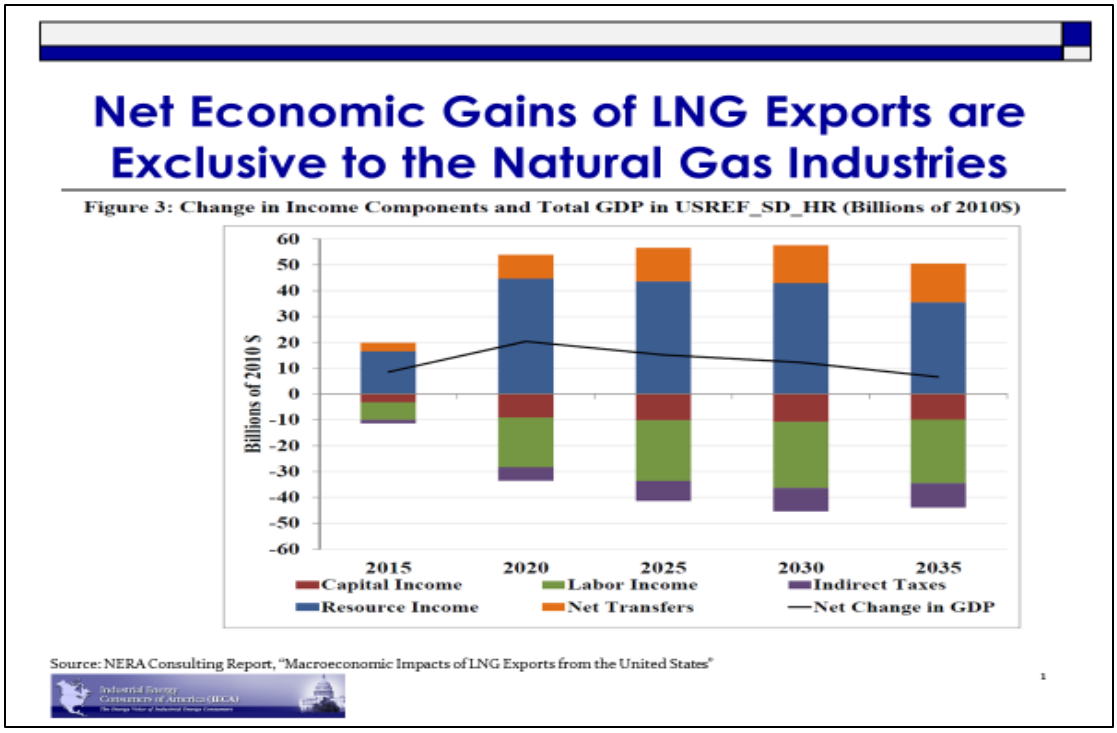
2. Shipments of U.S. LNG to the EU reduces U.S. manufacturing sector competitiveness relative to the EU manufacturing sector.

The EU wants access to U.S. natural gas, but does not want to give U.S. manufacturing products access to their markets. The U.S. should NOT surrender our competitiveness to EU demands to remove the NGA's public interest. It was the wisdom of Congress which concluded that shipments of LNG to countries with free trade agreements (FTA) could have unfettered access to our natural gas, but that LNG shipments to NFTA countries should not, unless it can be proven that such shipments are in the public interest.

Every study conducted by the DOE shows that LNG exports increase U.S. prices, reduces wages, reduces investment (other than investment in natural gas-related business), reduces relative manufacturing competitiveness, and reduces the price of natural gas to other nations (thereby reducing the price of natural gas to their manufacturing sector).

Macroeconomic conclusions that LNG exports provide a net economic benefit prove our point that LNG exports to NFTA countries are not in the public interest. See figure below which is copied directly from the DOE study entitled "Macroeconomic Impacts of LNG Exports from the United States". All DOE studies show there is a small net economic benefit of roughly 0.05 percent of GDP. All of the economic benefits go to only one segment of the economy, the natural gas production and export entities, and all other parts of the economy lose net economic benefits. It is not possible that this interpretation of the NGA public interest is what Congress intended, that one industry become a winner and everyone else, including homeowners, farmers, and the manufacturing sector become losers.

[2] https://www.federalregister.gov/documents/2018/06/12/2018-12621/study-on-macroeconomic-outcomes-of-lng-exports



3. **The NGA and its non-free trade agreement (NFTA) public interest provision has not been a deterrent to LNG exports going to the EU or anywhere else.**

The U.S. DOE has already approved 11 LNG export terminals with nameplate export capacity of 21.4 Bcf/day, an equivalent of almost 29 percent of U.S. demand. Export terminal volume with pending approval is another 32.7 Bcf/d or 44 percent of U.S. demand. Of concern is that DOE has never NOT approved an application that has completed the FERC NEPA process. The prospects of the DOE approving the combined approved and pending volume of 54.1 Bcf/day is extremely concerning (see figure 4).

4. **The U.S. delivered LNG price to the EU sets a price ceiling for Russia, Qatar, and Norway from which to reduce their price and ensure their market shares. Their costs are lower.**

Russia, Qatar, and Norway have lower delivered natural gas costs to the EU than the U.S. They are government-based entities that have the unique ability to conduct themselves differently in the market place in order to assure a revenue stream for their governments. Combined, this means that U.S. LNG exporters will have a difficult time competing with them.

As long as Russia, Qatar, Norway, and the world have spare natural gas capacity, they will likely keep their prices below U.S. delivered prices. And, as long as Russia and Qatar cannot sell their gas for higher prices elsewhere, it will likely be difficult for the U.S. to gain significant market shares.

The above points provide further evidence that IECA consistently makes about the LNG market, in that it is not a market. Major LNG suppliers and buyers are government-based entities that under certain market conditions disadvantage U.S. producers and consumers.

5. Although ample EU LNG import capacity already exists, the EU has purchased only 10.6 percent of all cargos from the U.S.

Since the U.S. began shipping LNG in February of 2016, the EU has purchased only 42 cargos of 396 or 10.6 percent of all shipments (see figures below). And, it is not because the EU does not have LNG import capacity. The World Gas LNG Report states that the EU has 20.3 Bcf/day of import capacity. The U.S. DOE has already given final approval of 21.4 Bcf/day to export to NFTA countries, a volume that is greater than the EU's total import capacity.

Shipments of Domestically-Produced LNG Delivered (cumulative starting from February 2016 through May 2018)

Country	# of Cargos	Volume (Bdf/d)	% of Total Exports
FTA Countries			
Mexico	72	0.68	18.8%
South Korea	69	0.65	18.1%
Chile	24	0.20	5.6%
Jordan	20	0.18	5.1%
Dominican Republic	6	0.04	1.1%
Panama	2	0.009	0.3%
Israel	1	0.009	0.2%
Colombia	1	0.004	0.1%
FTA Totals	**195**	**1.77**	**49.3%**
NFTA Countries			
China	53	0.49	13.7%
Japan	28	0.27	7.6%
India	18	0.17	4.8%
Argentina	16	0.13	3.6%
Turkey	12	0.11	3.1%
Brazil	12	0.09	2.6%
Kuwait	10	0.09	2.6%
Spain	11	0.09	2.5%
Portugal	8	0.07	2.0%
Egypt	5	0.05	1.3%
U.A.E.	5	0.05	1.3%
Pakistan	5	0.04	1.2%
Taiwan	5	0.04	1.2%
Italy	3	0.03	0.8%
United Kingdom	3	0.03	0.7%
Lithuania	2	0.02	0.5%
Netherlands	2	0.02	0.5%
Poland	1	0.009	0.3%
Thailand	1	0.008	0.2%

Country	# of Cargos	Volume (Bdf/d)	% of Total Exports
Malta	1	0.002	0.1%
NFTA Totals	**201**	**1.81**	**50.7%**
Grand Totals	**396**	**3.58**	**100.0%**

Source: LNG Monthly, U.S. Department of Energy, https://www.energy.gov/fe/listings/lng-reports

EU LNG Receiving Terminals by Capacity

Country	Terminal	Start Year	Capacity (MTPA)
UK	South Hook	2009	15.6
UK	Grain LNG	2005	15.0
Spain	Barcelona	1969	12.8
France	Dunkirk	2017	9.5
Spain	Huelva	1988	8.9
Spain	Cartagena	1989	8.9
Netherlands	GATE	2011	8.8
France	Montoir-de-Bretagne	1980	7.3
Spain	Saggas (Sagunto)	2006	6.7
Belgium	Zeebrugge	1987	6.6
France	Fos Cavaou	2010	6.0
Portugal	Sines	2004	5.8
Italy	Adriatic	2009	5.8
Spain	El Musel	2013	5.4
Spain	Bahia de Bizkaia Gas	2003	5.1
UK	Dragon	2009	4.4
Poland	Swinoujscie	2016	3.6
Greece	Revithoussa	2000	3.3
Lithuania	Klaipeda	2014	3.0
Italy	FSRU Toscana	2013	2.7
Spain	Mugardos	2007	2.6
Italy	Panigaglia	1971	2.5
France	Fos Tonkin	1972	2.2
Total Capacity			**152.5 MTPA (20.3 Bcf/d)**

Source: World Gas LNG Report – 2018 Edition, International Gas Union (IGU)

6. Availability of U.S. LNG export capacity gives the EU (our allies) the assurances of supply without the obligation to purchase.

The DOE approved LNG export volumes of 21.4 Bcf/day for shipment to NFTA countries, which is a lot of volume, especially when compared to EU's capacity to import. Exporting more LNG to the EU is a price issue.

APPENDIX

Figure 1

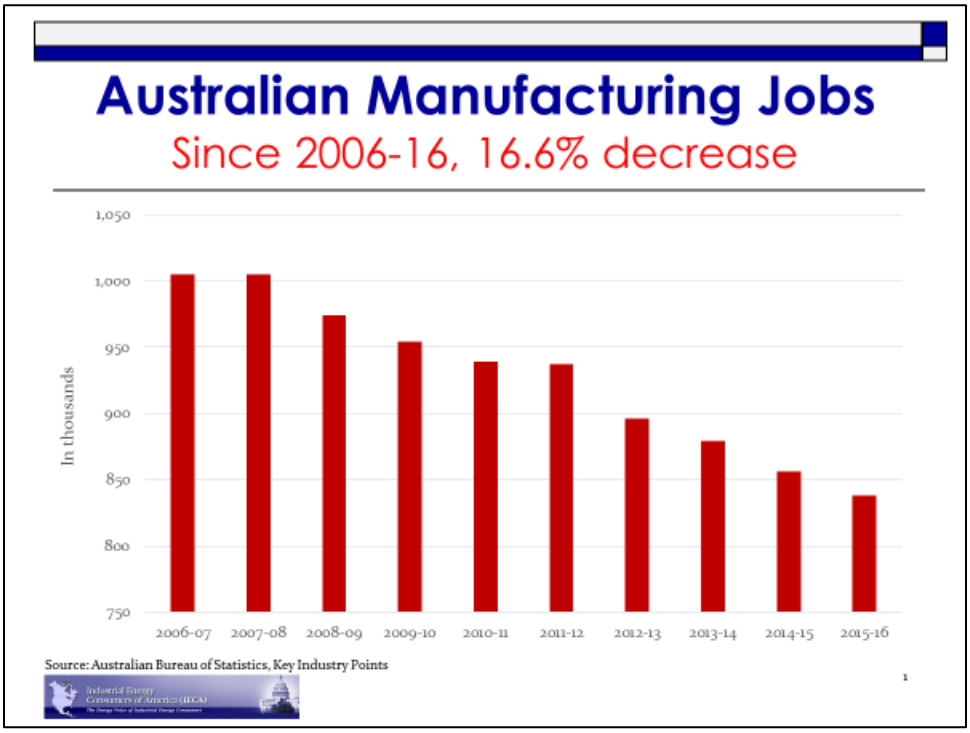


Figure 2

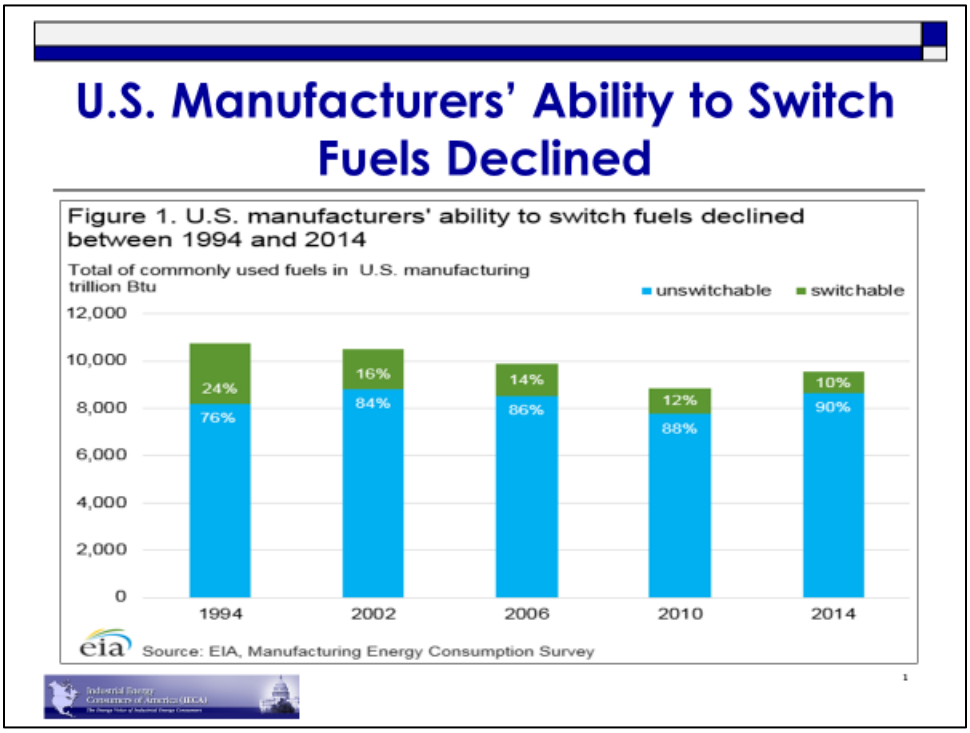


Figure 3

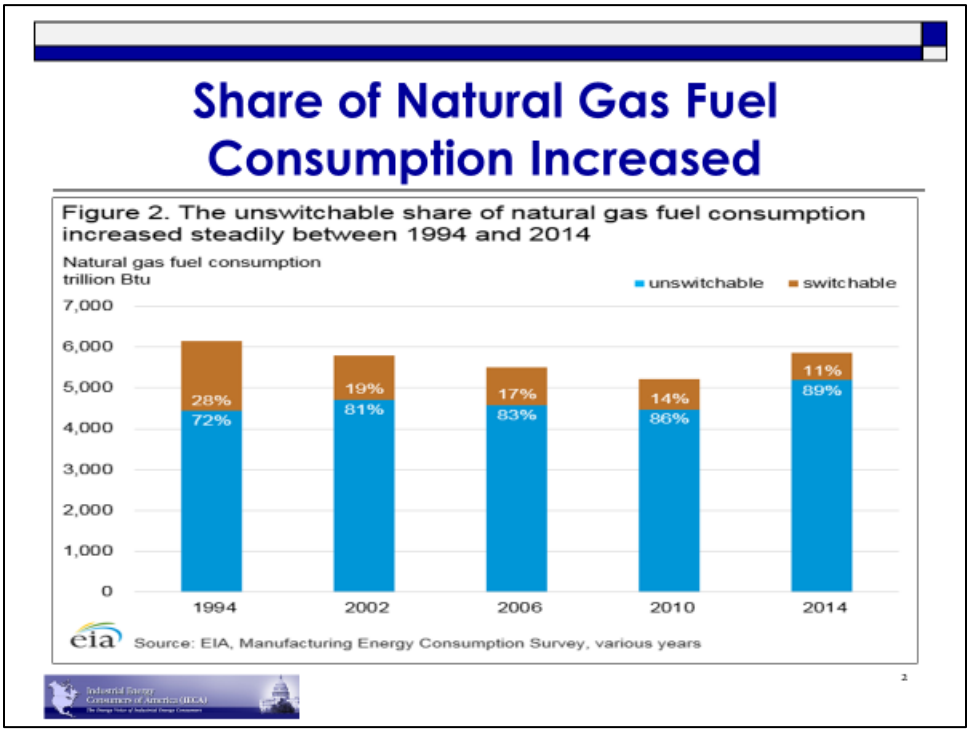


Figure 4

Status of LNG Exports at the Department of Energy (DOE):

- Non-Free Trade Agreement (NFTA) Countries
  Volume approved: 21.4 Bcf/day, 28.8% of 2017 U.S. demand
  Volume pending approval: 32.7 Bcf/day, 44.1% of U.S. demand
  Total applications: 51

- Free Trade Agreement (FTA) Countries
  Volume approved: 57.1 Bcf/day, 76.9% of 2017 U.S. demand
  Volume pending approval: 4.3 Bcf/day, 5.8% of U.S. demand
  Total applications: 55
  *Note: FTA and NFTA amounts are not additive.

Figure 5: Operating terminals with NFTA approval.

Terminals	Capacity (Bcf/d)
Sabine Pass	3.50
Dominion Cove Point	1.80
Total	**5.30 Bcf/d (7.1% of 2017 demand)**

Source: Company websites, 2017 U.S. natural gas demand was 74.22 Bcf/d.

Figure 6: Export terminals under construction with NFTA approval.

Terminals Approved, Under Construction	Capacity (Bcf/d)
Sempra-Cameron	2.10
Freeport	2.14
Cheniere-Corpus Christi	2.14
Sabine Pass	1.40
Southern LNG Company	0.35
Total	**8.13 Bcf/d (11.0% of 2017 demand)**

Source: LNG, Federal Energy Regulatory Commission, https://www.ferc.gov/industries/gas/indus-act/lng/lng-approved.pdf (as of July 13, 2018), 2017 U.S. natural gas demand was 74.22 Bcf/d.

Figure 7: Export terminals with NFTA approval and not under construction.

Terminals Approved, Not Under Construction	Capacity (Bcf/d)
Southern Union-Lake Charles LNG	2.20
Magnolia LNG	1.08
Sempra-Cameron LNG	1.41
ExxonMobil-Golden Pass	2.10
Total	**6.79 Bcf/d (9.1% of 2017 demand)**

Source: LNG, Federal Energy Regulatory Commission, https://www.ferc.gov/industries/gas/indus-act/lng/lng-approved.pdf (as of July 13, 2018), 2017 U.S. natural gas demand was 74.22 Bcf/d.

Figure 8: Applications to export in the process of NEPA approval at FERC.

Terminals	Capacity (Bcf/d)
Gulf LNG Liquefaction	1.50
Venture Global Calcasieu Pass	1.41
Texas LNG Brownsville	0.55
Rio Grande LNG	3.60
Annova LNG Brownsville	0.90
Port Arthur	1.86
Eagle LNG Partners	0.13
Venture Global LNG	3.40
Driftwood	4.00
Freeport	0.72
Jordan Cove	1.08
Cheniere-Corpus Christi	1.86
Commonwealth LNG	1.18
Port Fourchon LNG	0.65
Delfin LNG	1.80
Total	**24.64 Bcf/d (33.2% of 2017 demand)**

Source: LNG, Federal Energy Regulatory Commission, https://www.ferc.gov/industries/gas/indus-act/lng/lng-proposed-export.pdf (as of July 13, 2018), 2017 U.S. natural gas demand was 74.22 Bcf/d.

Figure 9: Applications to export approved by DOE for shipment to both FTA and NFTA countries.

Terminals Given Final Approval by DOE	Capacity (Bcf/d)	
FTA and NFTA volumes not additive.	**FTA**	**NFTA**
Sabine Pass	2.20	2.20
Freeport	1.40	1.40
Lake Charles	2.00	2.00
Carib Energy	0.03	0.04
Dominion Cove Point	1.00	0.77
Cameron LNG	1.70	1.70
Freeport	1.40	0.40
Southern LNG Company	0.36	0.36
Golden Pass	2.00	2.20
Cheniere-Corpus Christi	2.10	2.10
Sabine Pass	0.28	0.28
Sabine Pass	0.24	0.24
Sabine Pass	0.86	0.86
Delfin LNG	1.80	1.80
Magnolia	0.54	1.08
Sabine Pass	0.56	0.56
Cameron	0.42	0.42
Air Flow North America	N/A	0.002
American LNG Marketing	0.008	0.008
Cameron	1.41	1.41
Floridian Natural Gas Storage	0.04	0.04
Flint Hills Resources	0.01	0.01
Carib Energy	N/A	0.004
Freeport	N/A	0.34
Lake Charles	0.33	0.33
Eagle LNG Partners	0.01	0.01
Jordan Cove	1.20	0.80
Gulf LNG Liquefaction	1.50	Under review
SB Power Solutions	0.07	N/A
CE FLNG	1.07	Under review
Magnolia	0.54	N/A
MPEH	3.22	Under review
Venture Global Calcasieu Pass	0.67	Under review
Advanced Energy Solutions	0.02	N/A
Argent Marine Management	0.003	N/A
Eos LNG	1.60	Under review
Barca LNG	1.60	Under review
Annova LNG	0.94	N/A
Strom Inc.	0.08	Under review
SCT&E LNG	1.60	Under review
Venture Global Calcasieu Pass	0.67	Under review
Venture Global Calcasieu Pass	0.36	Under review

Terminals Given Final Approval by DOE	Capacity (Bcf/d)	
FTA and NFTA volumes not additive.	**FTA**	**NFTA**
American LNG Marketing	0.08	N/A
G2 LNG	1.84	Under review
Port Arthur LNG	1.42	Under review
Texas LNG Brownsville	0.55	Under review
Corpus Christi Liquefaction	1.41	Under review
Rio Grande LNG	3.61	Under review
Eagle LNG Partners	0.14	Under review
Venture Global Plaquemines	3.40	Under review
Driftwood LNG	4.10	Under review
Fourchon LNG	0.71	Under review
Galveston Bay LNG	2.15	Under review
Blue Water Fuels	0.007	N/A
Totals	**55.26**	**21.4**

Source: Long Term Applications Received by DOE/FE to Export, U.S. Department of Energy, https://www.energy.gov/sites/prod/files/2018/06/f53/Summary%20of%20LNG%20Export%20Applications_0.pdf (as of June 26, 2018)

Figure 10

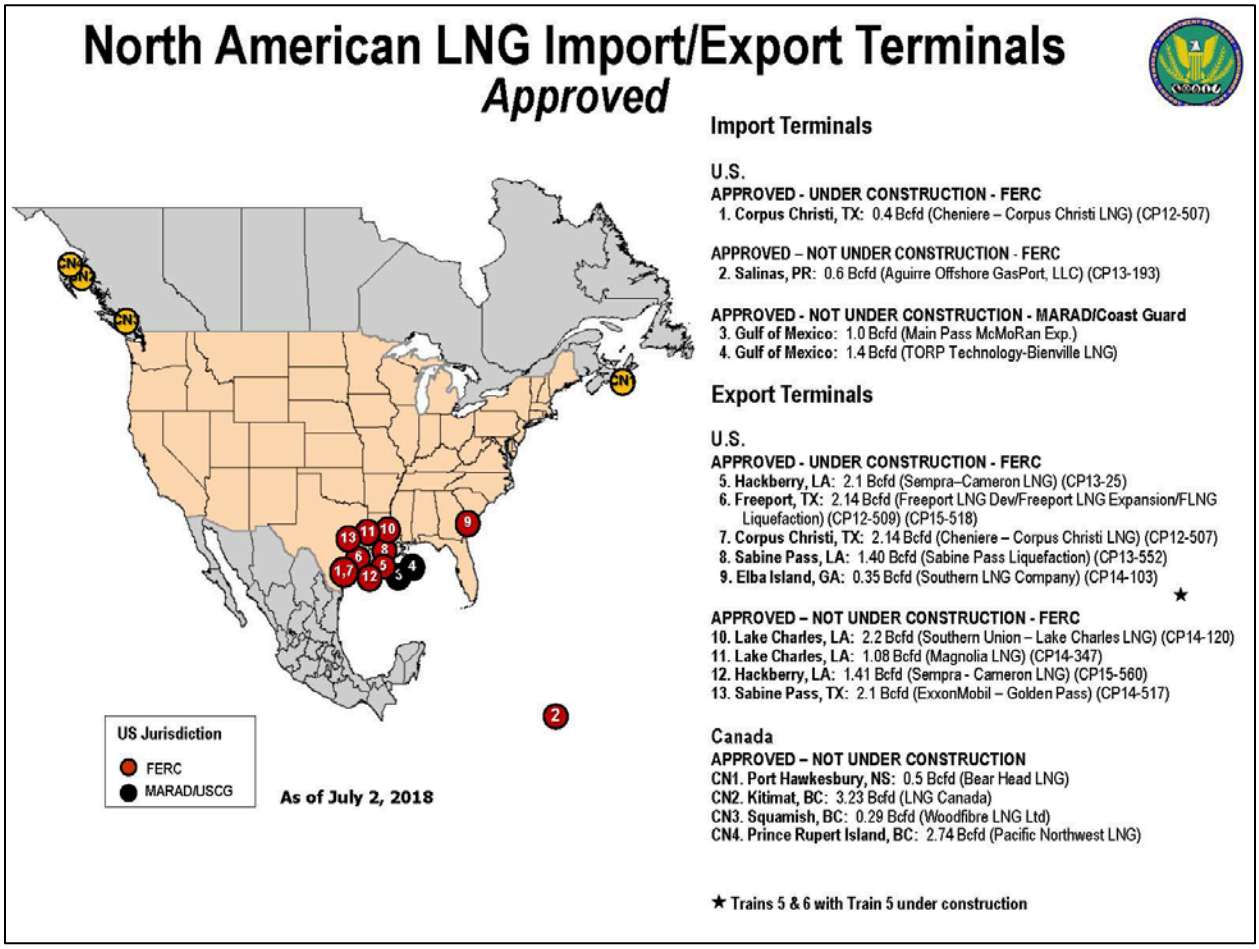
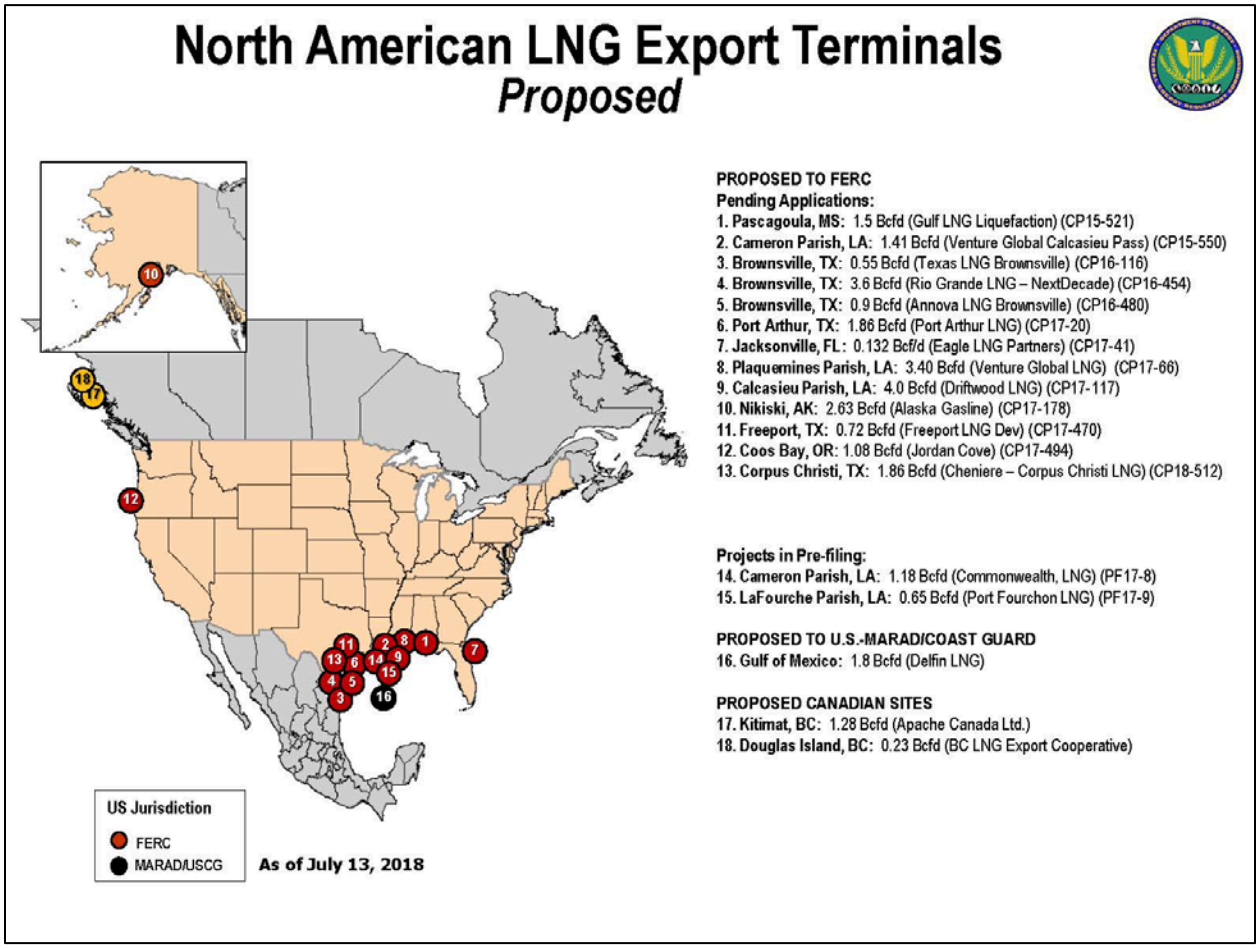


Figure 11


North American LNG Export Terminals
Proposed
PROPOSED TO FERC
Pending Applications:
1. Pascagoula, MS: 1.5 Bcfd (Gulf LNG Liquefaction) (CP15-521)
2. Cameron Parish, LA: 1.41 Bcfd (Venture Global Calcasieu Pass) (CP15-550)
3. Brownsville, TX: 0.55 Bcfd (Texas LNG Brownsville) (CP16-116)
4. Brownsville, TX: 3.6 Bcfd (Rio Grande LNG – NextDecade) (CP16-454)
5. Brownsville, TX: 0.9 Bcfd (Annova LNG Brownsville) (CP16-480)
6. Port Arthur, TX: 1.86 Bcfd (Port Arthur LNG) (CP17-20)
7. Jacksonville, FL: 0.132 Bcf/d (Eagle LNG Partners) (CP17-41)
8. Plaquemines Parish, LA: 3.40 Bcfd (Venture Global LNG) (CP17-66)
9. Calcasieu Parish, LA: 4.0 Bcfd (Driftwood LNG) (CP17-117)
10. Nikiski, AK: 2.63 Bcfd (Alaska Gasline) (CP17-178)
11. Freeport, TX: 0.72 Bcfd (Freeport LNG Dev) (CP17-470)
12. Coos Bay, OR: 1.08 Bcfd (Jordan Cove) (CP17-494)
13. Corpus Christi, TX: 1.86 Bcfd (Cheniere – Corpus Christi LNG) (CP18-512)
Projects in Pre-filing:
14. Cameron Parish, LA: 1.18 Bcfd (Commonwealth, LNG) (PF17-8)
15. LaFourche Parish, LA: 0.65 Bcfd (Port Fourchon LNG) (PF17-9)
PROPOSED TO U.S.-MARAD/COAST GUARD
16. Gulf of Mexico: 1.8 Bcfd (Delfin LNG)
PROPOSED CANADIAN SITES
17. Kitimat, BC: 1.28 Bcfd (Apache Canada Ltd.)
18. Douglas Island, BC: 0.23 Bcfd (BC LNG Export Cooperative)
US Jurisdiction
FERC
MARAD/USCG
As of July 13, 2018