
CHENIERE ENERGY, INC.
THE RISE OF US LNG EXPORTS

May 18, 2016



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Vice President, Government & Regulatory Affairs

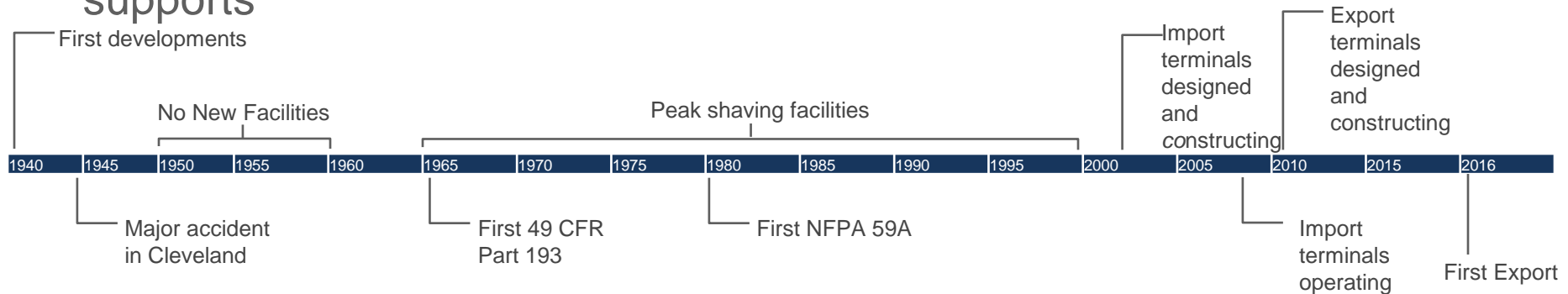
The bottom portion of the slide is decorated with several thick, light gray, wavy lines that curve across the width of the page, creating a sense of movement and depth.

Topics

- LNG Facilities and LNG Trade Evolution
- US LNG Exports
- Sabine Pass LNG Plant
- Corpus Christi LNG Plant
- LNG Standards, Regulations

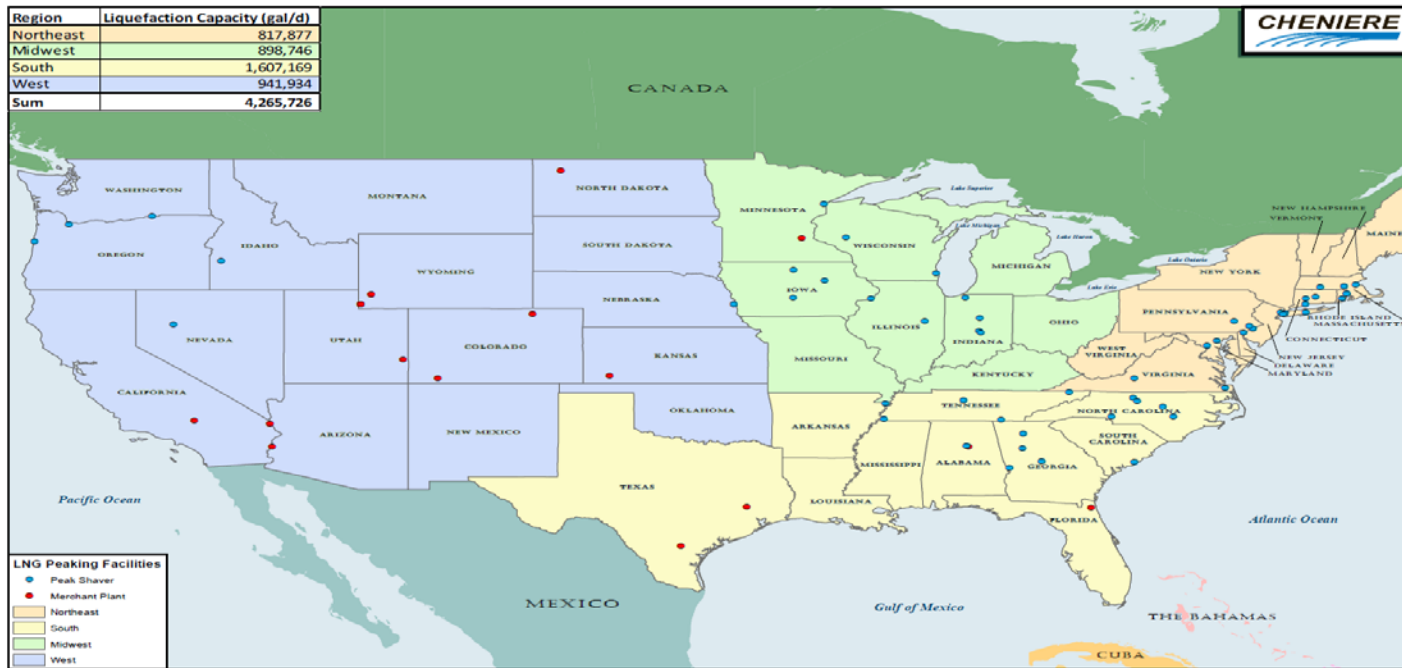
Timeline of U.S. LNG Industry

- Over 50 years of operations without a major incident affecting the public
- The good safety record of the industry makes risk analysis challenging as one cannot have a probability of zero, but that is what the data supports

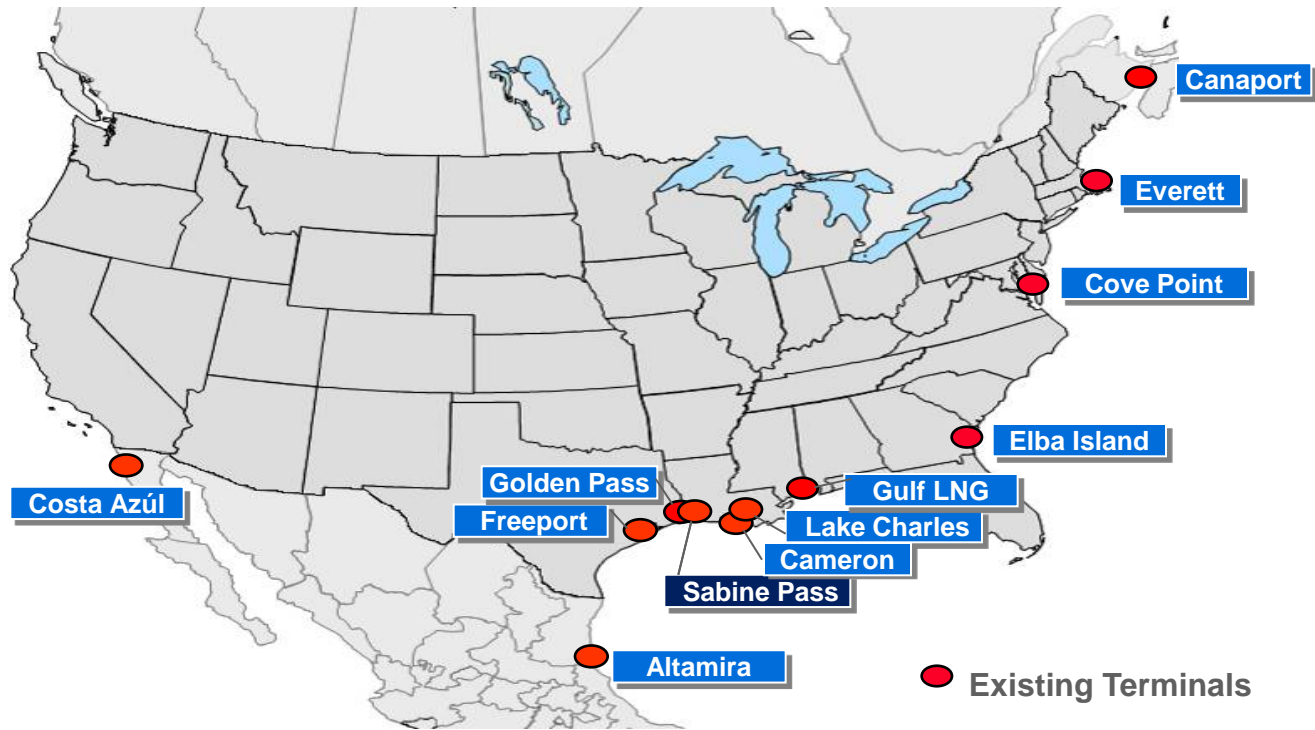


North American LNG Peaking Facilities

- 113 Peak Shaving Facilities 73 with Liquefaction and 40 Storage
- Produce between 10,000 and 265,000 gpd
- Built 1965-2008
- Costs: \$100M
- Footprint: 10's of acres
- Regas: 100's MMcf/d
- 1-2 Storage tanks
- Storage 1-2 Bcf



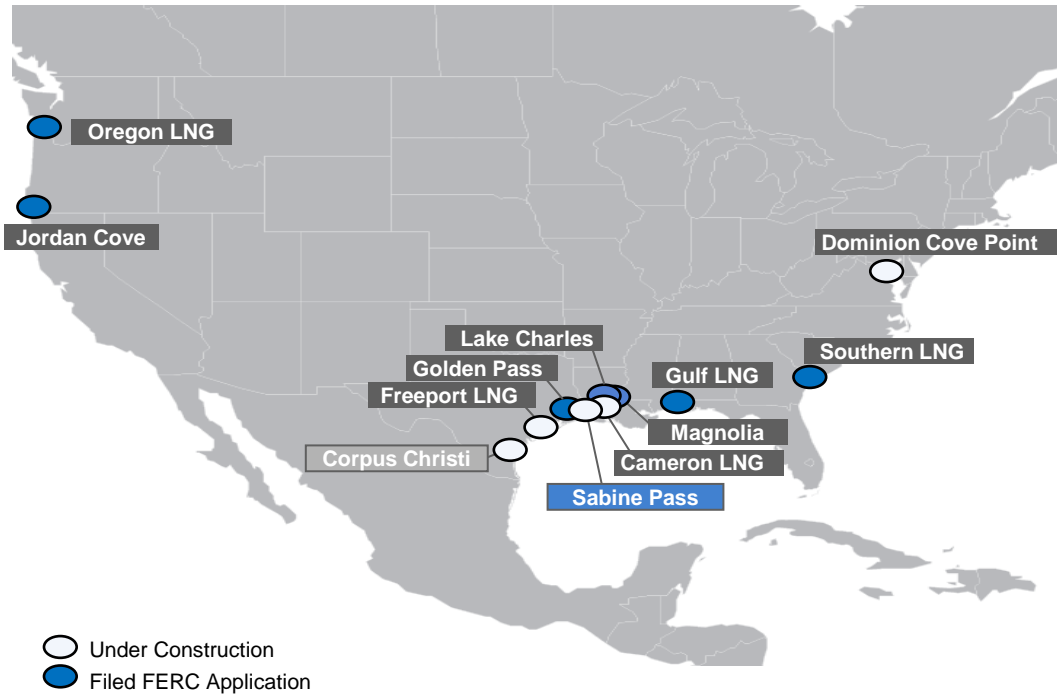
North America Onshore Regasification Capacity



Terminal Capacity Holder	Baseload Sendout (MMcf/d)
Canaport	1,000
Everett -	700
Cove Point	1,800
Elba Island	1,800
Gulf LNG	1,300
Lake Charles -	1,800
Freeport	1,500
Sabine Pass	4,000
Cameron	1,500
Golden Pass	2,000
Altamira	700
Costa Azul	1,000
Total	19,100

Source: Websites of Terminal Owners

U.S. LNG Export Projects



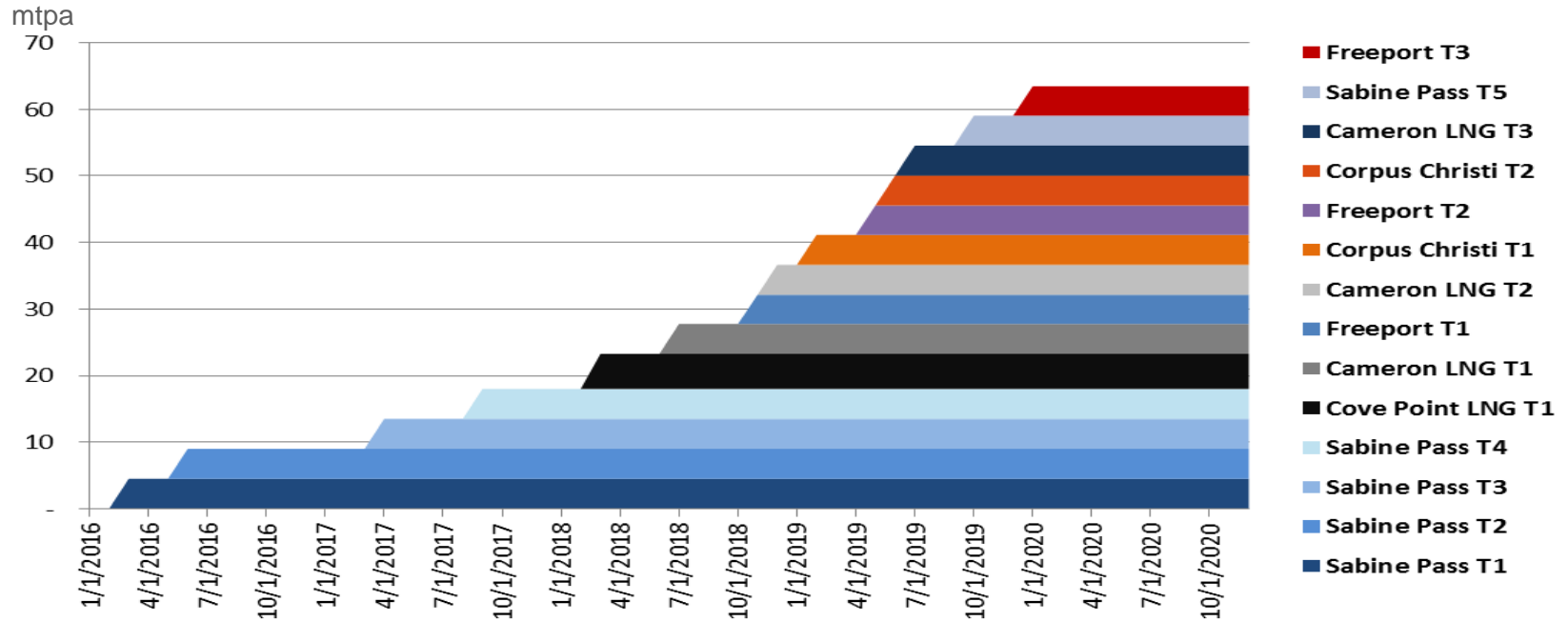
Company	Quantity (Bcf/d)	DOE	FERC	Contracts
Cheniere Sabine Pass T1 – T4	2.2	Fully permitted		Fully Subscribed
Freeport	1.8	Fully permitted		Fully Subscribed
Lake Charles	2.0	FTA	✓	Fully Subscribed
Dominion Cove Point	1.0	Fully permitted		Fully Subscribed
Cameron LNG T1-3	1.7	Fully permitted		Fully Subscribed
Jordan Cove	1.2/0.8	FTA	✓	
Oregon LNG	1.25	FTA	✓	
Cheniere Corpus Christi T1 – T3	2.1	Fully permitted		T1-2 Subscribed
Cheniere Sabine Pass T5 – T6	1.3	Fully permitted		T5 Subscribed
Southern LNG	0.5	FTA	✓	Fully Subscribed
Magnolia LNG	0.5	FTA	✓	Partially Subscribed
Golden Pass LNG	2.0	FTA	✓	Fully Subscribed
Gulf LNG	1.3	FTA	❖	
Cameron LNG T4-5	1.4	FTA	✓	

Plus other proposed LNG export projects that have not filed a FERC application. Excelerate has requested that FERC put on hold the review its application.

Application filing = ❖ FERC scheduling notice issued = ✓

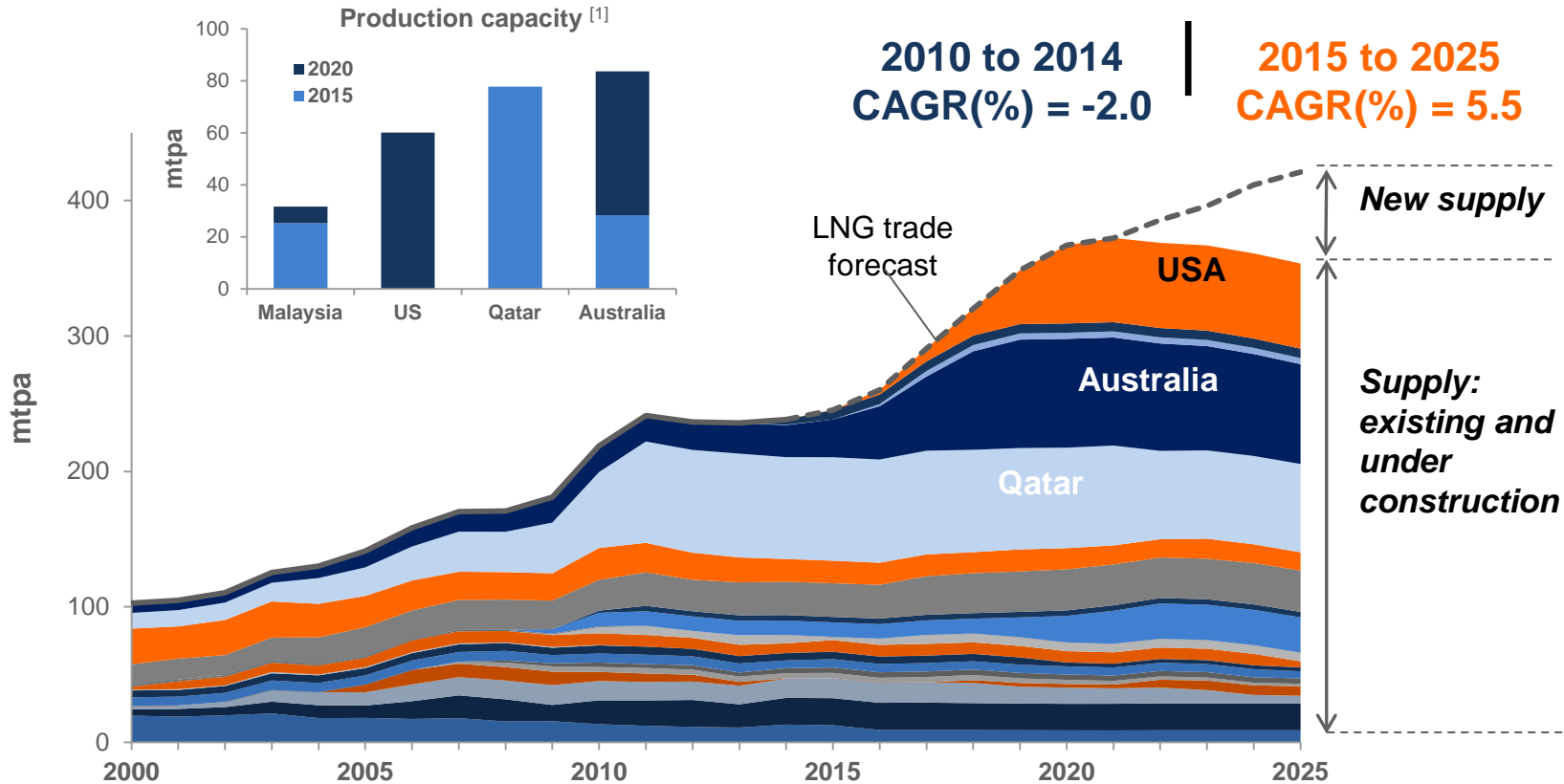
Source: Office of Oil and Gas Global Security and Supply, Office of Fossil Energy, U.S. Department of Energy; U.S. Federal Energy Regulatory Commission; Company releases

Sabine Pass to Launch US Exports, Two Years Ahead of the Pack



Source: Cheniere Research, Company filings Includes projects under construction only

U.S. To Become One of the Top Three LNG Suppliers by 2020



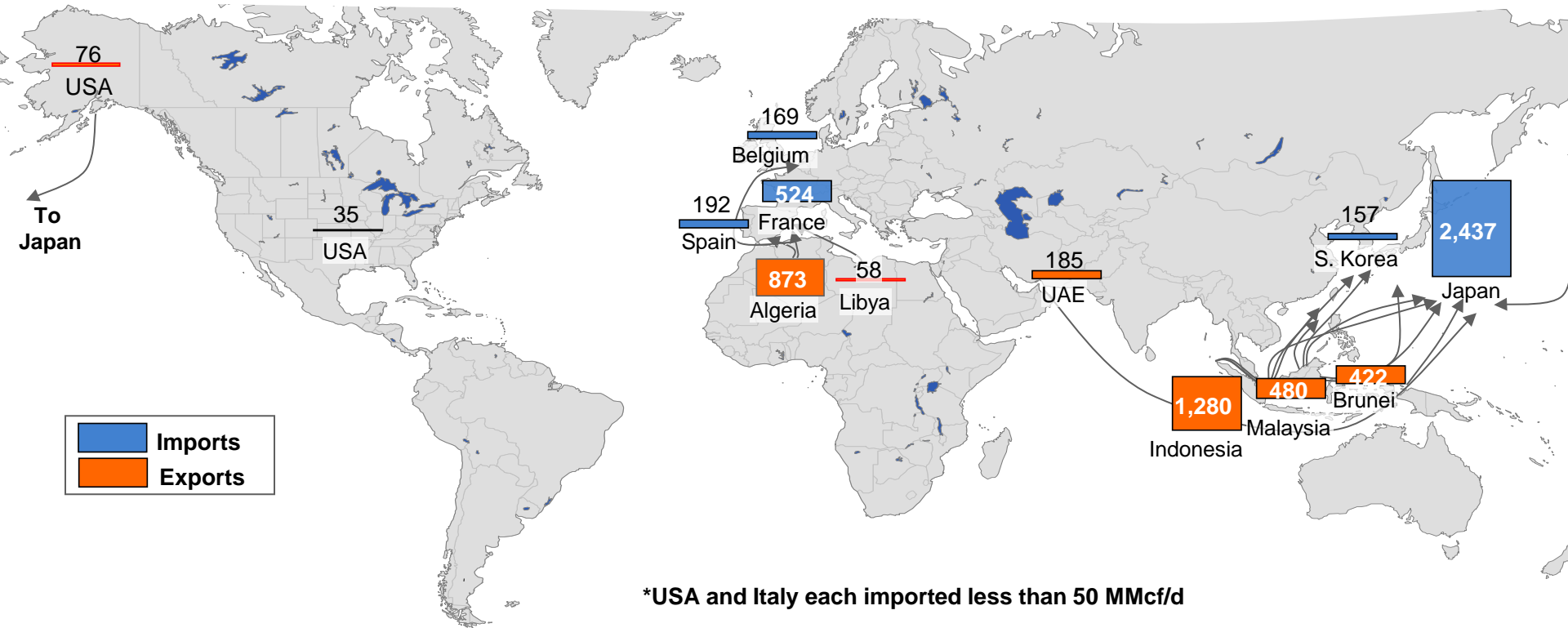
Source: Cheniere interpretation of Wood Mackenzie data (Q4 2015); [1] Operational capacity plus capacity under construction

Peakshaving Plant Overlaid on Sabine Pass LNG



LNG Trade in 1988, MMcf/d

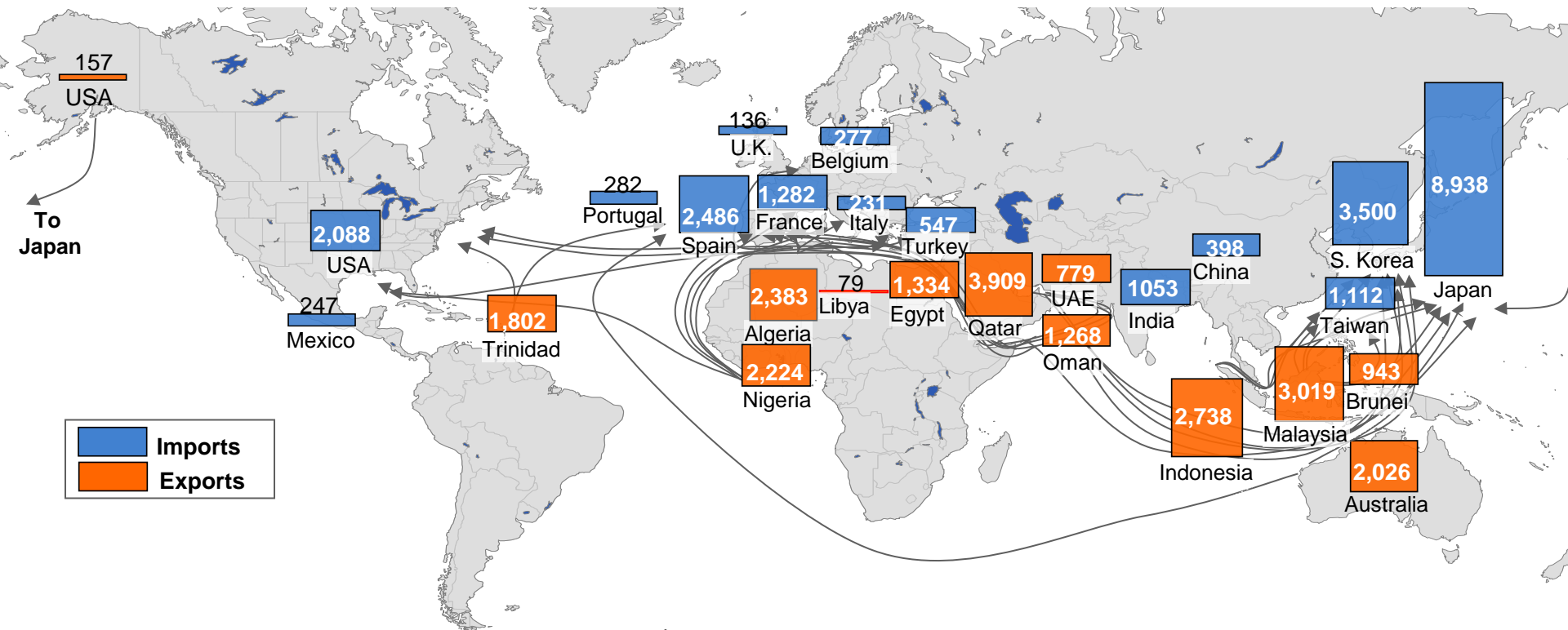
Two highly regionalized markets



*USA and Italy each imported less than 50 MMcf/d

LNG Trade in 2007, MMcf/d

Regional markets growing; New supply players; Spot trade increasing

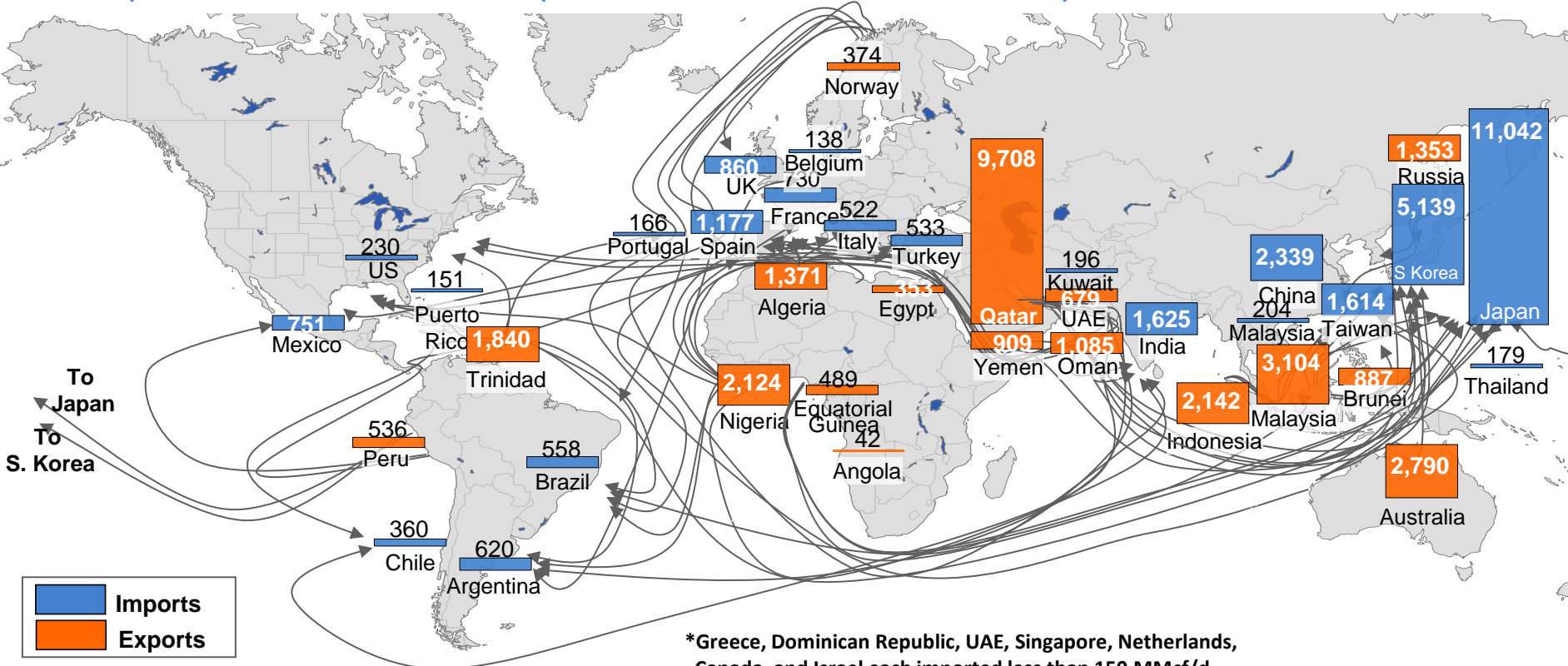


*Puerto Rico, Greece, and Dominican Republic each imported less than 100 MMcf/d

LNG Trade in 2013, MMcf/d

Many more small importers; Longer shipping routes; South America enters trade

Re-exports from 17 countries; Optimization needed!; Historical exporters shrink



*Greece, Dominican Republic, UAE, Singapore, Netherlands, Canada, and Israel each imported less than 150 MMcf/d

Cheniere LNG Platform Along Gulf Coast

31.5 mtpa
currently under construction

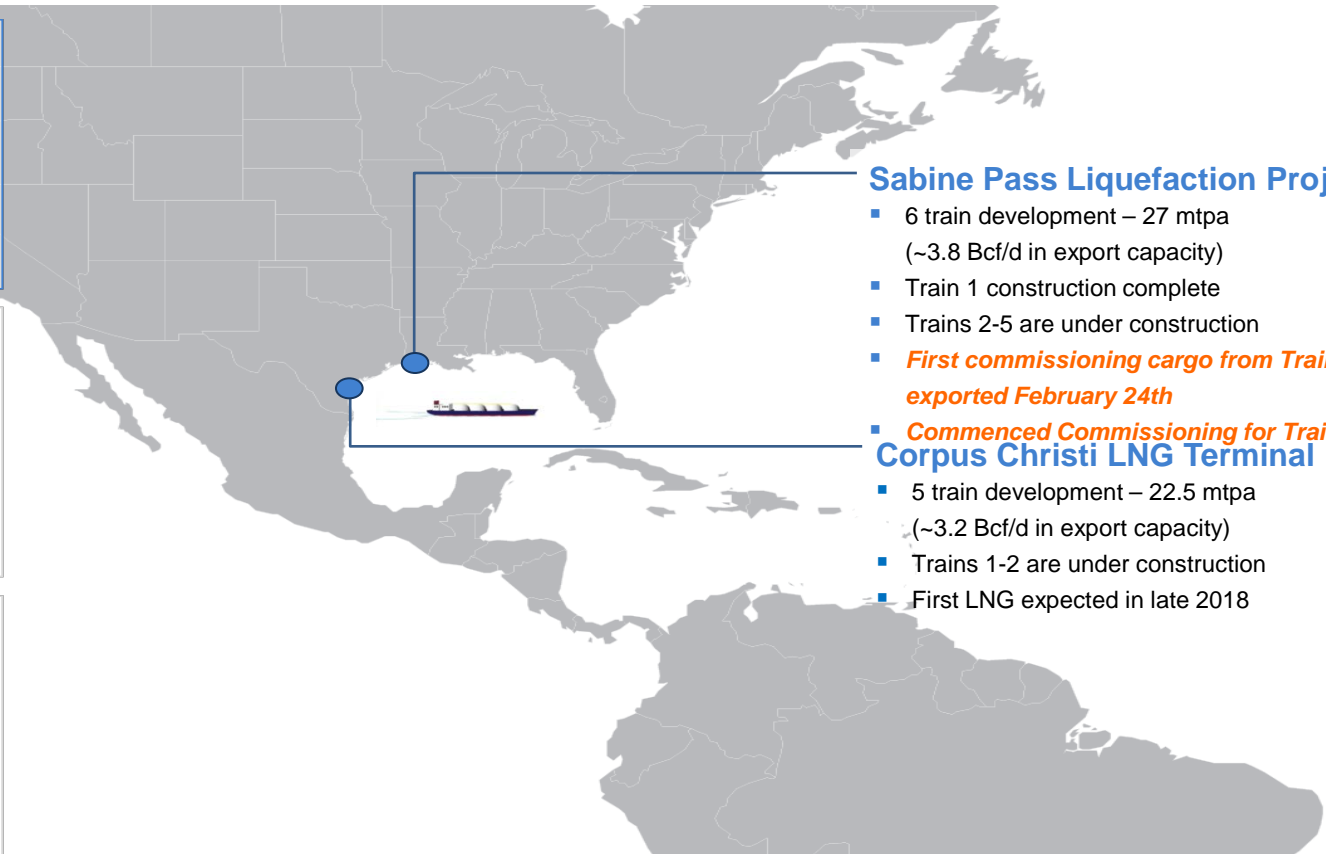
7 trains, design capacity of 4.5 mtpa each

~87%
LNG volumes contracted

20-year contracts with fixed fees, no price reopeners, and parent as counterparty or guarantor

~\$30B
capital spend

Significant investment in U.S. infrastructure



Sabine Pass Liquefaction Project

- 6 train development – 27 mtpa (~3.8 Bcf/d in export capacity)
- Train 1 construction complete
- Trains 2-5 are under construction
- *First commissioning cargo from Train 1 exported February 24th*
- *Commenced Commissioning for Train 2*

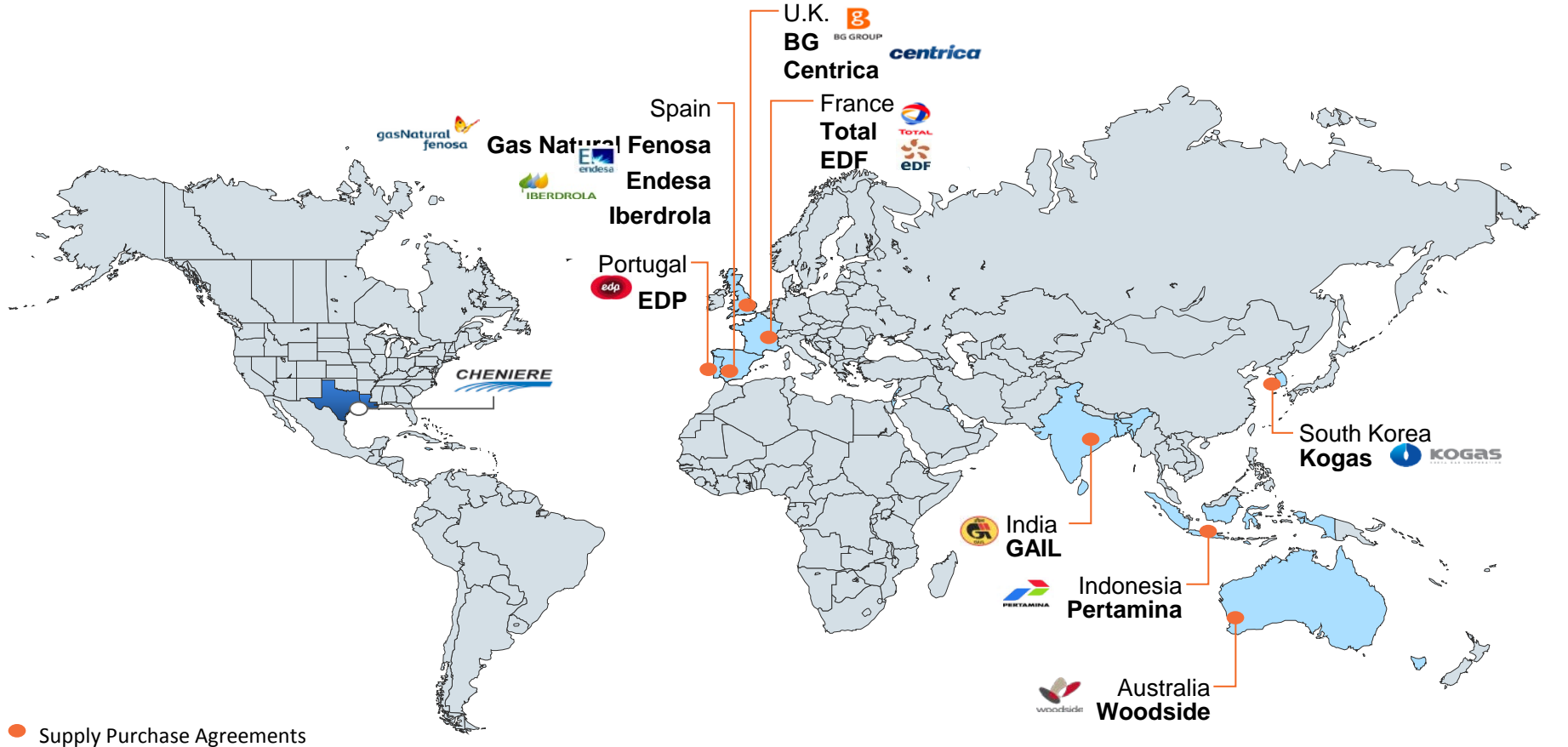
Corpus Christi LNG Terminal

- 5 train development – 22.5 mtpa (~3.2 Bcf/d in export capacity)
- Trains 1-2 are under construction
- First LNG expected in late 2018

Cheniere Statistics

- Cheniere tanks are large enough to fit a commercial airplane inside of it
- Sabine Pass
 - 6 trains, equivalent to 27 mtpa of LNG.
 - Each LNG train measures over 1,300 feet in length, equivalent to about 3 football fields, and over 90 feet high.
 - Each Cold Box weighs over 1000 tons
 - Over 200 fans, 15 feed in diameter, help cool the refrigerants
 - Some of the pipes in the train can be up to 6 feet in diameter
 - There are thirty gas turbines in the 5 trains
 - The components of all 5 trains
 - 367,00 cubic yards of concrete
 - 75,000 tons of structural steel
 - 345 miles of pipe
 - 2,415 miles of electrical cable
- Between Sabine and Corpus – 950 permanent jobs
- The two facilities support over 150,000 indirect jobs
- Total cost Sabine - \$20B
- Total cost Corpus Christi - \$10B
- Cheniere has twelve customers that have signed 20 year contracts for the LNG offtake

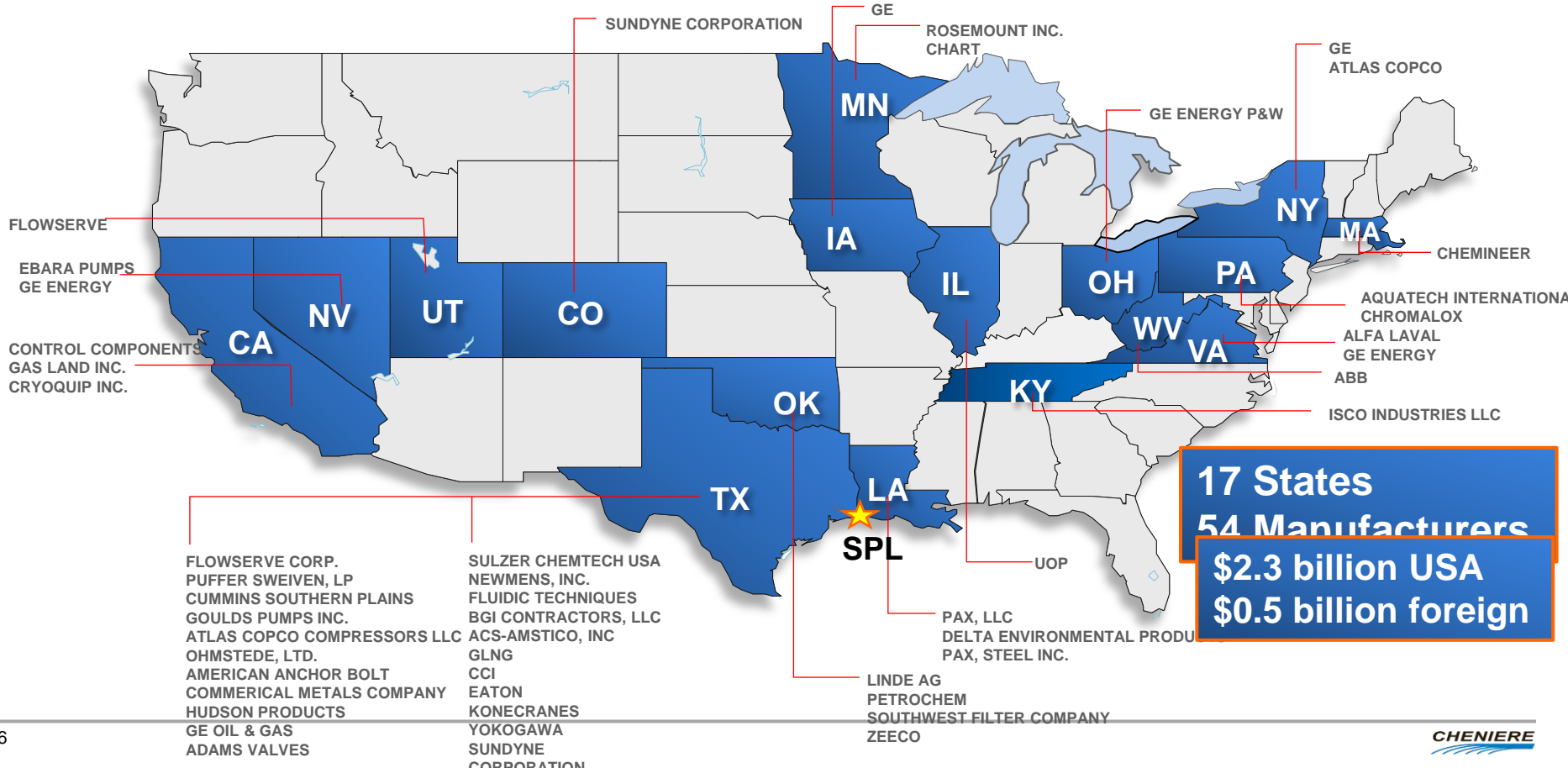
Cheniere Energy Global Customers



● Supply Purchase Agreements

Sabine Pass Liquefaction

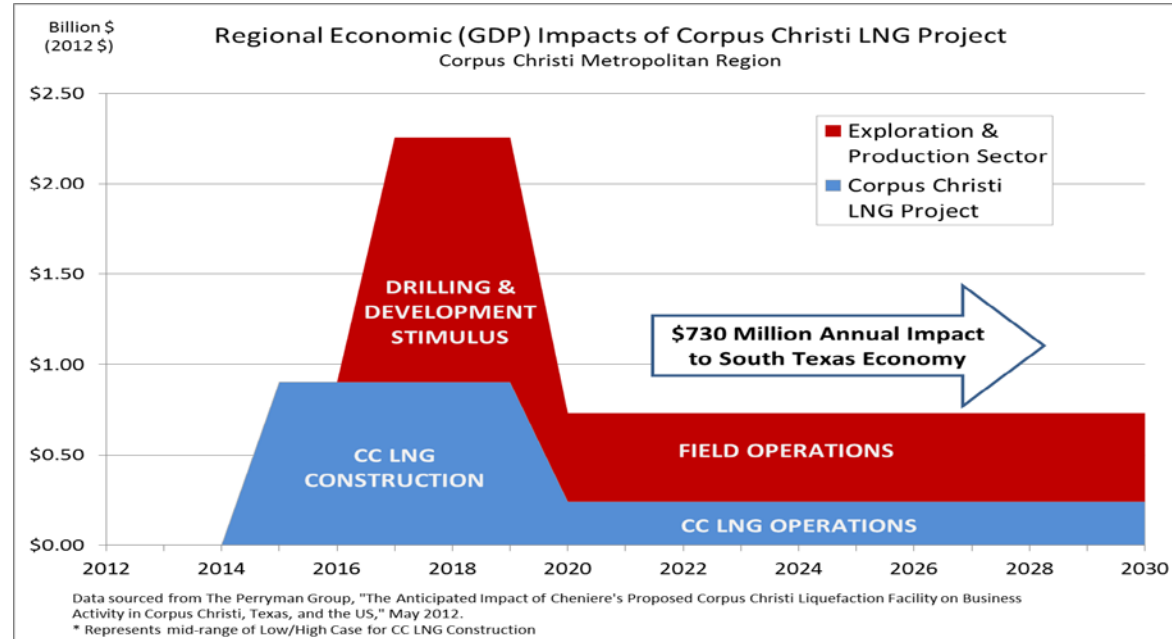
A \$2.3 Billion Investment in American Manufacturing



Corpus Christi Liquefaction Impacts (Trains 1-3)

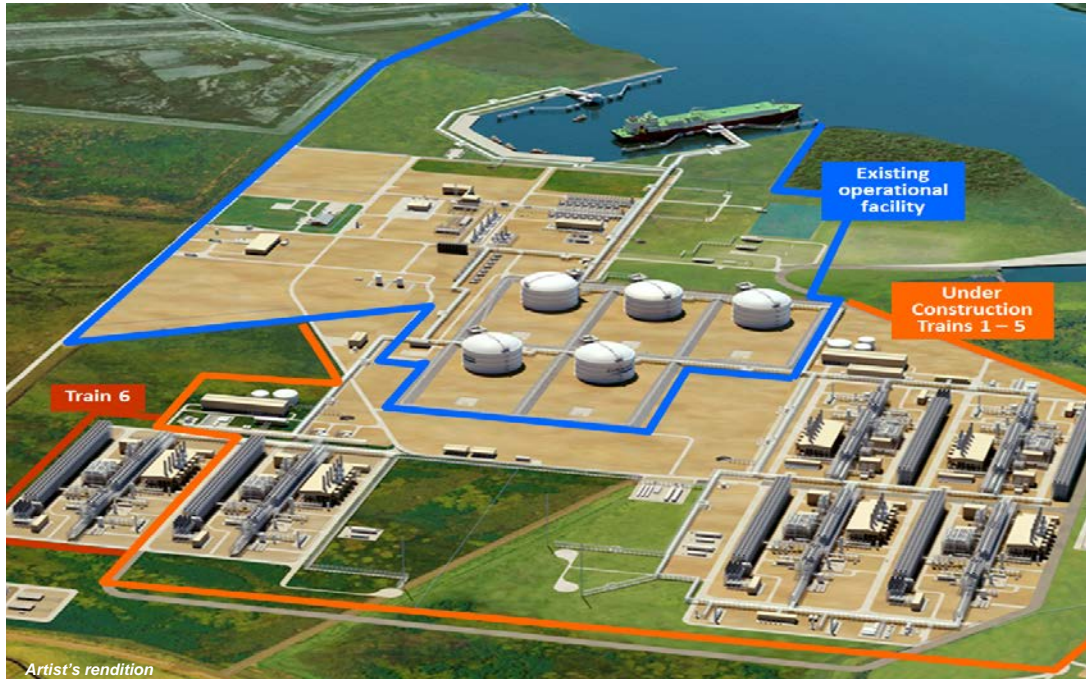
- Infrastructure Investment ~\$11 B
- Direct Jobs
 - Peak 4,000 construction jobs
 - 200+ permanent jobs at terminal
 - Estimated 15 million work hours
- Indirect & Induced Jobs U.S.*
 - 35,000 - 50,000 jobs from CC LNG construction
 - 55,000 – 75,000 jobs from initial E&P drilling stimulus
 - ~47,000 jobs long-term from CC LNG & E&P operations
- Economic Impacts*
 - \$11 - \$20 Billion/yr to GDP during construction
 - \$4.4 Billion/yr to GDP long term

Regional Impact of Corpus Christi LNG Project



* Data derived from The Perryman Group, "The Anticipated Impact of Cheniere's Proposed Corpus Christi Liquefaction Facility on Business Activity in Corpus Christi, Texas, and the US," May 2012.

Sabine Pass Liquefaction Project (SPL)



Design production capacity is expected to be ~4.5 mtpa per train, using ConocoPhillips' Optimized Cascade® Process

Current Facility – Utilizing existing assets

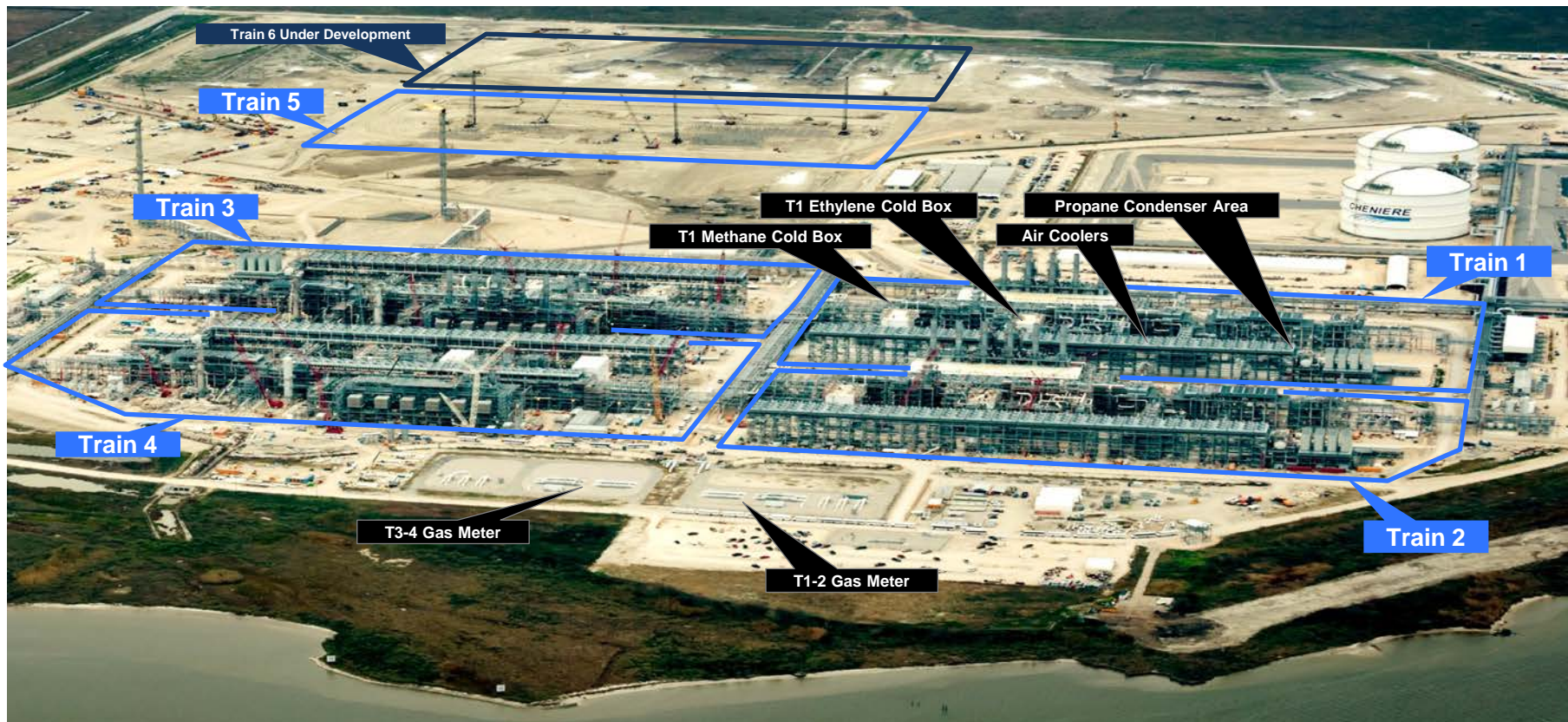
- ~1,000 acres in Cameron Parish, LA
- 40 ft. ship channel 3.7 miles from coast
- 2 berths; 4 dedicated tugs
- 5 LNG storage tanks (~17 Bcfe of storage)
- 5.3 Bcf/d of pipeline interconnection

Liquefaction Trains 1 – 5: Fully Contracted

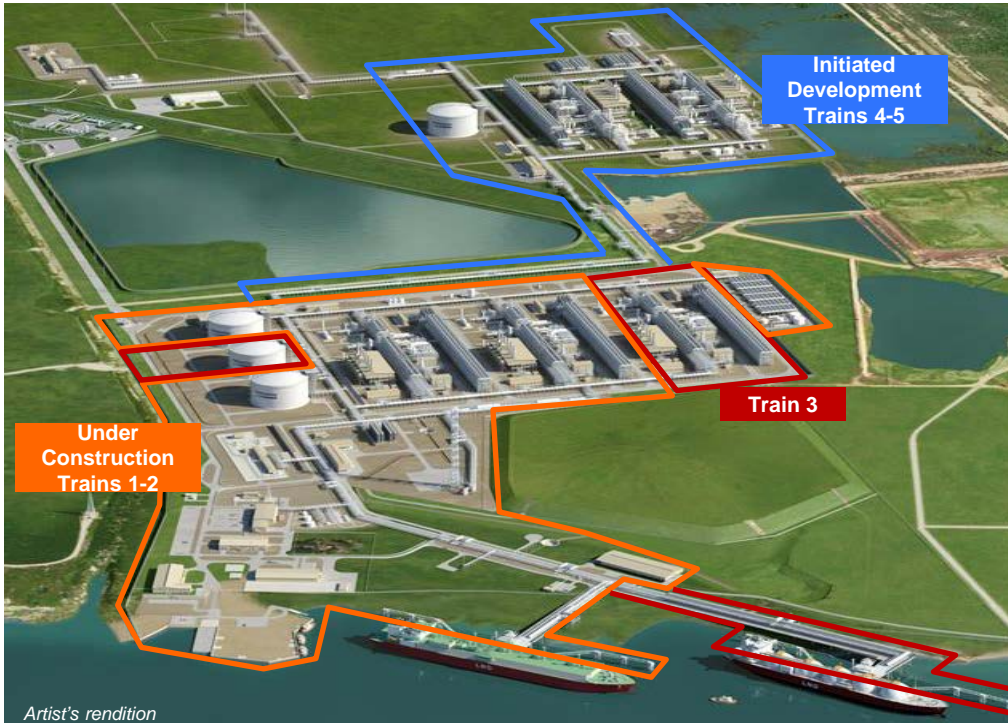
- Lump Sum Turnkey EPC contracts w/ Bechtel
- T1 & T2 EPC contract price ~\$4.1B
 - Overall project ~98% complete (as of 2/2016)
 - T1 is complete; 1st LNG produced in February
 - Operations estimated 2016
- T3 & T4 EPC contract price ~\$3.8B
 - Overall project ~82% complete (as of 2/2016)
 - Operations estimated 2017
- T5 EPC contract price ~\$3.0B

Significant infrastructure in place including storage, marine and pipeline interconnection facilities; pipeline quality natural gas to be sourced from U.S. pipeline network

Aerial View of SPL Construction – February 2016



Corpus Christi LNG Terminal



Artist's rendition

Design production capacity is expected to be ~4.5 mtpa per train, using ConocoPhillips' Optimized Cascade® Process

Proposed 5 Train Facility

- ~2,000 acres owned and/or controlled
- 2 berths, 4 LNG storage tanks (~13.5 Bcfe of storage)

Key Project Attributes

- 45 ft. ship channel 14 miles from coast
- Protected berth
- Premier Site Conditions
- 23-mile 48" and 42" parallel pipelines will connect to several interstate and intrastate pipelines

Liquefaction Trains 1-2: Under Construction

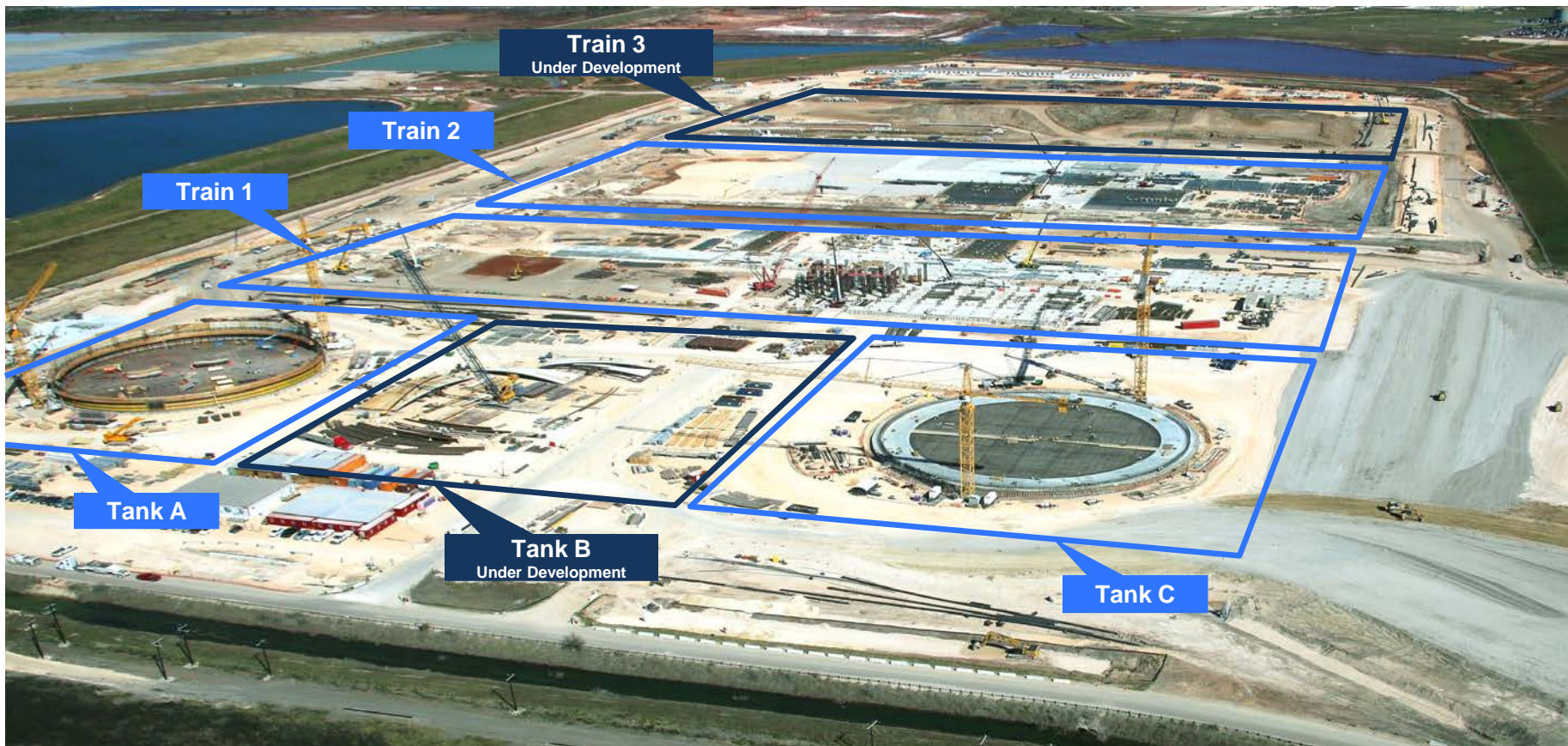
- Lump Sum Turnkey EPC contracts w/ Bechtel
- T1 & T2 EPC contract price ~\$7.5B
- Construction commenced May 2015
- Operations estimated 2018

Liquefaction Train 3: Partially Contracted

- 0.8 mtpa contracted to date
- Targeting additional 2.1 mtpa

Commenced Construction on Trains 1-2 in May 2015

Aerial View of CCL Construction – February 2016



OPENING EVENT VIDEO

Regulations and Standards – How they Impact Facilities

- Three primary documents used for LNG facilities
 - 49 CFR Part 193
 - 33 CFR Part 127
 - NFPA 59A
- Standards referenced by these two documents:

Industry Standard	No. of References	Industry Standard	No. of References
NFPA	32	AGA	1
ACI	4	API	1
ALPEMA	2	ASCE	1
API	4	ASME	1
ASCE	1	GTI	3
ASME	4	NFPA	2
ASTM	3		9
CSA	2		
IEEE	1		
NACE	1		
UL	1		
Others	6		
	61		

Issues Identified

- Older versions of standards referenced in the regulation negatively impact design, construction and operations

- Design Issues
 - The 2001 version of NFPA 59A is referenced in 49 CFR Part 193
 - The 2001 version of NFPA 59A references the 1992 version of ASME Boiler and Pressure Vessel Code
 - The ASME requires that six months after a new standard is issued that the new standard be utilized and that the old standard is void
 - Therefore, the regulations are asking professional engineers to utilize old and outdated standards that is against the requirements of the PE societies
 - This issue has resulted in additional submittals and the commensurate time to develop and review the submittals for both applicants and the PHMSA staff.

- Construction issues
 - Regulations call out using less effective quality assurance testing methods

- Operational issues
 - Regulations require prescriptive testing intervals for certain equipment instead of industry best practice or manufacturers recommendations
 - These prescriptive requirements actually increases risk and diminishes safety. (if it ain't broke don't fix it)

Conclusions

- LNG industry has evolved, both in the United States and worldwide, from a smaller relatively simple industry and facilities to larger and more complex business models and facilities.
- The regulations, although dated, have served the industry well as the safety record is exemplary compared to other industrial facilities.
- US regulations do not reflect industry best practices and actually increase risk in the design, construction and operation of LNG facilities.
- A good first step is to have LNG regulations updated with the newest standards

