



## Industrial Energy Consumers of America

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March 3, 2018

### **EIA AEO 2018 Cumulative Natural Gas Demand to 2050 Consumes 69 Percent of All EIA Known Technically Recoverable Resources in Lower 48**

The Energy Information Administration (EIA), an independent agency of the federal government, released its Annual Energy Outlook (AEO) 2018 projections for energy through 2050, including natural gas. In Figure 1 below, IECA uses the EIA demand forecast and places the various types of demand into six different categories to develop a total cumulative consumption of natural gas by 2050. We use 2015 as a starting year because that is the last year that EIA updated its “Technically Recoverable U.S. Natural Gas Resources” data, which is displayed in Figure 2 below. For additional clarity, Figure 2 only includes natural gas resources in the lower 48. It is assumed that natural gas in Alaska will not be pipelined to the lower 48.

The result is startling. Cumulative demand to 2050 would consume 69 percent of all known technically recoverable resources. Resources labeled as “technically” recoverable does not mean that they are “economically” recoverable. As compared to AEO 2017, the EIA projections of LNG exports and exports to Mexico continue to rise substantially. EIA’s LNG export forecast only includes export facilities that are under construction, which in our view and the view of companies in the LNG export business, greatly underestimates the volume the U.S. can expect to be exported by 2050.

The same analysis using EIA AEO 2017 concluded that 56 percent of all resources would be consumed. The jump from 56 to 69 percent of all resources is significant. For clarity though, this is a static analysis in that we would expect U.S. natural gas resources to increase. However, examining the Potential Gas Committee report on natural gas resource changes from 2014 to 2016, the EIA demand forecast increases are larger than the PGC resource increases. Therefore, considering the last four years of resource data, demand is outstripping the increases in supply.

Listed below are export volumes which have been given final approval by the U.S. Department of Energy (DOE). Non-free trade agreement (NFTA) and free trade agreement (FTA) countries’ volumes are not additive.

#### **DOE LNG Export Application Approvals (Source: DOE Website)**

##### Non-Free Trade Agreement (NFTA) Countries

- Volume approved: 20.6 Bcf/day, 27.3% of U.S. demand
- Volume pending approval: 0.8 Bcf/day, 1.1% of U.S. demand
- Total applications: 29

Free Trade Agreement (FTA) Countries

- Volume approved: 52.6 Bcf/day, 69.8% of U.S. demand
- Volume pending approval: 6.5 Bcf/day, 8.6% of U.S. demand
- Total applications: 56

**Figure 1: U.S. Natural Gas – EIA AEO 2018 Base Case (Billion Cubic Feet/Day)**

Year	U.S. Consumption	Net LNG Exports**	Net Exports to Mexico	Net Exports to Canada	Lease and Plant Fuel	Pipeline & Distribution Use	Total Consumption
2015	74.6	-0.2	2.9	-5.3	4.3	1.9	78.2
2016	75.3	0.3	3.8	-5.9	4.4	1.9	79.8
2017	73.1	1.6	4.3	-5.7	4.4	1.7	79.4
2018	77.2	2.8	4.7	-5.5	4.7	1.8	85.7
2019	79.5	5.1	5.5	-4.8	5.0	1.8	92.1
2020	79.5	8.1	5.9	-4.3	5.1	1.8	96.1
2021	79.9	8.4	6.0	-3.9	5.2	1.8	97.4
2022	80.7	9.0	6.5	-3.7	5.3	1.8	99.6
2023	81.5	10.1	6.7	-3.7	5.3	1.8	101.7
2024	81.2	11.4	6.9	-3.4	5.4	1.8	103.3
2025	81.6	12.5	7.0	-3.3	5.5	1.9	105.2
2026	81.8	13.2	7.0	-3.1	5.5	1.8	106.2
2027	82.5	13.9	7.0	-2.9	5.6	1.9	108.0
2028	83.4	14.3	7.1	-2.7	5.6	1.9	109.6
2029	83.9	14.5	7.0	-2.5	5.6	1.9	110.4
2030	84.2	14.5	7.0	-2.3	5.6	1.9	110.9
2031	84.6	14.5	7.0	-2.2	5.7	1.9	111.5
2032	84.8	14.5	6.9	-2.1	5.7	1.9	111.7
2033	85.1	14.5	6.8	-2.0	5.7	1.9	112.0
2034	85.7	14.5	6.8	-1.7	5.7	1.9	112.9
2035	86.1	14.5	6.8	-1.6	5.7	1.9	113.4
2036	86.6	14.5	6.8	-1.3	5.8	1.9	114.3
2037	87.3	14.5	6.7	-0.9	5.8	1.9	115.3
2038	87.8	14.5	6.7	-0.8	5.8	1.9	115.9
2039	88.2	14.5	6.6	-0.5	5.9	1.9	116.6
2040	89.0	14.5	6.6	-0.3	5.9	1.9	117.6
2041	89.6	14.5	6.5	-0.2	5.9	1.9	118.2
2042	90.3	14.5	6.5	0.03	6.0	1.9	119.2
2043	90.8	14.5	6.4	0.2	6.0	1.9	119.8
2044	91.1	14.5	6.4	0.8	6.0	1.9	120.7
2045	91.5	14.5	6.3	1.0	6.0	1.9	121.2
2046	92.0	14.5	6.3	1.3	6.0	1.9	122.0
2047	92.6	14.5	6.2	1.7	6.1	1.9	123.0
2048	93.2	14.5	6.2	2.0	6.1	1.9	123.9
2049	93.6	14.5	6.1	2.2	6.1	2.0	124.5
2050	94.5	14.5	6.0	2.6	6.1	2.0	125.7

Year	U.S. Consumption	Net LNG Exports**	Net Exports to Mexico	Net Exports to Canada	Lease and Plant Fuel	Pipeline & Distribution Use	Total Consumption
Total Consumption	3,064.3	429.5	225.9	-64.77	200.5	67.6	3,923.03

Source: Energy Information Administration (EIA), Annual Energy Outlook (AEO) 2018

\*The process of producing consumer-grade natural gas. Natural gas withdrawn from reservoirs is reduced by volumes used at the production (lease) site and by processing losses. Volumes used at the production site include (1) the volume returned to reservoirs in cycling, repressuring of oil reservoirs, and conservation operations; and (2) gas vented and flared. Processing losses include (1) nonhydrocarbon gases (e.g., water vapor, carbon dioxide, helium, hydrogen sulfide, and nitrogen) removed from the gas stream; and (2) gas converted to liquid form, such as lease condensate and plant liquids. Volumes of dry gas withdrawn from gas storage reservoirs are not considered part of production. Dry natural gas production equals marketed production less extraction loss.

**Figure 2: EIA – Technically Recoverable U.S. Natural Gas Resources (Billion Cubic Feet/Day)**

	Proved Reserves	Unproved Reserves	Total Technically Recoverable Resources
Lower 48 (Onshore)	967.1	3,953.2	4,920.3
Lower 48 (Offshore)	24.7	746.0	770.7
<b>TOTAL</b>	<b>991.8</b>	<b>4,699.2</b>	<b>5,691.0</b>

Source: Technically recoverable U.S. dry natural gas resources as of January 1, 2015, report released July 2017, Energy Information Administration (EIA)

<https://www.eia.gov/outlooks/aeo/assumptions/pdf/oilgas.pdf>

Note: Data does not include Alaska (onshore and offshore)