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Natural Gas Pipeline Regulation and its Impact on Value

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Introduction

- The Federal Energy Regulatory Commission ("FERC") sets rates for natural gas transmission pipeline companies pursuant to the FERC's authority under the Natural Gas Act, 15 U.S.C. § 717, et seq.
- The FERC's process is similar to that used by most state regulatory authorities in regulating local gas distribution companies and to that which had been used for local telephone exchange companies.
- FERC's process for natural gas transmission is also more stringent than the more market-based types of regulatory schemes applied to such companies as long distance telecommunication companies, and liquid or petroleum products pipelines.

FERC Ratemaking Based Upon Historical Cost Less FERC-allowed Depreciation

- Under the Natural Gas Act, all natural gas transportation companies, subject to the jurisdiction of the FERC, must charge rates that are "just and reasonable". 15 U.S.C. § 717c(a). The FERC does so by determining the variables in the below equation for each service offered by the pipeline company:

- **Rates =** $\dfrac{\textbf{Reasonable Expenses + (Rate Base x Reasonable Rate of Return)}}{\textbf{Expected Volumes}}$

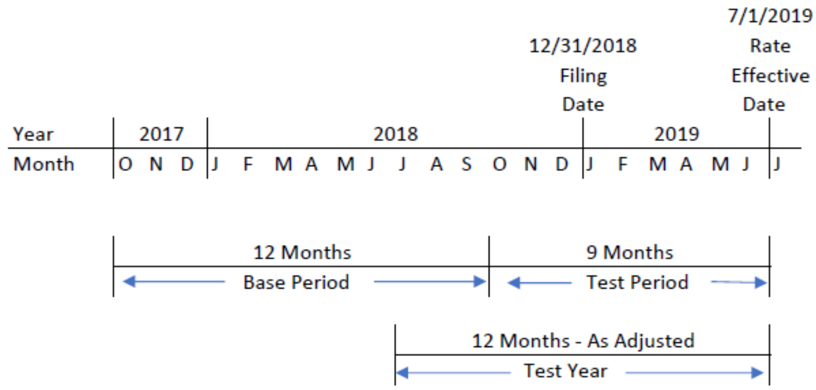
- The entire upper right side of the equation is referred to as the pipeline's cost of service.

Determining the Cost of Service – The Test Period Concept

- The FERC's goal is to determine costs and service volumes that **will** best represent the company's actual experience when the rates go into effect.
- Since many of the components or variables that become the basis for rates change over time the FERC must determine the time over which it will "test" the reasonableness of expected expenses and volumes.
- This test period is comprised of base period consisting of 12 months of actual accounting data available when the pipeline files its rate case, followed by an adjustment period during which the FERC determines what costs and volumes are abnormal or nonrecurring so that they can be ignored for setting rates.
- To ensure the FERC is using current information, the test period must end within 9 months after the filing of the rate case. *See* 18 C.F.R. §154.303.

Illustration of Rate Case Key Dates
Base Period & Test Period Concepts

Rate Case Filing Effective July 1, 2019



Determining Reasonable Operation Expenses

- Generally, prudently incurred or reasonable operating expenses can be recovered in rates. Examples are taxes, salaries, insurance, O&M, rent, utilities and yearly depreciation.
- To determine depreciation, the FERC first looks at the useful economic life of the assets.
- Its economic life is limited by the physical life of the facilities (or sometimes the estimated gas reserves connected to the facilities).
- That useful life is then used to create a depreciation rate which, when applied to the original cost of the facilities, determines how much depreciation can be taken as an expense in each year.
- Different depreciation rates may apply to different types of property.
- Overall, depreciation rates on transmission property have been falling over the past twenty years as new reserves are discovered and most pipeline property remains physically capable of transporting gas.
- FERC depreciation is not appraisal depreciation.
- No effort is made by FERC to find market value, rather the focus is to make sure customers who use the facilities pay for the facilities (“intergenerational equity”).

Determining the Rate Base

- The original cost of the pipeline's capitalized assets is the starting point for determining the rate base.
- This is the invested capital, primarily plant and equipment that is "used and useful" in providing the pipeline's service to the public.
- Pipeline and compressor station property make up the bulk of this plant and equipment which in turn is generally synonymous with the "property" appraised by the assessor.
- Not all assets capitalized on a company's books are tangible property nor may they even be considered taxable property under a state's tax laws.
- For example, when pipeline is installed, companies may reflect as the capitalized cost of that pipeline not only the cost of the pipe, but also related installation costs, archeological, environmental and other engineering and consultants' fees, allocated home office overhead, and contractor fees and profits.
- A state's law may not allow taxation of all of these costs that are reflected as "pipeline" on the company's books.

Rate Base – continued…

- From the original cost of these capitalized assets, the pipeline must deduct total FERC-allowed depreciation to arrive at the net book value of its assets.
- The rationale for deducting total accumulated depreciation is because each year's rates are designed to recover one year of depreciation expense.
- If rate base were not based on net book value, then customers would be paying for depreciation as it occurs AND continuing to pay for a rate of return based on the original cost of the assets, in a sense allowing a double recovery of a cost.

Rate Base – continued…

- Besides plant and equipment, the FERC allows a working capital allowance to be included in rate base.
- This is the money, materials and supplies the company must have on hand to meet current obligations.
- The FERC recognizes that these funds or inventories could be invested elsewhere and thereby be earning a rate of return if they did not have to be held for eventual use by the customers.

Rate Base – DFIT

- The final step in arriving at rate base is to reduce the net book value of the company's assets by the accumulated deferred federal and state income taxes ("DFIT").
- The FERC generally requires straight-line depreciation.
- Federal and state tax laws, however, allow accelerated depreciation so that more depreciation can be taken in the early years when an asset is new, but less depreciation is taken in later years.
- Prudent accounting requires that a reserve be built up to pay what might become a relatively greater income tax liability in future years as the depreciation expense deduction grows smaller and taxable income grows larger.

Rate Base – DFIT continued…

- The FERC and most state regulatory commissions treat DFIT as a deferred liability which, in theory, the pipeline can use in the present to purchase property included in the rate base.
- If this portion of the rate base is essentially free, customers should not pay for it.
- Thus, FERC requires the net book cost of the pipelines' assets to be further reduced by the amount of DFIT under the theory that the customers should get the benefit of the deferred liability, rather than the company.

Hypothetical – Rate Base As of Year End for Appraisal Purposes

- While the company's actual rate base will be set by FERC order based on the company's rate base as of a certain test period, an appraiser can create a hypothetical rate base that would be valid as of the year-end tax assessment date.
- Most information is available from the company's annual regulatory report filed with FERC, the FERC Form 2.
- The approximate rate base is derived from the following accounts in the FERC Form 2:
    - net utility plant (pg. 110)
    - plant materials and operating supplies (pg. 111)
    - gas stored underground (pg. 110 and 111)
    - stores' expense (pg. 111)
    - residuals and extracted products (pg. 111)
    - prepayments (pg. 111)
    - + <u>other regulatory assets & liabilities</u>
    - - <u>accumulated deferred income taxes (pg. 275)</u>

  approximate rate base

Permitted Rate of Return on Rate Base

- The FERC is under a legal obligation to set a rate of return on the pipeline's rate base that will allow it to continue to attract capital and to maintain its financial integrity.
- This obligation comes from two landmark Supreme Court decisions: *Bluefield Water Works and Improvement Co. v. Public Service Comm'n of West Virginia*, 262 U.S. 679, 693 (1923) and *Federal Power Comm'n v. Hone Natural Gas Co.*, 320 U.S. 591, 603 (1944).
- Determining this permitted rate of return is essentially the same as determining a capitalization rate in the income approach to value.
- FERC generally relies on its staff and outside financial experts to find the return by using the weighted average cost of capital.
- An example of its application is as follows:

	Amount	Percentage	Return	Cost
Long Term Debt	$500,000,000	37.0%	9.6%	3.65%
Preferred Stock	$20,000,000	1.5%	9.9%	15%
Common Equity	$800,000	61.5%	15%	9.23%
TOTAL	$1,320,000,000			13.03% Permitted Rate of Return

Determining the Debt Rate

- The FERC's practice is to use the actual cost of the company's debt obligations since pipeline customers are responsible for paying the company's current obligations.
- Of course, the company cannot inflate its permitted rate of return by refusing to call its high cost debt and refinance for low cost debt if it were able to do so without incurring penalties in excess of the savings.

Determining Cost of Equity

- Just as in appraisal practice, determining the cost of equity is much more difficult than determining the cost of debt.
- There are several methods recognized by the FERC or finance experts.
  - (1) Discounted Cash Flow or DCF method (cost of equity by determining the present value of investors' expected dividends and growth in stock price)
  - (2) Comparable Earnings Method (the expected average total returns provided by any company in any industry provided it presents risk similar to the subject pipeline company)
  - (3) Risk Premium Method (risk-free rates of return, such as the rate on long-term government bonds, are the starting points to which are added the historical measures of the additional return earned by investors in common stock)
  - (4) CAPM (adds an additional step to the basic risk premium model. The equity risk premium is multiplied by a representative beta co-efficient)
- For natural gas pipelines (from 1987 to the present) the FERC has exclusively employed a 2 stage DCF model using 2/3 short term and 1/3 long term.

Determining the Appropriate Capital Structure

- Generally, the FERC will examine the company's books to determine its proportions of debt and equity and will use the company's existing proportions of debt and equity if they are within a zone of reasonableness.
- Finding the zone of reasonableness requires balancing the benefits and risks of debt.
- Debt costs the company less than equity because investors perceive debt to be less risky: debt holders have a legal right to be paid before equity holders.
- Debt cost is also deducted as a business expense.
- A primary disadvantage of debt is the company's obligation to make fixed, periodic payments to the debt holders or else risk bankruptcy.

Caveat – WACC Is For Company As A Whole

- The FERC determines the rate at which the company can attract capital.
- For unit value cases, it is similar to the WACC used for the pipeline's unit value.
- It would not be appropriate to apply this WACC to value just a segment of the pipeline.
- In the context of an integrated electric utility, the error of applying the company's WACC to present value cash flows from a single asset is clear: the risk of an investment in the company as a whole is typically much less than the risk of investing in a single asset like a coal-fired power plant, a nuclear power plant, or a wind park.

Functionalizing the Costs

- Pipelines have numerous services, the most prominent are:
  - (1) gathering, where gas is moved from the wellhead, through small low pressure lines to a central point for processing;
  - (2) interstate transportation of gas, where gas is moved from the gas producing regions to the gas consuming regions through large diameter high pressure pipes; and finally,
  - (3) gas storage, where gas is stored in underground storage reservoirs, sometimes in the producing areas to take advantages of price swings and possible pipeline incapacity, but most times in consuming regions for rapid delivery on cold, high demand days.
- The property and operating expense necessary to provide these services are first identified and separated by service so the FERC can begin constructing rates for each service.

Classifying or Categorizing Costs as Fixed or Variable Costs and Assigning Costs to Demand or Commodity Charges

- FERC makes a determination as to whether costs are fixed or variable.
- Fixed costs do not vary with the volume of gas transported on the pipeline.
- The vast majority of a pipeline's costs are, in fact, fixed, in the short run such as most salaries and the return on its investment in pipeline and compressor engines.
- The primary variable costs are the portion of operations and maintenance expenses directly related to volume such as gas consumed, compressor engine lubricants and filters.
- Cost classification is a necessary step in arriving at the two principal components of the rates charged by a pipeline company.
- The first is a demand or reservation charge.
- It is a charge that is independent of the actual volume of gas transported by the customer.
- Pipelines are capital intensive and the pipe size cannot be increased or decreased to meet seasonable fluctuations.
- Consequently, a practice has been developed of charging customers for a certain portion of the space on the pipeline, whether or not it is used all year long.

Firm and Interruptable Transportation Commodity or Usage Charges

- Commodity or usage charges are incurred only when a customer chooses to transport gas on the pipeline.
- This classification between demand and usage charges is important for the two major types of transportation services offered by a pipeline company: firm transportation and interruptible transportation.
- For its firm transportation service, the pipeline guarantees to make its capacity available to transport the customer's requested amount of gas at any time of the year.
- For this, the customer must pay the demand charge for that capacity all year around, whether or not the space is used.
- In contrast, the interruptible transportation service customer pays the pipeline only when its gas is actually transported (and pays only the rate close to a variable cost of transporting the gas.)
- However, if the pipeline's capacity is needed to serve the firm transportation customers, the pipeline can refuse to transport gas for its interruptible customers.
- The customers get the reliability they pay for.

Allocating Costs

- Next, the FERC apportions the costs classified to either reservation and usage charges among the pipeline's various rate zones and among the pipeline's various classes of services.
- This task, along with the task of cost functionalization are perhaps the least important from the perspective of an appraiser.

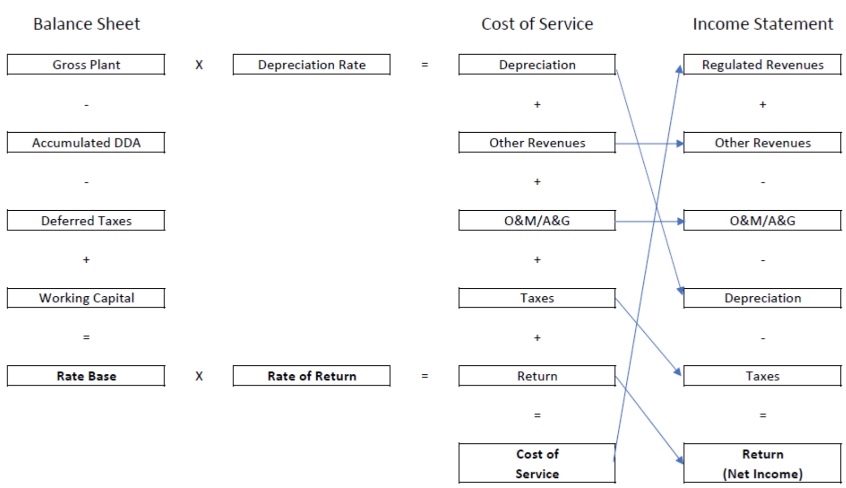
Designing Rates by Computing the Billing Units for Each Service

- Once the FERC determines the total revenue requirements necessary to cover the cost for each class of service to provide the pipeline's investors with a market rate of return, and divides those revenue requirements across the various services, rate zones and charges, the final step is to determine the increments in which it can collect those revenue requirements from the customers.
- The customers pay for each unit of gas gathered, transported or stored by rates that are expressed in terms of the heat content of the gas, generally decatherms (Dth) or their Btu equivalent, (MMBtu).
- Pipeline quality natural gas with the heat content of a decatherm will generally have the volume of a thousand cubic feet or Mcf.
- Thus, to derive the final rates, the total revenue requirement for each class of service is divided by the total expected volumes of those services to arrive at a rate per Mcf of gas.
- A pipeline will not recover its costs if FERC overestimates the Mcfs of each service each customer will purchase, but will overrecover costs if FERC underestimates actual purchases.

With Perfect Knowledge

- FERC allowed NOI = rate base x permitted rate of return = actually earned NOI (FERC Form 2, Pg. 114, Ln. 26)
- The reason this relationship will be true is because 1) the projected expenses in the cost of service that are deducted from total revenue to get to net operating income or ("NOI") would be identical to those costs actually experienced in the reporting period and (2) the volumes predicted under each service were actually achieved.
- But as a practical matter, there will be deviations between FERC-permitted NOI and reported NOI.
- NOI may be below FERC-permitted NOI because of (1) unanticipated expenses; (2) inflation; (3) actual sales volumes below those experienced in the rate case test period; (4) more discounting of rates than was predicted from the rate case test period.

Ratemaking Model
Cost of Service and Rate Base



Substantial Deviations Trigger Rate Cases

- If NOI is substantially below FERC-allowed NOI to justify the expense of a rate case, then the pipeline may file another rate case under NGA § 4, 15 U.S.C. § 717(c).
- The company has the burden of proving the need for increased rates.
- NOI can be above permitted NOI if the converse to the above is true: the volumes exceed those projected in the rate case, the company locates costs that it can eliminate or interest rates fall.
- Then the FERC, state utility commissions or the pipelines' customers can institute a rate investigation under NGA § 5, 15 U.S.C. § 717d.
- Whether or not a pipeline customer attempts to force a pipeline into a rate case under § 5, it has the right to intervene in any rate case the pipeline files.
- As a practical matter, all of the major customers of the interstate pipeline companies intervene in their rate cases and thereby provide another level of oversight in addition to the FERC.

Conclusion – The Usual Case

- FERC regulation has a direct and substantial impact on pipeline valuation.
- Historical cost less FERC-allowed depreciation becomes the starting point for the cost indicator of value.
- The FERC-allowed rate base and the FERC-permitted rate of return become the primary variables in predicting the income the pipeline will earn.
- Periodic rate cases ensure that net operating income will always be in a relatively constant, direct proportion to rate base.

Now for the Unusual

- Tax Reductions
- Low, declining volumes when costs can't be recovered from a limited pool of customers.
- Special payments for policy reasons to keep assets in operation when cost of service ratemaking inadequate.

Legislation Can Have Dramatic Effects Causing Proactive Responses by Regulators

- Typically rate cases are not needed every year or frequently since many changes offset each other.
- But under the Tax Cut and Jobs Act the federal corporate income tax rate was cut dramatically.
- The effective federal income tax rate used in typical utility appraisals fell from 35% (year-end 2016 appraisal date) to 21% (year-end 2017 appraisal date).
- Tax reduction lowers cost of service (taxes are in O&M) offset by an increase in after tax debt rate.

Regulatory Responses to Tax Decreases

- Michigan Public Service Commission ("MPSC") required utilities subject to its jurisdiction to implement near immediate rate reductions.
- For example, in July 2018 and in August 2018, Consumers Energy implemented a $49 million customer credit to gas customers and a $113 million customer credit to electric customers in response to the decrease in the federal income tax rate as a result of the Tax Cuts and Jobs Act. These two customer credits offset, on a going-forward basis, the higher rate of federal income taxes embedded in customer rates by prior rate cases. See MPSC Cases #U-20102 and # U-20103.
- Later, in October 2018, Consumers Energy submitted a proposed method for refunding excess deferred taxes in the form of a one-time adjustment of $1.6 billion, refunded over the remaining average regulatory life of the assets. See MPSC Case # U-20309.
- MPSC did not and does not order immediate credits to customers for a utility's proactive efforts to recover tax refunds caused by excessively valued property.
- FERC has struck an intermediate policy.

Gathering System with Declining Volumes

- Michigan has some old, high cost, declining output gas wells.
- In theory, rates to remaining customers can be raised.
- BUT – The few remaining customers cannot pay all the operating costs and still sell gas at a profit.
- Gas prices now too low.
- Despite theoretical ability to raise rates, gathering system may be shut down.

Transmission Pipeline Case Studies – Declining Volumes and Response

- ANR Pipeline Company – Time to reverse course.
- Appalachian shale gas availability changed historical gas flow patterns.
- Significant capital investment led to first rate case in 20 years.

* * *

- Bison Pipeline Company – Markets can change quickly.
- The pipeline was shut in within 5 years of beginning operation.
- Revenues remained stable due to a 10 year levelized agreement with shippers.
- Ultimately the pipeline was impaired.

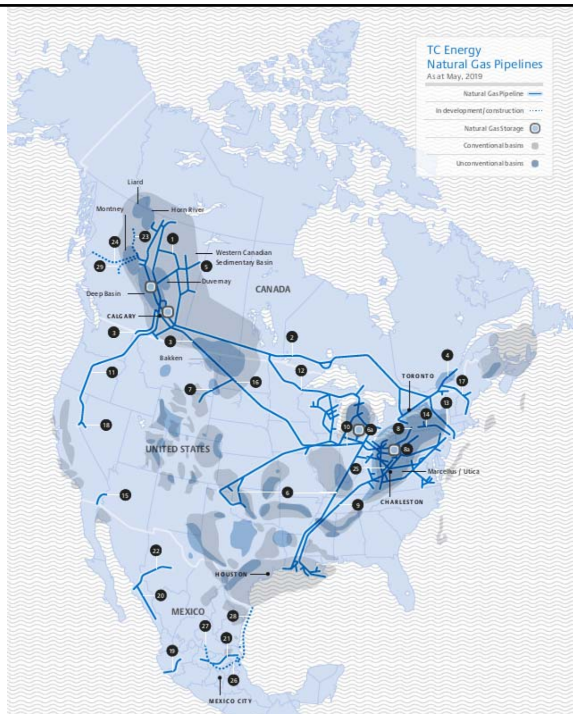
Examples from electric power industry - remedies for shortcomings of cost of service rate making.

- Coal-fired power plants have been closing due to environmental compliance costs and competition from gas-powered and renewable sources.
- Presque Isle Power Plant and System Support Resources
- In 2013, Wisconsin Electric Power announced it's intention to close of the 1970s vintage Presque Isle Power Plant ("PIPP"). It is now closed.
- Market prices of electricity did not cover its operational costs and substantial capital investment was needed for environmental compliance.
- In the interim, between closure and construction of new gas replacement generating plants, the Midcontinent Independent System Operation ("MISO") through FERC proceedings, determined PIPP operation was necessary to maintain the reliability of the transmission grid, designating PIPP as a "System Support Resource," or "SRR."
- MISO paid a portion of the PIPP production costs, recovering them in part from entities (other distribution utilities) benefiting from PIPP and grid reliability.
- See FERC Docket No. ER14-1242, MPSC Case No. U-17751.

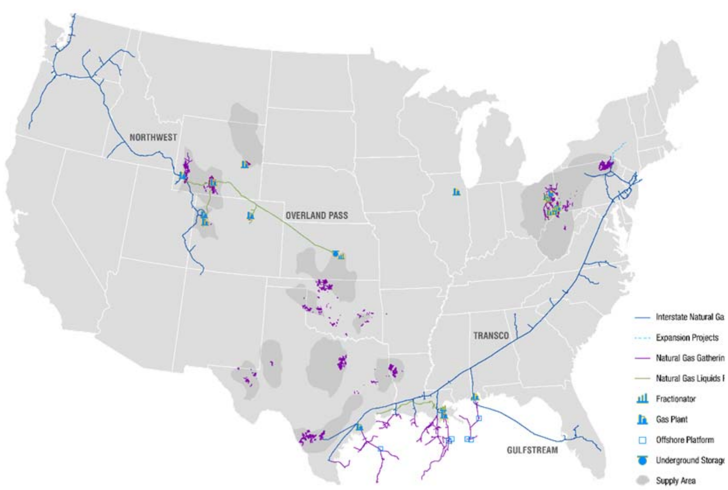
DOE Secretary Perry Efforts to Compensate Coal Plants for Fuel Reliability

- In September of 2017, the Secretary of Energy, Rick Perry, wrote to FERC providing it with the DOE's staff report on electricity markets and reliability and urging FERC to consider a proposed rule to protect the resiliency of the electric grid.
- Secretary Perry pointed out that coal-fired power plants in particular had on-site fuel storage that could withstand major supply disruptions caused by natural disasters (hurricanes, tsunamis, polar vortex) and man-made disasters (terrorist attacks).
- The owners of such plants were not adequately compensated by traditional rate-making and he urged the FERC to react.
- FERC is still studying the issues.
- See 162 FERC ¶61,012, Order issued January 8, 2018, terminating rule-making process on Grid Reliability and Resilience Pricing in Docket No. RM 18-1-000 and initiating a new proceeding and establishing additional procedures, Docket No. AD18-7-000.

Appendix – System Maps

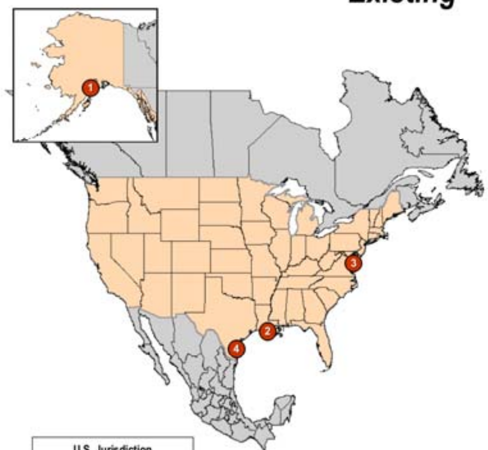


The Williams Companies



North American LNG Export Terminals

Existing



U.S. Jurisdiction

- FERC
- MARAD / U.S. Coast Guard

Export Terminals

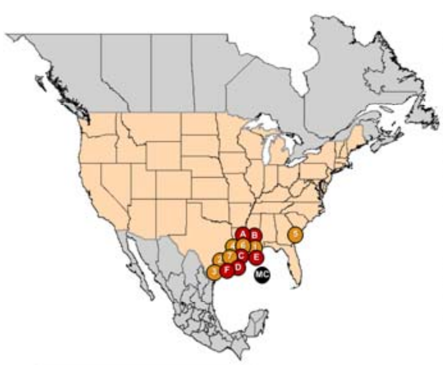
UNITED STATES

1. Kenai, AK: 0.2 Bcfd (ConocoPhillips)
2. Sabine, LA: 3.5 Bcfd (Cheniere/Sabine Pass LNG – Trains 1-5)
3. Cove Point, MD: 0.82 Bcfd (Dominion–Cove Point LNG)
4. Corpus Christi, TX: 0.71 Bcfd (Cheniere – Corpus Christi LNG Train 1)

As of May 8, 2019

North American LNG Export Terminals

Approved, Not Yet Built



U.S. Jurisdiction & Status

- **FERC** - Approved, Under Construction
- **FERC** - Approved, Not Under Construction
- **MARAD / U.S. Coast Guard**

Export Terminals

UNITED STATES

APPROVED - UNDER CONSTRUCTION - FERC
1. Hackberry, LA: 2.1 Bcfd (Sempra–Cameron LNG) (CP13-25)
2. Freeport, TX: 2.14 Bcfd (Freeport LNG Dev/Freeport LNG Expansion/FLNG Liquefaction) (CP12-509) (CP15-518)
3. Corpus Christi, TX: 1.4 Bcfd (Cheniere – Corpus Christi LNG) (CP12-507)★
4. Sabine Pass, LA: 0.7 Bcfd Train 6 (Sabine Pass Liquefaction) (CP13-552)
5. Elba Island, GA: 0.35 Bcfd (Southern LNG Company) (CP14-103)
6. Cameron Parish, LA: 1.41 Bcfd (Venture Global Calcasieu Pass) (CP15-550)
7. Sabine Pass, TX: 2.1 Bcfd (ExxonMobil – Golden Pass) (CP14-517)

APPROVED – NOT UNDER CONSTRUCTION - FERC
A. Lake Charles, LA: 2.2 Bcfd (Southern Union – Lake Charles LNG) (CP14-120)
B. Lake Charles, LA: 1.08 Bcfd (Magnolia LNG) (CP14-347)
C. Hackberry, LA: 1.41 Bcfd (Sempra - Cameron LNG) (CP15-560)
D. Port Arthur, TX: 1.86 Bcfd (Port Arthur LNG) (CP17-20)
E. Calcasieu Parish, LA: 4.0 Bcfd (Driftwood LNG) (CP17-117)
F. Freeport, TX: 0.72 Bcfd (Freeport LNG Dev) (CP17-470)

APPROVED – NOT UNDER CONSTRUCTION – MARAD/Coast Guard
MC. Gulf of Mexico: 1.8 Bcfd (Delfin LNG)

CANADA
For Canadian LNG Import and Proposed Export Facilities go to:

https://www.nrcan.gc.ca/energy/natural-gas/5683

As of May 17, 2019

★ Trains 2 & 3

Appendix – Michigan Law on Rate Base and Value

- By statute, Michigan states that, "the value attributed to the property of regulated public utilities by governmental regulatory agency for rate-making purposes is not controlling evidence of true cash value [market value] for assessment purposes." MCL 211.27(1).
- The legislature added this provision in response to ongoing litigation in *Consumers Power Company v Big Prairie Township*, *Newaygo County*, 81 Mich. App. 120, 265 NW2d 182 (1978) (the relatively low net book cost of an old hydroelectric dam understated market value when unregulated purchasers or purchasers for their own use would pay more than net book cost).
- See also *Consumers Power Company v Port Sheldon Township*, 283 NW2d 680, 91 Mich. App. 180 (1979) (unreliable to take company unit value and allocate it to a single coal-fired power plant).
- *County of Wayne et al v Michigan State Tax Comm'n*, 261 Mich. App. 174, 682 NW2d 100 (2004), *affirming*, 11 MTT 452, MTT Docket No. 273674 (2002) (value of regulated transmission and distribution property is directly related to its net book cost so that net book cost could be considered in determining value even though not controlling evidence of value.)