

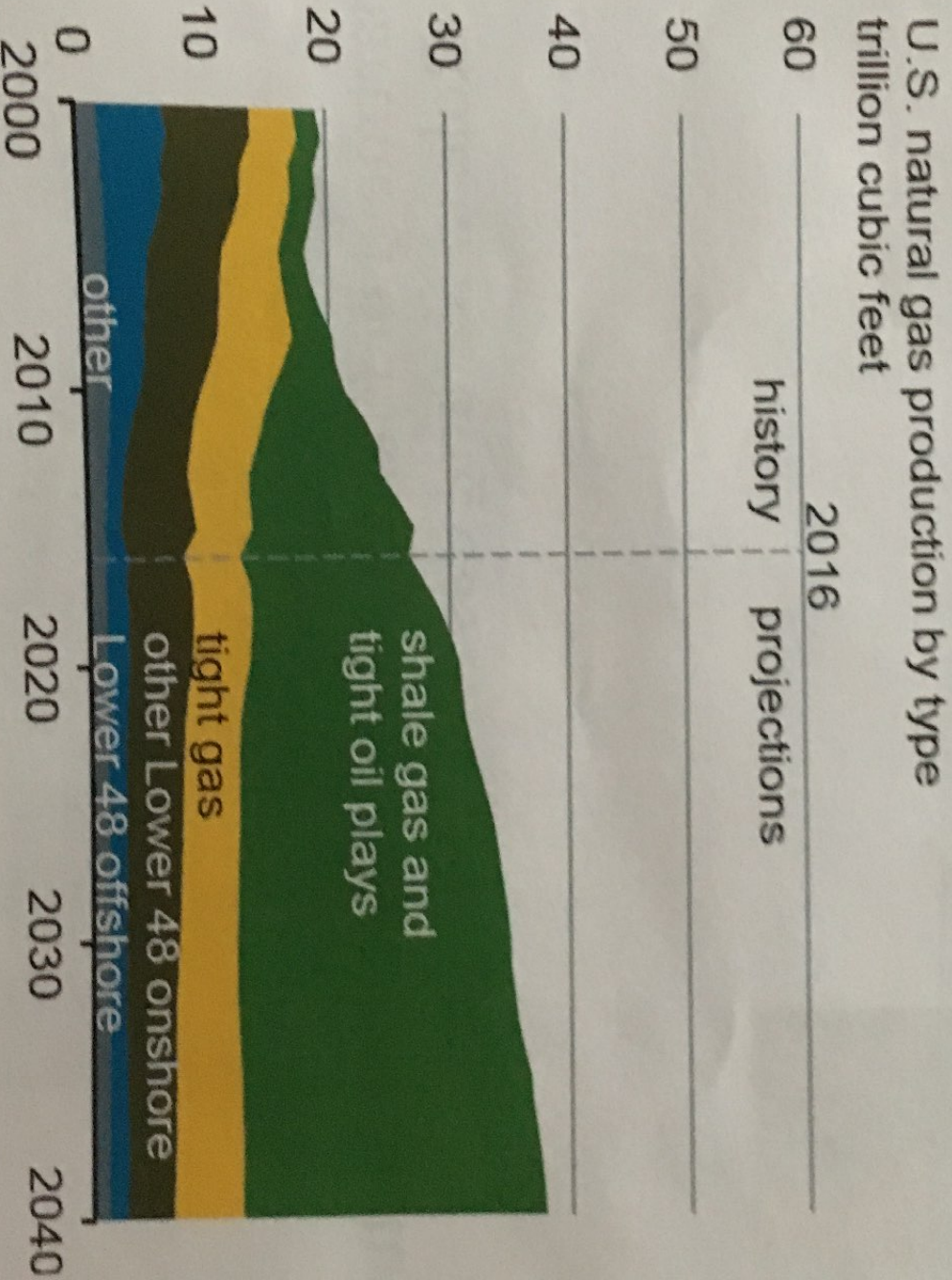
U.S. Department of Energy's Regulatory and Statutory Role in Natural Gas and LNG Trade

October 2017



MULTIPLE TYPES OF U.S. NATURAL GAS RESOURCES – GROWING SUPPLY

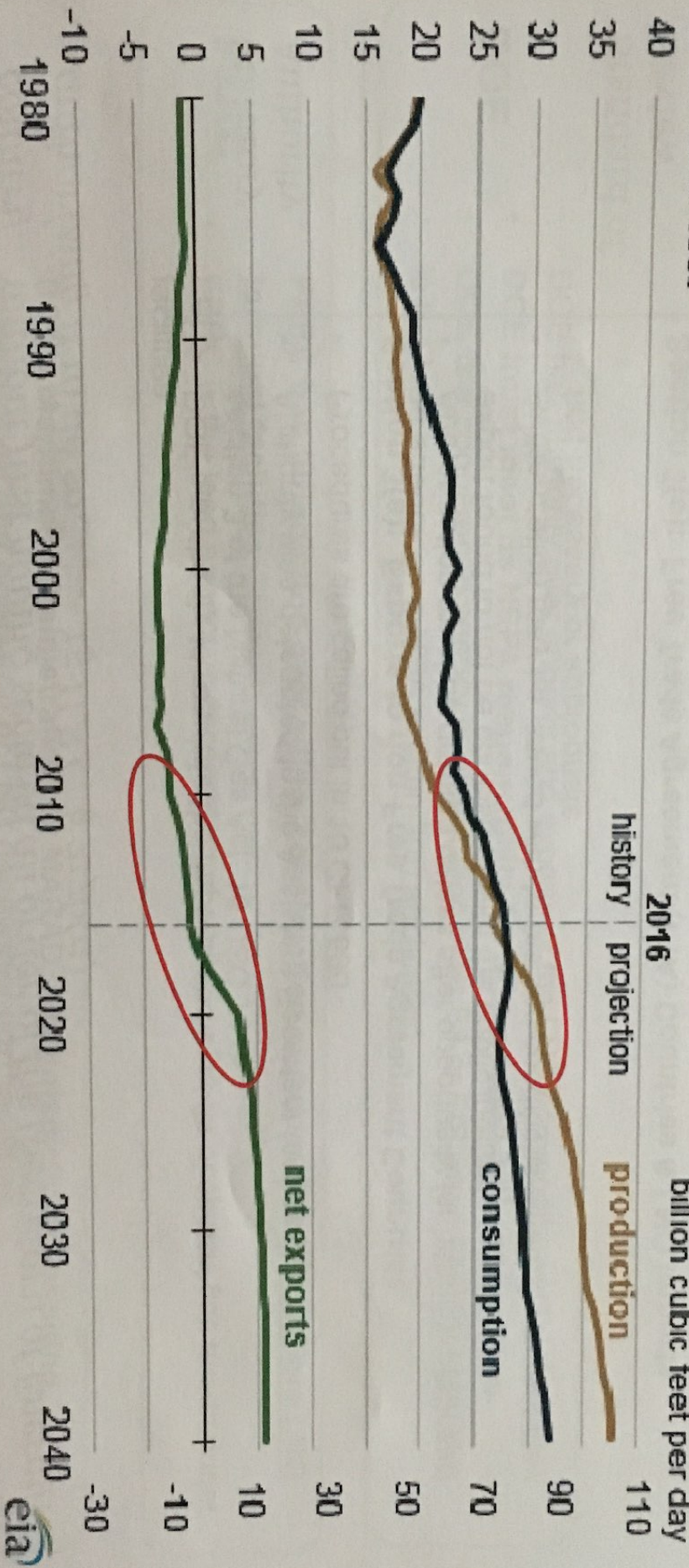
U.S. Dry Natural Gas Production
in AEO 2017 Reference Case



Source: EIA, Annual Energy Outlook 2017

THE UNITED STATES IS CURRENTLY TRANSITIONING FROM AN IMPORTER TO AN EXPORTER OF NATURAL GAS

Natural gas production, consumption, and trade in the AEO2017 Reference case
trillion cubic feet



Source: U.S. Energy Information Administration, *Annual Energy Outlook 2017 Interactive Table Viewer*

DOE REGULATION OF NATURAL GAS TRADE

• “...no person shall export any natural gas from the United States to a foreign country... without first having secured an order of the [Secretary of Energy] authorizing it to do so.” - 15 U.S.C. § 717b(a)

<p>Statutory Authority</p>	<ul style="list-style-type: none"> • DOE's authority to regulate the imports and exports of natural gas arises under section 3 of the <u>Natural Gas Act</u>, 15 USC 717b • Authority was delegated to the Assistant Secretary for Fossil Energy • Procedures are called out in 10 CFR 590
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<p>Standard of Review</p>	<p>Section 3(a): Exports to non-Free Trade Agreement Countries</p> <ul style="list-style-type: none"> • Authorization must be granted unless after opportunity for hearing, proposed export found to not be consistent with the <u>public interest</u> • Authorization may be issued with terms and conditions as the Secretary may find necessary or appropriate <p>Section 3(c): Free Trade Agreement (FTA) Countries & LNG Imports</p> <ul style="list-style-type: none"> • By law, deemed to be consistent with the public interest • Authorization must be <u>granted without modification or delay</u> • 18 FTA countries: primarily in the Americas, plus Korea, Singapore, Australia, Bahrain, Jordan, Morocco and Oman
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Key US Agencies Involved with LNG Regulation

DOE

- DOE has authority over imports and exports of the LNG commodity, not the facility
- **DOE must meet its NEPA responsibility for NGA section 3(a) applications**
- DOE is a cooperating agency in preparation of an EA or EIS when FERC or MARAD is the lead agency on a NGA section 3(a) application

FERC

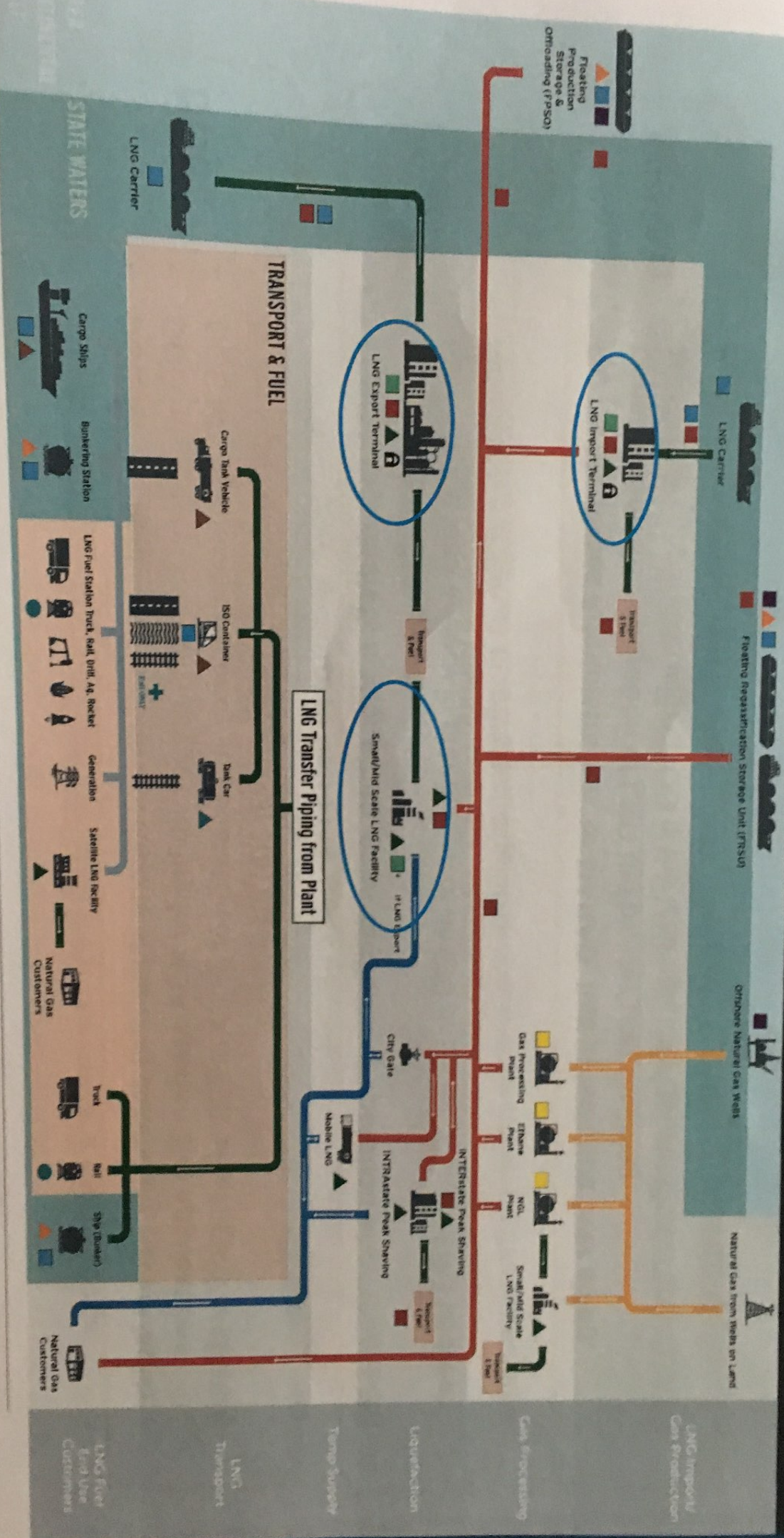
- **FERC has jurisdiction over siting, construction and operation of onshore LNG terminal facilities**
- FERC is the lead agency in preparation of an EIS or EA for onshore LNG terminal facilities

MARAD

- **DOT's Maritimes Administration, or MARAD, has jurisdiction over siting, construction and operation of LNG deepwater port facilities**
- MARAD in cooperation with USCG is the lead agency in preparation of an EIS or EA for LNG deepwater port facilities



FEDERAL OVERSIGHT OF LIQUEFIED NATURAL GAS (LNG) VALUE CHAIN



This schematic is intended to provide general information. Certain aspects may be regulated differently than shown and other federal agencies may also regulate LNG through the value chain.

Source: Presentation by Kyle Moorman, DOE, Sept. 2017 and Pipelines and Hazardous Materials Safety Administration: Federal Oversight of Liquefied Natural Gas (LNG) Value Chain, June 2017

THE MAJORITY OF THE ORDERS ISSUED BY THE OFFICE OF OIL AND GAS ARE FTA ORDERS FOR TRADE WITH CANADA AND MEXICO

- *Most of U.S. natural gas trade is currently via pipeline with Canada and Mexico*
- The Office of Oil and Gas issues around 150 orders per year, mostly short-term, pursuant to Section 3(c) of the Natural Gas Act for pipeline import and exports between Canada and Mexico, our historic natural gas trade partners.
- Mexico is also getting the majority of U.S. LNG cargos from Sabine Pass to date, as well.
- Authorization holders must report their import/export activity to DOE.
- In 2016, the U.S. imported on a net basis approximately 6 Bcf/d from Canada via pipeline and exported about 3.7 Bcf/d to Mexico.
- Further decreases of pipeline imports from Canada, and increased pipeline exports to Mexico, are expected to continue.
- The changes in pipeline trade, along with increased LNG exports, is putting the U.S. on track to be a net natural gas exporter in 2017.

DOE REVIEW OF NON-FTA LNG EXPORT APPLICATIONS ARE PUBLIC PROCEEDINGS THAT CAN END IN LITIGATION

1. Notice of Application in Federal Register – 60 Days

Public can comment and/or intervene

2. DOE Public Interest Review

DOE Steps 1 and 2 are usually concurrent with Environmental Review of an Application at FERC or MARAD

3. DOE Order

DOE Issues an Order once the final non-appealable steps in FERC or MARAD's process has been reached

4. Request for Rehearing from Intervenor(s)

Intervenors must request rehearing within 30 days of DOE's Order

5. DOE Order on Rehearing

DOE has denied rehearing on requests for rehearing to date.

6. U.S. Court of Appeals

DOE has been sued by an intervenor, the Sierra Club, in the U.S. Court of Appeals in five proceedings.

ANALYSIS SUPPORTING PROCEDURES FOR NON-FTA EXPORT DECISIONS

Macroeconomic Impact Analyses

- DOE commissioned a two-part study of the cumulative economic impact of LNG exports.
- Completed in 2012**
- The Energy Information Administration (EIA) assessed how specified scenarios of increased LNG exports could affect domestic energy markets.
 - NERA Economic Consulting, under contract to DOE, evaluated the macro-economic impact of LNG exports on the U.S. economy.

Released in 2015

In December 2015, DOE released the results of a second set of economic studies, one from EIA and the other from Oxford Economics and Rice University. The studies examine how the effects of potential LNG exports between 12 and 20 billion cubic feet per day could affect the public interest with the Rice/Oxford study including one scenario showing benefits to the U.S. for exports up to 28 billion cubic feet per day. These studies were open to public comment in early 2016.

Addendum to Environmental Review Documents Concerning Exports of Natural Gas from the United States

- Surveys potential environmental impacts from unconventional natural gas production.
- DOE released the final version on August 15, 2014.

Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States

- Assesses the potential GHG impacts of U.S. LNG exports vs. alternatives.
- Finds U.S. LNG exports will not increase global GHG emissions vs. alternatives.
- DOE released the final version on August 15, 2014.

PROPOSED RULE FOR SMALL-SCALE EXPORTS

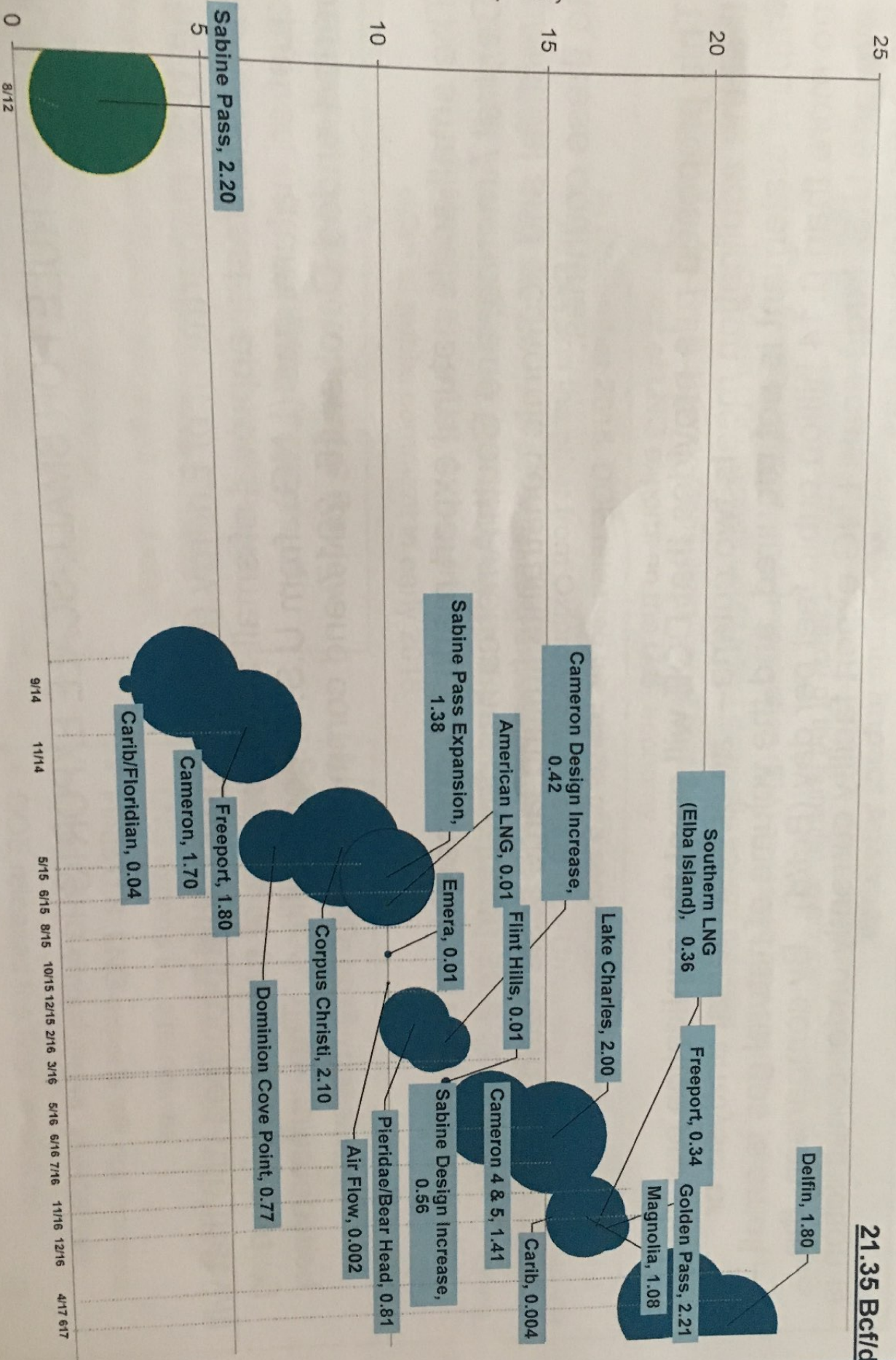
- The U.S. Department of Energy (DOE) announced a proposed rule that will provide for faster approval of small-scale exports of natural gas, including liquefied natural gas (LNG), from U.S. export facilities. The comment period ended October 16, 2017 and comments are being reviewed.
- The small-scale natural export market to our neighbors in the Caribbean, Central America, and South America has developed as a solution to the practical and economic constraints limiting large scale natural gas exports to these countries.
- This proposed rule provides that DOE will grant the application provided that the application meets two criteria—an environmental analysis or impact statement is not required, and the volume of natural gas is small—no more than 0.14 billion cubic feet per day (Bcf/d). By comparison, the average U.S. large-scale LNG export facility currently under construction is 2.2 Bcf/d of natural gas.



NATURAL GAS EXPORT FINAL AUTHORIZATIONS TO NON-FTA COUNTRIES EQUAL 21.35 BILLION CUBIC FEET PER DAY

Cumulative Volume of Final, non-FTA Export Authorizations

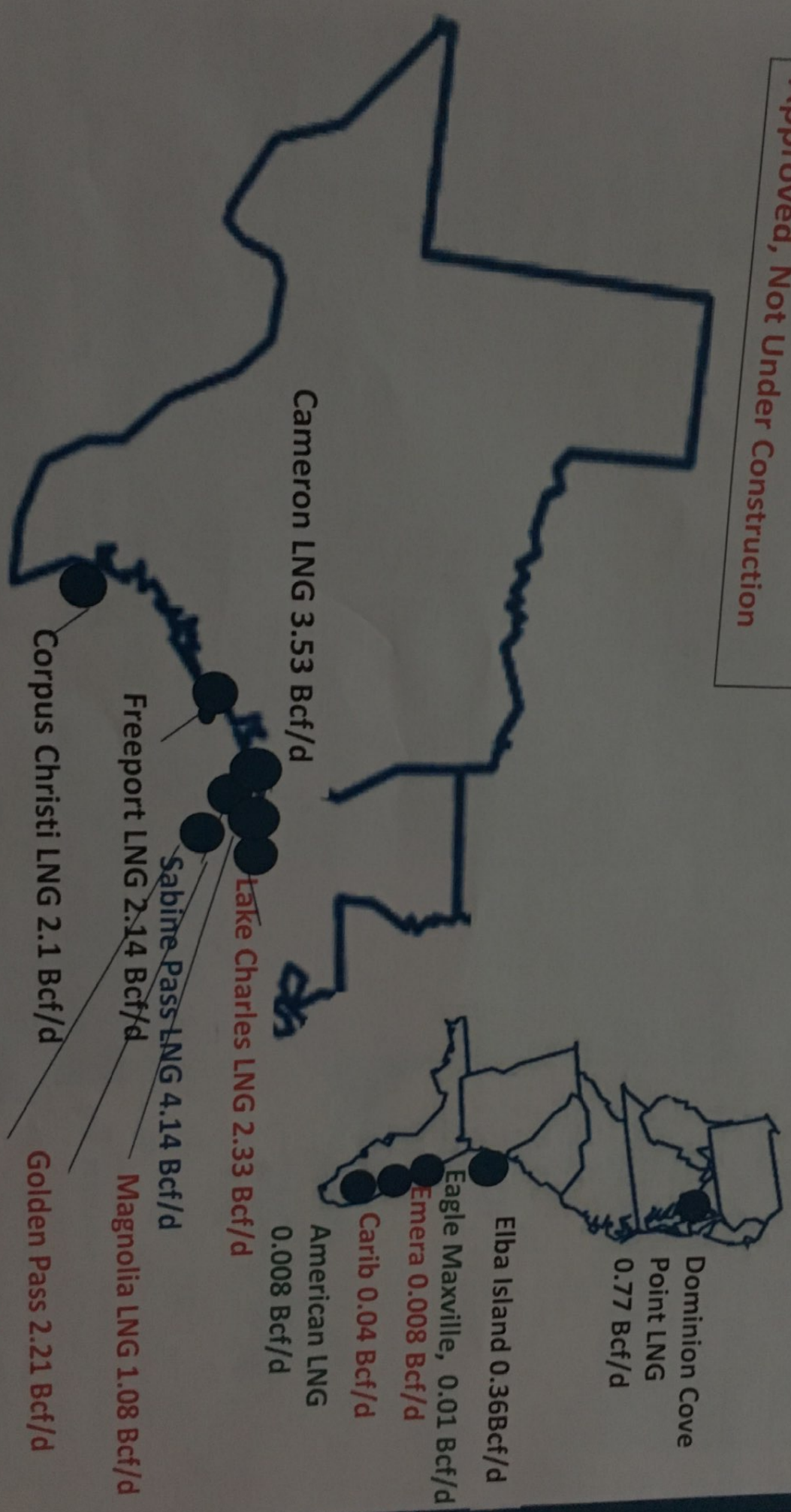
Billion cubic feet per day



U.S. LOWER 48 LNG EXPORT FACILITIES

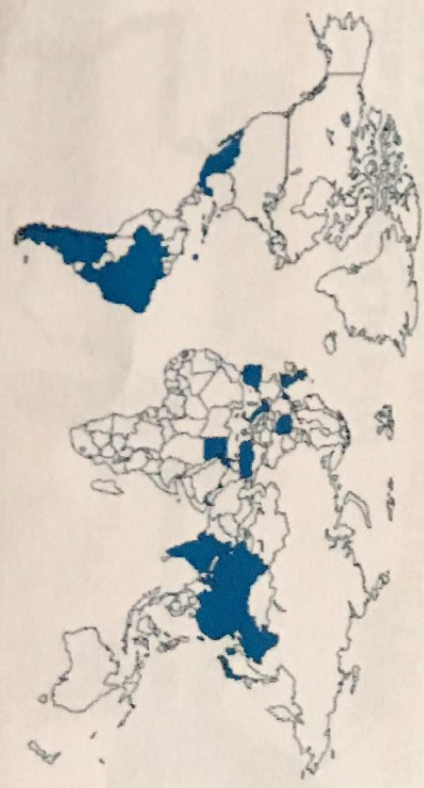
Operating – Completed Construction
 Operating & Partially Complete
 Under Construction
 Approved, Not Under Construction

Map of facilities with final DOE non-FTA export approval of Lower-48 LNG export facilities as of October 12, 2017



REPORTED DESTINATIONS FOR LOWER 48 EXPORTS

Vessel Exports		
Country of Destination	Volume (Bcf) Thru 8/2017	Number of Cargos
Argentina	33.5	12
Brazil	17.9	8
Chile	48.1	16
China	41.7	13
Dominican Republic	5.9	2
Egypt	10.4	3
India	27.9	9
Italy	9.8	3
Japan	43.8	12
Jordan	35.7	11
Kuwait	27.3	8
Lithuania	3.4	1
Malta	0.9	1
Mexico	136.4	41
Netherlands	3.0	1
Pakistan	3.2	1
Poland	3.4	1
Portugal	19.5	6
South Korea	59.3	18
Spain	18.6	7
Taiwan	1	3
Thailand	1	3.1
Turkey	19.7	6
U.A.E.	16.8	5
United Kingdom	3.4	1



ISO Container Exports		
Country of Destination	Volume (MMcf)	Number of Cargos
Barbados	228.8	68

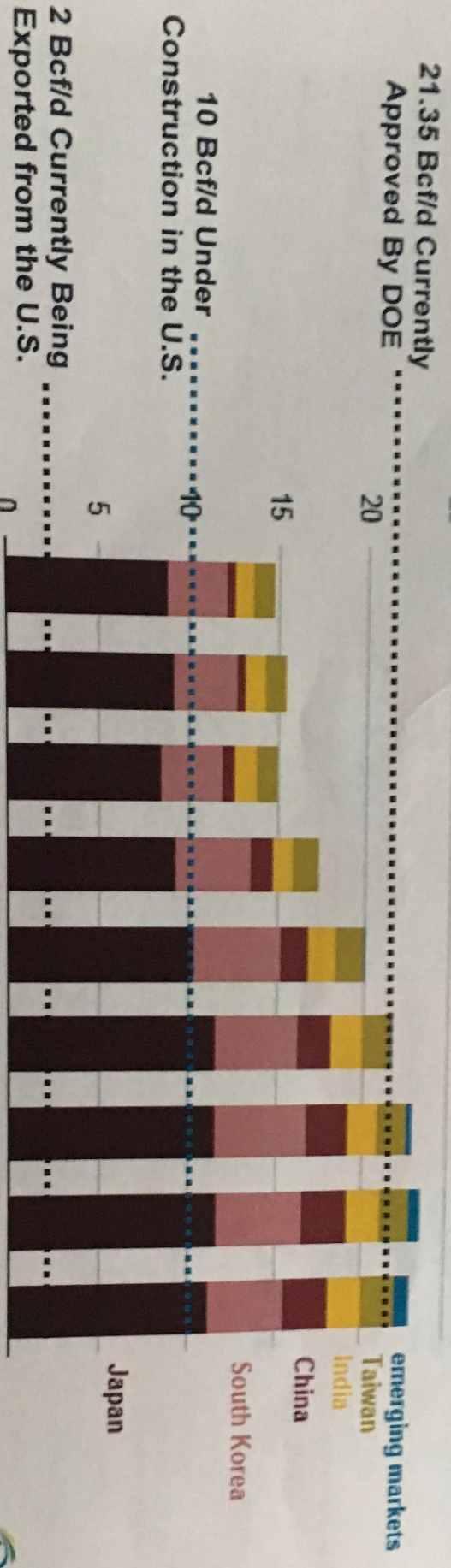
LONG-TERM CONTRACTS FOR U.S. LNG MAKE UP LESS THAN HALF OF THE TOTAL VOLUME AUTHORIZED FOR NON-FTA EXPORT.

	<ul style="list-style-type: none"> Gas Natural Aprouvisionamientos SDG S.A. Spain 0.49 Bcf/d Gail (India) Limited India 0.49 Bcf/d Korea Gas Corporation South Korea 0.49 Bcf/d 		 <ul style="list-style-type: none"> Endesa Spain 0.11 Bcf/d + 0.22 Bcf/d
	<ul style="list-style-type: none"> Gail (India) Limited India 0.49 Bcf/d 		 <ul style="list-style-type: none"> Iberdrola, S.A. Spain 0.11 Bcf/d
	<ul style="list-style-type: none"> Korea Gas Corporation South Korea 0.49 Bcf/d 		 <ul style="list-style-type: none"> Gas Natural Fenosa LNG SL Spain 0.22 Bcf/d
	<ul style="list-style-type: none"> Total Gas & Power North America, Inc. France 0.28 Bcf/d + 0.28 Bcf/d in exp'n 		 <ul style="list-style-type: none"> Woodside Energy Trading Singapore Pte. Ltd Singapore 0.12 Bcf/d
	<ul style="list-style-type: none"> BG Gulf Coast LNG, LLC UK/Netherlands 0.77 Bcf/d 		 <ul style="list-style-type: none"> Electricite de France, S.A. France 0.11 Bcf/d
	<ul style="list-style-type: none"> Centrica PLC UK 0.24 Bcf/d 		 <ul style="list-style-type: none"> EDP Energia de Portugal S.A. Portugal 0.11 Bcf/d
	<ul style="list-style-type: none"> Chubu Electric Power Co., Inc. Japan 0.31 Bcf/d 		 <ul style="list-style-type: none"> Engie, S.A. France 0.12 Bcf/d
	<ul style="list-style-type: none"> Osaka Gas Co., Ltd. Japan 0.31 Bcf/d 		 <ul style="list-style-type: none"> Central El Campesino Chile 0.09 Bcf/d
	<ul style="list-style-type: none"> BP Energy Company UK 0.62 Bcf/d 		 <ul style="list-style-type: none"> Enel Italy 0.2 Bcf/d + 0.1 Bcf/d
	<ul style="list-style-type: none"> BP Energy Company UK 0.62 Bcf/d 		 <ul style="list-style-type: none"> PT Pertamina (Persero) Indonesia 0.45 Bcf/d + 0.45 Bcf/d
	<ul style="list-style-type: none"> BP Energy Company UK 0.62 Bcf/d 		

THE AMOUNT OF LNG APPROVED FOR EXPORT FROM THE US TO NON-FTA COUNTRIES IS OVER HALF OF CURRENT GLOBAL DEMAND

32 Bcf/day 2016 Global Demand

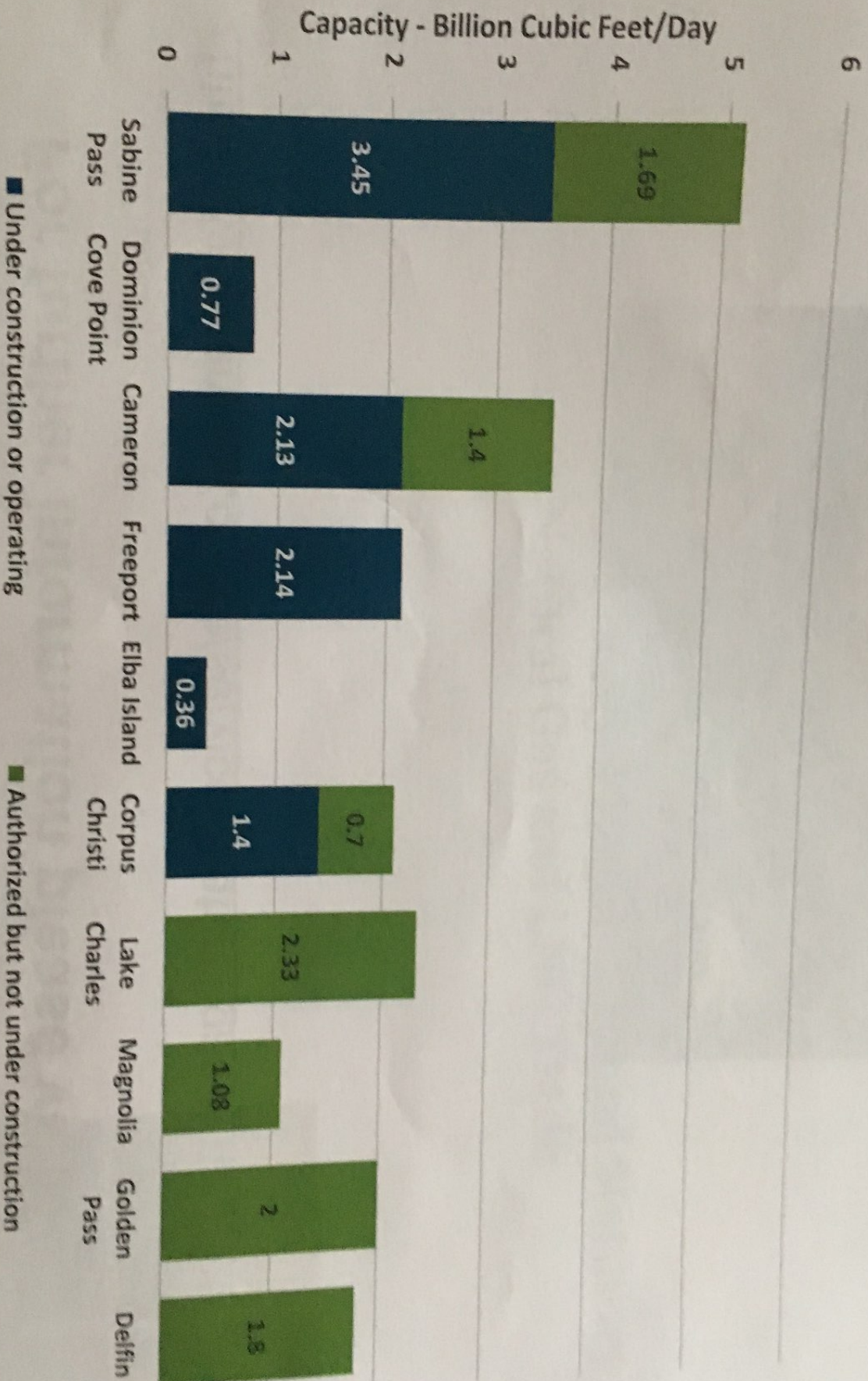
Imports of liquefied natural gas (LNG) in selected Asian countries (2007-15)
billion cubic feet per day



Source: U.S. Energy Information Administration, compiled from several countries' statistical departments



LOWER 48 LNG PROJECTS, UNDER CONSTRUCTION/OPERATING AND AUTHORIZED BUT NOT YET UNDER CONSTRUCTION



For further information please visit:

<https://www.energy.gov/fe/services/natural-gas-regulation>

