
Federal Regulation of Interstate Hydrogen Pipelines

May 6, 2021

Matthew Field | William G. Bolgiano

Interstate pipelines carrying the emerging fuel are common carriers subject to regulation by the Surface Transportation Board under authority closely related to the Federal Energy Regulatory Commission's parallel authority over oil pipelines. FERC regulation under its cognate statute is also plausible and would be substantially similar.

America's renewable hydrogen pipeline network will soon be here. Hydrogen energy is currently receiving an unprecedented level of interest and investment because, in addition to its clean, efficient, versatile, potent, and dense attributes, renewable hydrogen could provide the key to decarbonizing numerous crucial industries. Widespread adoption of renewable hydrogen will bring with it the development of a large interstate pipeline network. Fortunately, the regulatory regime governing hydrogen pipeline transportation is already in place.

Hydrogen pipelines will be regulated as common carriers under an established body of precedent, regulation, and statute with deep historic origins. This regulatory regime will allow market forces to drive the development of the interstate hydrogen pipeline network, while ensuring it remains open, equal, and affordable to those reliant on it.

A. Hydrogen's Importance to a Clean Energy Economy

At home and abroad, government policy and markets are turning in hydrogen's favor. President Biden's Department of Energy is aiming to drive the price of renewable hydrogen down 80 percent in the next ten years to make it competitive with natural gas. Worldwide, businesses and governments are investing hundreds of billions of dollars in hydrogen technology and infrastructure, and that number is expected to grow exponentially.

Renewable hydrogen is clean, dense, versatile, and getting cheaper. When fed into a fuel cell, its only byproduct is water. Importantly, hydrogen weighs a fraction of its energy equivalent in gasoline, jet fuel, biofuel, or battery capacity. And it can be burned to achieve high temperatures. These attributes allow it to power crucial sectors of the economy that are difficult to electrify, run with battery power, or otherwise convert to renewables. These include aviation, maritime shipping, mining, long-distance and heavy-duty transportation, and industrial manufacturing such as steel and concrete production. Therefore, any carbon neutral economy that uses current technology will likely rely on hydrogen to power its essential infrastructure.

Currently, renewable hydrogen's primary barrier is its cost, which is steadily declining. By some estimates, the price of renewable hydrogen may be competitive with the price of hydrogen derived from fossil fuels as early as 2030. Renewable hydrogen can be thought of more as a means of storing and transporting renewable electricity used to split water molecules, than as a source of energy. It can be produced anywhere with access to electricity and water. However, some estimates suggest it can be transported

by pipeline at a fraction of the cost of transmitting its equivalent in electricity.¹ Therefore, an interstate network of hydrogen pipelines to carry the fuel from production centers to consumption centers is inevitable.

Despite its remarkable potential as a renewable fuel, hydrogen is currently neither renewable nor a fuel for the most part. Rather, it is primarily generated and used within the oil and gas industry where it is overwhelmingly derived from fossil fuel resources and used by refiners to lower the sulfur content of fuels.² However, this gives hydrogen energy a unique strategic advantage: much of the infrastructure and expertise needed to store and transport it is already developed in the oil and gas sector. Oil and gas companies can leverage these assets to benefit from (or hedge against) large-scale adoption of renewable hydrogen energy. And many major oil and gas companies are the biggest investors in the emerging hydrogen sector. Like the physical infrastructure, the regulatory infrastructure to accommodate this transition is already in place.

Hydrogen pipelines fit squarely within the regulatory framework for “miscellaneous”³ non-oil, non-gas, non-water pipelines administered by the Surface Transportation Board (STB) under the Interstate Commerce Commission Termination Act (ICCTA). Because of its shared legal history, this framework is best understood as it relates to FERC’s regulatory framework for oil pipelines under the “old” Interstate Commerce Act (ICA),⁴ which oil and gas businesses and attorneys should already be familiar with. However, there are important distinctions and many unanswered questions as well. There is also a serious case to be made for FERC’s direct jurisdiction over hydrogen pipelines under the old ICA and this argument grows stronger as hydrogen is increasingly used as a fuel.

Developers of hydrogen pipelines and members of reliant industry sectors should be aware of their likely economic rights in the current regulatory landscape, as well as the viability and advantages of pursuing FERC jurisdiction. The discussion below describes the knowns and unknowns of the common carrier framework that will govern interstate hydrogen pipelines.

¹ See HYDROGEN COUNCIL in collaboration with MCKINSEY & CO., A PERSPECTIVE ON HYDROGEN INVESTMENT, DEPLOYMENT AND COST COMPETITIVENESS at 20 (HYDROGEN COUNCIL 2021), available at <https://hydrogencouncil.com/wp-content/uploads/2021/02/Hydrogen-Insights-2021.pdf> (“Hydrogen pipelines can effectively transport renewable hydrogen across long distances. They can transport 10 times the energy at one-eighth the cost associated with electricity transmission lines. Furthermore, hydrogen pipelines have a longer lifespan than electricity transmission lines and offer dual functionality, serving as both a transmission and storage medium for green energy.”).

² This hydrogen is known as “gray” hydrogen—in contrast to “green” renewable hydrogen produced by electrolysis. In addition, “brown” hydrogen is the term for hydrogen produced from coal gasification. When brown or gray hydrogen production is paired with carbon capture and sequestration, that lower carbon hydrogen is known as “blue” hydrogen.

³ For purposes of this paper, all pipelines other than those carrying oil, water, or gas are referred to as “miscellaneous.” The STB sometimes refers to pipelines under its jurisdiction as “non-energy” pipelines. However, that term obviously does not fit if the STB retains jurisdiction over hydrogen pipelines. The STB regulates all pipelines (other than water and natural gas) that have not been transferred to FERC’s oversight, as described below. The STB also retains jurisdiction over coal slurry pipelines even though that commodity is an energy product because coal slurry competes with solid coal, whose transportation is regulated by the STB, and does not compete with products regulated by FERC. *Gulf Cent. Pipeline Co.-Petition for Declaratory Ord.*, 7 I.C.C.2d 52, 58 (1990); *Gulf Cent. Pipeline Co.*, 50 FERC ¶ 61,381, at 62,165-66 (1990).

⁴ 49 U.S.C. App. § 1, *et seq.* (1988). As discussed below, the statute applicable to interstate oil pipelines is the Interstate Commerce Act as it existed on October 1, 1977. This was last published in the U.S. Code in 1988 as an appendix. Miscellaneous non-oil, non-gas pipelines were also governed by the ICA as it evolved between 1977 and 1995. Thus the 1977 version of the ICA applicable to oil pipelines is sometimes herein referred to as the “old ICA.”

B. Historical Background

Oil and all other non-gas, non-water pipelines share a common regulatory history that began to diverge in the 1970s when Congress decided that oil and petroleum products pipelines should be governed with an eye towards energy, rather than transportation, policy.

Federal pipeline regulation began in 1906 with the Hepburn Act.⁵ Instigated by the journalism of Ida Tarbell and signed into law by Teddy Roosevelt, the act was aimed primarily at “busting” the Standard Oil trust.⁶ The substance of the law, however, was not limited to oil, but rather declared any entity “engaged in the transportation of oil *or other commodity*, except water and except natural or artificial gas, by means of pipe lines” to be a common carrier subject to the jurisdiction of the ICA and the Interstate Commerce Commission (ICC).⁷ Thus, from 1906 to 1977, oil and miscellaneous pipelines (together, “Hepburn Act pipelines”) were subject to the same statutory provisions, the ICA, as administered by the same agency, the ICC.

In 1977, Congress passed the Department of Energy Organizational Act (DOE Act).⁸ This law split jurisdiction over Hepburn Act pipelines, transferring the regulation of those carrying “oil” to the newly-created FERC, while leaving those carrying everything else to the oversight of the ICC.⁹ The purpose of this division was to consolidate the nation’s energy policy into one agency.¹⁰ Congress also froze the text of the ICA in time, but only for FERC’s oil pipelines, as it existed on October 1, 1977 (sometimes referred to herein as the “old ICA”).¹¹

Since 1977, FERC’s regulation of oil pipelines has evolved. FERC created a market-based rate application process, where pipelines may demonstrate that they lack market power and afterwards charge discretionary rates.¹² It has also individually permitted committed and contract rate structures for new oil pipeline capacity in order to promote investments in infrastructure.¹³ FERC also implemented an indexing regime, designed to allow oil pipelines’ rates to keep pace with industry-wide cost changes.¹⁴ In general, FERC has leaned heavily on its experience regulating other energy-industry sectors, especially natural gas pipelines.¹⁵

5 An Act to amend an Act entitled an Act to regulate commerce and to enlarge the powers of the Interstate Commerce Commission, 59 Cong. Ch. 3591, June 29, 1906, 34 Stat. 584.

6 *Farmers Union Cent. Exch., Inc. v. FERC*, 734 F.2d 1486, 1506 (D.C. Cir. 1984) (*Farmers Union II*).

7 Act of June 29, 1906, ch. 3591, § 1(1)(b), 34 Stat. 584 (codified at 49 U.S.C. App. § 1(1)(b) (1988)).

8 42 U.S.C.A. § 7101, *et seq.*

9 *See CF Indus., Inc. v. FERC*, 925 F.2d 476, 477 (D.C. Cir. 1991).

10 *Id.* at 478.

11 Act of Oct. 17, 1978, Pub.L. 95-473, § 4(c), 92 Stat. 1337, 1470.

12 *See Market Based Ratemaking for Oil Pipelines*, Order No. 572, FERC Stats. & Regs. ¶ 31,007 (1994), *aff’d sub nom. Assoc. of Oil Pipelines v. FERC*, 83 F.3d 1424 (D.C. Cir. 1996) (*AOPL I*).

13 *See Oil Pipeline Affiliate Conts.*, 173 FERC ¶ 61,063, at PP 5-6 (2020); *Express Pipeline P’ship*, 76 FERC ¶ 61,245 (1996).

14 *See Revisions to Oil Pipeline Regulations Pursuant to Energy Policy Act of 1992*, Order No. 561, 58 Fed. Reg. 58753 (Nov. 4, 1993) FERC Stats. & Regs. ¶ 30,985 (1993) (cross-referenced at 65 FERC ¶ 61,109), *order on reh’g*, Order No. 561-A, FERC Stats. & Regs. ¶ 31,000 (1994) (cross-referenced at 68 FERC ¶ 61,138), *aff’d sub nom. AOPL I*, 83 F.3d 1424.

15 *See, e.g., Flint Hills Res. Alaska, LLC v. FERC*, 627 F.3d 881, 887 (D.C. Cir. 2010) (“reliance, in an ICA proceeding, on a Natural Gas Act (‘NGA’) case . . . is orthodox and presumptively permissible”).

For the remaining miscellaneous pipelines under ICC jurisdiction, the most significant development since 1977 was the passage of the Interstate Commerce Commission Termination Act (ICCTA) in 1995.¹⁶ ICCTA replaced the ICC with the STB, which retained the ICC’s jurisdiction “over transportation by pipeline . . . when transporting a commodity other than water, gas, or oil.”¹⁷ ICCTA generally moved toward more light-handed regulation, but retained the general common carrier paradigm that requires pipelines to provide transportation upon request, to charge reasonable rates, and to avoid unreasonable discrimination. Importantly, ICCTA includes a savings clause that preserves the ICC’s precedent that was not changed by statute.¹⁸ There have been fewer pipeline disputes handled by the STB but, like the ICC, it is informed primarily by its experience regulating the nation’s railroads.

C. STB Jurisdiction Over Hydrogen Pipelines

The obvious first question for shippers, developers, and other interested parties is whether a particular hydrogen pipeline, or hydrogen pipelines in general, are subject to regulation. The STB has jurisdiction over “transportation by pipeline . . . when transporting a commodity other than water, gas, or oil . . . between a place in a State and a place in another State . . . [or] a foreign country.”¹⁹ Therefore, there are three questions to establish the STB’s jurisdiction over a pipeline: (1) does the pipeline carry something other than oil, gas, or water; (2) does it transport that material; and (3) is that transportation between two states or international?

1. Hydrogen is A Commodity Other Than Gas

Pipelines carrying hydrogen are subject to ICCTA.²⁰ Hydrogen is gaseous,²¹ but it is not “gas” within the meaning of the statute. Although ICCTA does not define “gas,” the Hepburn Act specifically named “natural and artificial gas” as excluded from jurisdiction. The STB has taken the position that it retained the ICC’s jurisdiction over pipelines carrying other gaseous materials, notwithstanding ICCTA’s use of the singular word “gas,” and the D.C. Circuit has affirmed that position.²² The STB’s position was informed by ICC precedent and, importantly, the legislative history of ICCTA indicating Congress’s interest in continuing to regulate specific gaseous commodities carried by pipeline.²³ Specifically, Congress directed the GAO to compile a report on the STB’s jurisdictional pipelines following the Act, focused on anhydrous ammonia—a gaseous commodity with agricultural

¹⁶ ICC Termination Act of 1995, Pub.L. 104–88, 109 Stat. 803; 1995-12-29.

¹⁷ 49 U.S.C. § 15301(a).

¹⁸ ICC Termination Act § 204(a), 109 Stat. at 941 (providing that all ICC orders and regulations shall continue in effect until modified or revoked by the STB), reprinted in 49 U.S.C. § 701.

¹⁹ 49 U.S.C. § 15301(a).

²⁰ Unless, as discussed below, they are found to be subject to the old ICA administered by FERC.

²¹ Researchers are also pursuing methods of transporting and storing hydrogen via other liquid and gaseous chemical “carriers,” such as ammonia, hydrogenated oil, or even a paste made with magnesium hydroxide. See DEPARTMENT OF ENERGY, NOVEL HYDROGEN CARRIERS, <https://www.energy.gov/eere/fuelcells/novel-hydrogen-carriers> (accessed Mar. 9, 2021); Hydrogen goop could be a more convenient fuel than hydrogen gas, THE ECONOMIST (Feb. 27, 2021 Edition), <https://www.economist.com/science-and-technology/2021/02/27/hydrogen-goop-could-be-a-more-convenient-fuel-than-hydrogen-gas> (accessed Mar. 9, 2021). This paper is focused on pipelines carrying pure hydrogen. However, because jurisdiction depends on the material transported being anything other than oil, natural gas, or water, the analysis should apply equally to these more novel approaches as well.

²² *CF Indus., Inc. v. Koch Pipeline Co., L.P.*, Docket No. 41685, at 4 n.11 (S.T.B. May 9, 2000), *aff’d sub nom. CF Indus., Inc. v. STB*, 255 F.3d 816 (D.C. Cir. 2001).

²³ *Id.* (citing H.R. REP. NO. 104-122, at 250 104th Cong., 1st Sess. 230 (1995) (specifically referring to anhydrous ammonia in connection with transferring the ICC’s pipeline jurisdiction to the STB)).

applications.²⁴ That report identified hydrogen pipelines as subject to the STB's jurisdiction under ICCTA.²⁵ In addition, Department of Transportation has recognized that interstate hydrogen pipelines are subject to STB jurisdiction.²⁶ Most recently, the Congressional Research Service reached this same conclusion.²⁷

Therefore, while technically untested before the STB, hydrogen pipelines are almost certainly subject to the STB's regulation if they meet the next two jurisdictional requirements. However, as noted above and discussed below, there is an argument for FERC jurisdiction under the old ICA and the DOE Act.

2. Is the Pipeline "Transporting" Hydrogen?

Common carrier status is not optional. Virtually any pipeline that crosses state lines is subject to the associated obligations even if the pipeline does not hold itself out as providing transportation to third parties for compensation. This is the rule of *The Pipe Line Cases*, which prevented Standard Oil from evading regulation under the Hepburn Act by refusing to transport product but rather buying it in one market and selling it in another.²⁸ This case remains good law and has been applied to oil pipelines by FERC and to miscellaneous pipelines by the ICC, the STB's predecessor.²⁹

There is a narrow exception for contained pipeline systems created by *The Pipe Line Cases* called the "Uncle Sam" rule.³⁰ This rule is named for the Uncle Sam Oil Company, whose pipeline crossed state lines but only transported crude oil from the Uncle Sam well to the Uncle Sam refinery. Writing for the Court, Justice Holmes compared extending jurisdiction over such a pipeline to saying that a "man was engaged in the transportation of water whenever he pumped a pail of water from his well to his house."³¹ However, this exception is rarely invoked successfully.³²

²⁴ H.R. REP. NO. 104-422 to Accompany H.R. 2539, the ICC Termination Act of 1995, at 250, 104th Congress, (1995).

²⁵ GOV'T ACCOUNTABILITY OFFICE, RCED-98-99, ISSUES ASSOCIATED WITH PIPELINE REGULATION BY THE SURFACE TRANSPORTATION BOARD, Appendix I (1998).

²⁶ *Statement Regarding a Coordinated Framework for Regulation of a Hydrogen Economy*, RITA-2006-26758, 72 Fed. Reg. 609, 618 (Jan. 5, 2007) ("The statement recognizes that the Surface Transportation Board (STB), the Federal economic regulator of railroads, also regulates economic aspects of interstate hydrogen pipelines").

²⁷ CONGRESSIONAL RESEARCH SERVICE, R46700 PIPELINE TRANSPORTATION OF HYDROGEN: REGULATION, RESEARCH, AND POLICY at 10 (Mar. 2, 2021) ("Jurisdiction over rates for interstate hydrogen pipelines resides with the Surface Transportation Board (STB).").

²⁸ 234 U.S. 548 (1914). *See also United States v. Champlin Ref. Co.*, 341 U.S. 290, 297 (1951).

²⁹ *See Ashley Creek Phosphate Co. v. Chevron Pipe Line Co.*, 5 I.C.C.2d 303, 309 (1989).

³⁰ *Pipe Line Cases*, 234 U.S. at 561-62.

³¹ *Id.* at 562. There is an interesting and short concurrence by Chief Justice White arguing that this exemption is required by the Constitution's Takings Clause. *Id.* at 162-63.

³² *Valvoline Oil Co. v. United States*, 308 U.S. 141, 146-47 (1939) ("it is the purchase from many sources and subsequent carriage that determine the applicability of the statute to Valvoline. . . . The smallness of the operation is immaterial"); *Nobel Energy, Inc.*, 150 FERC ¶ 61,073, at P 13 (2015) (oil pipeline "failed to demonstrate unambiguously that it will own 100 percent of the production to be transported on the Crow Creek Gathering System."); *Ashley Creek Phosphate Co.*, Docket No. 40131, 1988 WL 226402, at *32-33 (I.C.C. May 31, 1988) (administrative law judge saying the argument was "sensibly abandoned" and applies only "where it is known in advance that no other shipper will want or need to ship" on the pipeline); *id.* at *33 ("It is not for owner-shippers, however, to arrogate such exceptions to themselves. They must make application therefor to the regulatory agency, upon a showing that no other potential shipper could or would desire service").

3. Is the Transportation Between One State and Other?

The final question to answer in establishing STB jurisdiction is whether the pipeline transportation is interstate. In many cases, this can be easily answered. However, both FERC and the STB face difficult cases where it's unclear whether a movement within one state is part of a larger interstate, or international, movement. The standard applied by FERC under the ICA builds in large part on ICC and Supreme Court opinions that are also binding on the STB.³³ This test focuses on the essential character of the commerce from the perspective of the shipper.³⁴ The STB has not faced this issue in its regulation of pipelines. However, it has faced the issue recently in several high-profile cases in the passenger rail context involving high-speed rail projects. In answering this question, both the STB and FERC undertake a fact-intensive analysis where no one factor is determinative.³⁵

D. Potential Regulation of Hydrogen Pipelines by FERC

Hydrogen pipelines are clearly among the Hepburn Act pipelines that must be subject to regulation by either FERC under the old ICA or by the STB under ICCTA. The question of whether FERC or STB jurisdiction applies turns on whether hydrogen as an energy commodity would be considered “oil” such that its transportation was transferred to FERC by the DOE Organization Act in 1977.³⁶ While there is undeniably a surface-level, dictionary-based problem with this interpretation, the D.C. Circuit has explained that “Congress intended a broader meaning of ‘oil’” which was “not to be given a dictionary meaning.”³⁷ Furthermore, the driving force behind the transfer was to have one agency—FERC—comprehensively administer the nation’s energy policy.³⁸ FERC and the STB both understand the primary distinction between their respective pipeline jurisdictions to be whether the commodity transported is directly used as fuel.³⁹

Consequently, FERC has asserted jurisdiction over the transportation of ethanol, a commodity that is not petroleum-based but is used as fuel.⁴⁰ FERC explained that ethanol “is a fuel source and is used for energy-related purposes”; its transportation costs “will have an impact on energy markets”; and the commodity would “compete for the same pipeline capacity as the oil and other refined products.”⁴¹ Similarly, FERC recently declined to disclaim jurisdiction over a pipeline carrying liquid ethane that the

33 *Aircraft Serv. Int'l, Inc. v. FERC*, 985 F.3d 1013, 1020 (D.C. Cir. 2021) (*Aircraft Services v. FERC*).

34 *Aircraft Serv. Int'l Grp., v. Central Florida Pipeline LLC*, 169 FERC ¶ 61,119, at P 145 (2019), *aff'd sub nom. Aircraft Services v. FERC*, 985 F.3d 1013.

35 *Id.*; *Texas Central Railroad and Infrastructure, Inc. & Texas Central Railroad, LLC—Petition for Exemption—Passenger Rail Line Between Dallas and Houston, Tex.*, at 7 Docket No. FD 36025 (S.T.B. Jul. 16, 2020).

36 *See Gulf Central Pipeline*, 7 I.C.C.2d at 55 (“There is no question that the transportation of anhydrous ammonia is subject to regulation. Rather, the issue is whether regulation was transferred to FERC by the DOE Act. If not, it continues to reside with this Commission”).

37 *CF Industries v. FERC*, 925 F.2d at 478 (finding that FERC and the ICC’s shared position that FERC did not have jurisdiction over anhydrous ammonia, “a non-energy-producing commodity,” was reasonable). However, the D.C. Circuit explicitly did not hold that a contrary interpretation was wrong. *Id.* at 478 n.2.

38 *Id.* at 478-79.

39 *Id.*; *Gulf Cent. Pipeline*, 7 I.C.C.2d at 55 (“Consistent with the Congressional intent, we must examine whether anhydrous ammonia is an energy-related commodity”); *Gulf Central Pipeline*, 50 FERC ¶ 61,381, at 62,167 (“there is no practical reason why the Commission should exercise jurisdiction over anhydrous ammonia pipelines as the operation of those pipelines has little, if any, impact on the prices of fuels used in the transportation or heating markets”).

40 *Palmetto Prods. Pipe Line LLC*, 151 FERC ¶ 61,090 (2015) (ethanol).

41 *Id.* at P 31.

carrier claimed was not going to be used for energy purposes.⁴² FERC reasoned that the product was a petroleum-based product that had “current energy uses and future undeveloped energy uses.”⁴³ While ethane is a petroleum product, FERC’s jurisdictional analysis focused on its energy use rather than treating its derivation from petroleum as definitive. And FERC has declined to exercise jurisdiction over commodities that are derived from oil but not used directly as fuel.⁴⁴ Because hydrogen undoubtedly has current and undeveloped energy applications and it is currently primarily petroleum-derived, FERC may view it as analogous to ethane. The status of pipelines carrying renewable hydrogen (*i.e.*, hydrogen that is not derived from petroleum) could turn on whether FERC focuses more on the statutory language of “oil” or its precedent that turns on the use of the commodity as fuel, like ethanol.

This question of jurisdiction, already difficult, may become even more mercurial as the two key facts underlying both agencies’ analysis steadily flip in opposite directions. Currently, hydrogen is overwhelmingly derived from petroleum resources and is used primarily for non-fuel purposes. But it is increasingly derived from a non-petroleum source and increasingly used directly as a fuel source. Interested parties will need to understand how the specific facts of their case and the evolving industry and legal landscape could determine their regulatory status. As described below, the possible FERC and STB regimes are largely similar, but there are important distinctions.

Until the STB, FERC, or the courts say otherwise, the most natural fit for hydrogen pipelines is the STB’s authority over pipelines transporting any commodity “other than water, gas, or oil,” described above. However, until a definitive statement on this topic is issued, some ambiguity regarding the appropriate regulator will remain.

E. Substantive Requirements: Comparison of ICCTA and the Old ICA

Regulation of hydrogen pipelines will be substantively similar under either FERC or STB jurisdiction. Both regulatory regimes are based in common carrier principles that require essential infrastructure to be open, fair, and reasonably priced. As described below, there are some important differences that arise from the different statutory structures and the two agencies’ different industry focuses and experience.

1. Hydrogen Pipelines Must Provide Service Upon Reasonable Request

Interested parties have a right to ship their product on any pipeline that falls under ICCTA jurisdiction described above. Hydrogen pipelines must “provide the transportation or service on reasonable request.”⁴⁵ The ICA has an identical requirement for oil pipelines.⁴⁶ STB regulations provide additional procedures that require pipelines to “promptly establish and provide to the

⁴² *Williams Olefins Feedstock Pipelines, L.L.C.*, 145 FERC ¶ 61,303 (2013).

⁴³ *Id.* at P 16.

⁴⁴ *Gulf Central Pipeline*, 50 FERC ¶ 61,381 (anhydrous ammonia); *Texaco Petrochemical Pipeline LLC*, 107 FERC ¶ 61,151 (2004) (ethylene); *Sabine Propylene Pipeline L.P.*, 109 FERC ¶ 61,025 (2004) (propylene); *Enter. Lou-Tex Propylene Pipeline L.P.*, 111 FERC ¶ 61,068 (2005) (same).

⁴⁵ 49 U.S.C. § 15701(a).

⁴⁶ *See* 49 U.S.C. App. § 1(4) (1988) (“It shall be the duty of every common carrier subject to this chapter to provide and furnish transportation upon reasonable request therefor”); *see also Colonial Pipeline Co.*, 156 FERC ¶ 61,001 (2016) (rejecting tariff provision that appeared to exclude new shippers).

requester a rate and applicable service terms” upon request where the pipeline does not yet have an existing rate.⁴⁷ These regulations require the carrier to establish these terms within 10 days, allowing potential shippers to determine if a dispute with a pipeline has crystallized.⁴⁸

2. Hydrogen Pipelines Must Maintain and Follow – But Not Necessarily File – Tariffs

One of the biggest differences between ICCTA and the old ICA is that ICCTA does not require pipelines to file their tariffs publicly with the agency. Section 6 of the ICA requires every oil pipeline to “file with the Commission . . . schedules showing all the rates, fares, and charges for transportation between different points” on the routes it serves.⁴⁹ Section 6(7) of the ICA further prohibits a carrier from charging anything other than the filed rate.⁵⁰ FERC has also implemented regulations mirroring this requirement.⁵¹ This process allows interested parties to file a protest to oil pipeline rates and terms before they take effect.

ICCTA removed the requirement that pipelines *file* tariffs. However, ICCTA still requires pipelines to *establish* “(1) rates and classifications for transportation and service it may provide under this part[,] and (2) rules and practices on matters related to that transportation or service.”⁵² Rather than filing them publicly, ICCTA requires that a pipeline “promptly” provide these rates and terms to any person upon reasonable request.⁵³ STB regulations clarify that these rates must be provided “immediately” and that it “is expected that the response will be sent within hours, or at the latest by the next business day, in most situations.”⁵⁴

ICCTA requires pipelines to adhere to the tariffs they provide to shippers, just as the ICA does.⁵⁵ Furthermore, ICCTA requires that a pipeline provide 20 days’ notice before it changes its rates and terms.⁵⁶ This notice must be given to anyone who has shipped on the pipeline or requested the pipeline’s rates and terms in the last year.⁵⁷ However, STB regulations exempt rate reductions from this requirement.⁵⁸

47 49 C.F.R. § 1305.3

48 *Id.* (allowing an additional ten days if the pipeline needs more information from the shipper).

49 49 U.S.C. App. § 6(1) (1988).

50 49 U.S.C. App. § 6(7) (1988).

51 18 C.F.R. § 341.8 (“Carriers must publish in their tariffs. . . rules which in any way increase or decrease the amount to be paid on any shipment or which increase or decrease the value of service to a shipper.”).

52 49 U.S.C. § 15502.

53 49 U.S.C. § 15701.

54 49 C.F.R. § 1305.2(b).

55 49 U.S.C. § 15701(d) (“pipeline carrier shall provide transportation or service in accordance with the rates and service terms, and any changes thereto, as published or otherwise made available”).

56 49 U.S.C. § 15701(c).

57 49 U.S.C. § 15701(c) (1) and (2).

58 49 C.F.R. § 1305.4(a).

3. Hydrogen Pipelines Must Charge Reasonable Rates

Shippers on hydrogen pipelines are protected from paying excessive rates for transportation. ICCTA requires that the rates charged by pipelines be “reasonable,”⁵⁹ while the ICA requires rates to be “just and reasonable.”⁶⁰ Neither term is defined in the respective statutes. However, both agencies have well-developed bodies of precedent interpreting these terms. At a basic level, a just and reasonable rate is a rate that is high enough to allow a carrier to recover its costs plus a reasonable return on its investment, while not being excessive to shippers or reflecting the exercise of market power.

In evaluating a pipeline rate’s reasonableness, the STB relies on its experience regulating the nation’s railroads, in contrast to FERC’s experience in the energy sector. To that end, the STB employs what it calls “constrained market principles” that are aimed at determining the rate a carrier would need to charge to stay in business without cross-subsidies of traffic.⁶¹

In contrast to FERC, where the Commission’s cost-of-service-based 154-B methodology is primarily used to assess the reasonableness of an oil pipeline’s rates, the STB’s constrained market principles include multiple methodologies, any one of which could show the rate to be unreasonable.⁶² That is to say, a pipeline must be prepared to defend its rates by showing they fall below the levels calculated under all accepted methodologies. Among these is the “stand-alone cost” (SAC) methodology that estimates the costs of a hypothetical efficient pipeline and which ICCTA specifically sanctions as an acceptable means of establishing pipeline rates.⁶³ This methodology is something of a perennial issue in FERC rate disputes under the ICA when pipelines cannot justify their rates under FERC’s methodology.⁶⁴ However, FERC has yet to find it probative.⁶⁵

a. *Investor risk is a key element of reasonable hydrogen pipeline rates.*

Reasonable rates are meant, in large part, to give investors an opportunity to recover a return on their investment that is commensurate with the risk of their enterprise while limiting supracompetitive profits. Both FERC and the STB’s rate regulation methodologies incorporate a “cost of capital” element to ensure that rates are compensatory of debt and equity financing costs of operating a pipeline.⁶⁶ Both approaches are similar in purpose and application—with a focus on providing a return to the owners of the regulated asset that is commensurate with the returns available in capital markets for investments of equivalent risk.

The operation of these methodologies for novel, transformative, and high-risk projects like early renewable energy hydrogen pipelines presents a problem. Both the STB’s and FERC’s methods for estimating cost of capital for carriers rely on capital market

⁵⁹ 49 U.S.C. § 15501(a).

⁶⁰ 49 U.S.C. App. § 1(5) (1988).

⁶¹ *CF Industries v. Koch Pipeline*, S.T.B. Docket No. 41685 at 6-7 (citing *Coal Rate Guidelines, Nationwide*, 1 I.C.C. 2d 520 (1985) (*Rate Guidelines*), *aff’d sub nom. Consolidated Rail Corp. v. United States*, 812 F.2d 1444 (3d Cir. 1987)).

⁶² *CF Industries v. Koch Pipeline*, S.T.B. Docket No. 41685 at 7.

⁶³ 49 U.S.C. 15503(a).

⁶⁴ *See, e.g., Epsilon Trading, LLC v. Colonial Pipeline Co.*, 170 FERC ¶ 61,149 (2020) (allowing oil pipeline to submit SAC evidence to defend its rates).

⁶⁵ *See Williams Pipe Line Co.*, Opinion No. 391-B, 84 FERC ¶ 61,022 (1998); *BP Pipelines (Alaska) Inc.*, Opinion No. 502, 123 FERC ¶ 61,287 (2008).

⁶⁶ *See CF Industries v. Koch Pipeline*, S.T.B. Docket No. 41685 at 20; *Chevron Products Co. v. SFPP, L.P.*, 172 FERC ¶ 61,207, at P 119 (2020).

data for “proxy groups” of publicly traded companies engaged in similar enterprises as a way to meet the “equivalent risk” standard.⁶⁷ Identifying appropriate publicly traded comparable companies to proxy the risk of renewable energy hydrogen pipeline ventures will likely present a challenge early on, since the risks of this emerging sector may be novel and difficult to evaluate and quantify in relation to those of established industries.

Investors and developers should consult ratemaking experts early in their project and consider what regulatory approaches may be available to ensure the pipeline’s allowed return is commensurate with the investors’ actual risk and corresponding cost of capital. However, this requirement to charge only reasonable rates, if applied correctly, should not frustrate investment in hydrogen pipeline projects.

4. Hydrogen Pipelines May Not Discriminate Unreasonably

ICCTA prohibits hydrogen pipelines from “subject[ing] a person, place, port, or type of traffic to unreasonable discrimination.”⁶⁸ There is no STB or recent ICC precedent applying this rule to pipelines, so how the STB will choose to enforce this provision is uncertain. One important point to note, though, is that this section is not limited to a pipeline’s shippers. In particular, it offers protections to “places,” which draws on the ICC’s body of precedent against “locality preference.”⁶⁹ Section 3(1) of the ICA prohibits discrimination against a similarly broad set of entities.⁷⁰ For instance, FERC recognized that a provider of local storage services has standing to object to an oil pipeline’s rate structure that might place it at a competitive disadvantage.⁷¹ The breadth of this coverage means that not just shippers, but many interested parties, such as reliant businesses or even civic associations and local governments, have an enforceable right to fair treatment by a hydrogen pipeline.

5. Market Power Issues for Hydrogen Pipelines

In STB proceedings, pipelines can assert they lack market power as a defense of their existing rate levels.⁷² By contrast, FERC’s oil pipeline regime relies on a pre-approval process, allowing market-based rates only when a pipeline has first filed an application for market-based rate authority and demonstrated that it lacks market power.⁷³ In evaluating market power, the STB relies on guidance from its experience regulating railroads, so its analysis differs from FERC’s.⁷⁴

⁶⁷ See *Inquiry Regarding the Commission’s Policy for Determining Return on Equity*, 171 FERC ¶ 61,155 (2020) (employing “proxy groups”); see also *Consumers Energy Company v. CSX Transportation, Inc.*, Docket No. NOR 42142 at 18 (S.T.B. Jan. 11, 2018) (“use of industry-wide average more reliable than individual figures given the margin of error associated with railroad estimates”) (quoting *Methodology to be Employed in Determining the R.R. Indus.’s Cost of Capital*, EP 664, slip op. at 17-18 (S.T.B. Jan. 17, 2008)).

⁶⁸ 49 U.S.C. § 15505.

⁶⁹ See, e.g., *State of New York v. United States*, 331 U.S. 284 (1947).

⁷⁰ 49 U.S.C. App. § 3(1) (1988) (prohibiting discrimination against any “person, company, firm, corporation, association, locality, port, port district, gateway, transit point, region, district territory, or any particular description of traffic.”).

⁷¹ *Colonial Pipeline Co.*, 173 FERC ¶ 61,023173 FERC ¶ 61,023, at P 18 (2020).

⁷² *CF Industries v. Koch Pipeline*, S.T.B. Docket No. 41685 at 4-5.

⁷³ *Market Based Ratemaking for Oil Pipelines*, Order No. 572, FERC Stats. & Regs. ¶ 31,007 (1994), *aff’d sub nom. AOPL I*, 83 F.3d 1424.

⁷⁴ See *CF Industries v. Koch Pipeline*, S.T.B. Docket No. 41685 at 7-20 (applying *Market Dominance Determinations*, 365 I.C.C. 118 (1981), *aff’d sub nom. Western Coal Traffic League v. United States*, 719 F.2d 772 (5th Cir. 1983) (en banc), *cert. denied*, 466 U.S. 953 (1984), *modified in Product and Geographic Competition*, 2 I.C.C.2d 1 (1985)).

Practically speaking, this should only be a serious consideration for hydrogen pipeline operators and users once the interstate market is significantly more mature. Unlike some other commodities, hydrogen is not susceptible to other modes of transportation at costs comparable to those of pipelines. In fact, the FTC recently investigated a merger between two chemical companies and found that the Gulf Coast market for hydrogen was less competitive in part because of limited access to an interstate hydrogen pipeline and lack of competitively priced alternatives to it.⁷⁵ However, the ability to produce renewable hydrogen wherever there is water and electricity may create sufficient competition in markets with access to low-cost renewable electricity.

6. *Damages for Cases Involving Hydrogen Pipelines*

Like the old ICA, ICCTA allows for retroactive recovery of damages for shipper overpayments and other economic harms. ICCTA makes a carrier liable “for amounts charged that exceed the applicable rate for the transportation” as well as “damages sustained by a person as a result of an act or omission of that carrier in violation” of ICCTA’s pipeline provisions.⁷⁶ ICCTA requires that claims for overcharges be made within three years, and claims for other damages be made within two years.⁷⁷ This mirrors provisions in the old ICA administered by FERC.⁷⁸ Carriers have three years to seek to collect payment from shippers.⁷⁹ Injured parties are also eligible for attorney’s fees if they need to go to court to enforce an STB order.⁸⁰

7. *Hydrogen Pipelines May Be Required to Provide Interconnection with Other Hydrogen Pipelines*

ICCTA requires hydrogen pipelines “provide reasonable, proper, and equal facilities that are within its power to provide for the interchange of traffic between, and for the receiving, forwarding, and delivering of property to and from, its respective line and a connecting line of a pipeline.”⁸¹ It is unclear if this requirement will translate into a requirement that hydrogen pipelines accept interconnection from other pipelines as there are no clarifying STB regulations or precedent. Moreover, in interpreting nearly identical language from section 3(4) of the old ICA, FERC found that it did not have the power to order one oil pipeline to connect to another.⁸²

8. *Legality of Contracts for Hydrogen Pipeline Transportation Is Uncertain*

It is unclear to what extent contracts for transportation on hydrogen pipelines are legal. Contracts have been allowed expressly by statute in other industries regulated by the STB.⁸³ However, there is no such provision in ICCTA permitting contracts on

⁷⁵ Analysis of Proposed Agreement Containing Consent Orders to Aid Public Comment at 7-9, In the Matter of Linde AG, Praxair, Inc., and Linde PLC, File No. 171-0068 (F.T.C. Oct. 22, 2018).

⁷⁶ 49 U.S.C. § 15904(c)(1) and (2).

⁷⁷ 49 U.S.C. § 15905(b) and (c).

⁷⁸ 49 U.S.C. App. § (3)(b) and (d) (1988).

⁷⁹ 49 U.S.C. § 15905(a).

⁸⁰ 49 U.S.C. § 15904(d)(2).

⁸¹ 49 U.S.C. § 15506.

⁸² *Plantation Pipe Line Co. v. Colonial Pipeline Co.*, 104 FERC ¶ 61,271, at PP 21-28 (2003) (discussing 49 U.S.C. App. § 3(4) (1988)).

⁸³ See 49 U.S.C. §§ 10709 (rail) and 14101(b) (motor and water).

miscellaneous pipelines.⁸⁴ In the oil pipeline context, FERC has developed a relatively robust policy of allowing contracts for committed service. These are allowed only if pipelines follow procedures designed to make the contracts available to all interested parties.⁸⁵ And FERC allows these arrangements only for new oil pipeline capacity, on the theory that new infrastructure might not be developed but for these contracts.⁸⁶ Notably, FERC's tolerance of committed service on common carrier oil pipelines has never been subject to judicial scrutiny. If the STB pursues a similar policy, however, it may be able to rely on its explicit powers to grant pipelines exceptions to ICCTA requirements, discussed below.

F. Agency Powers: Comparison of Relevant STB and FERC Pipeline Authority

Under either the STB or FERC regulatory regimes, the federal government does not have a role in the planning of the infrastructure, but rather leaves construction and development of pipelines, as well as entry and exit from the transportation market, to market forces. The federal government's authority over hydrogen pipelines is therefore primarily limited to preventing monopoly abuse by enforcing the substantive provisions discussed above. Below, we discuss the agencies' authority regarding and approach to pipeline oversight.

1. Initiation of Rate Proceedings

The STB has somewhat more limited authority than FERC over its Hepburn Act pipelines. It may investigate a pipeline only upon a complaint, while FERC may initiate investigations on its own.⁸⁷ This limitation has little practical consequence since, as FERC's current chair has previously acknowledged, the Commission's "historic practice" is to "rely[] on shippers to challenge rates rather than initiate its own investigations."⁸⁸ Notably, any complaint that is not resolved by the STB with a final order in three years is automatically dismissed.⁸⁹ The STB cannot, however, dismiss a complaint based on an absence of damages.⁹⁰

2. Authority to Set New Hydrogen Pipeline Rates After Existing Rates Are Found Unreasonable

Both FERC and STB may set a new rate or practice to be thereafter observed by a pipeline if, after complaint and a full hearing, it finds that a rate or practice violates the substantive provisions described above.⁹¹ When the STB sets this new rate or practice, ICCTA mandates that the STB consider: "(1) the effect of the prescribed rate, classification, rule, or practice on the movement of traffic by that carrier; (2) the need for revenues that are sufficient, under honest, economical, and efficient management, to let the carrier provide that transportation or service; and (3) the availability of other economic transportation alternatives."⁹² Notably, oil pipelines whose rates have been set by FERC may still change those rates pursuant to indexing and may file tariffs

⁸⁴ *Dyno Nobel, Inc. v. NuStar Pipeline Operation P'ship, L.P.*, Docket No. NOR 42147 at 4 n.7 (S.T.B. Mar. 24, 2017).

⁸⁵ See generally *Oil Pipeline Affiliate Conts.*, 173 FERC ¶ 61,063.

⁸⁶ *Id.* See also *Express Pipeline*, 76 FERC ¶ 61,245.

⁸⁷ 49 U.S.C. § 15901(a).

⁸⁸ See, e.g., *Revisions to Indexing Policies and Page 700 of FERC Form No. 6*, 170 FERC ¶ 61,134, at 61,946 (2020) (Glick, Comm'r, dissenting).

⁸⁹ 49 U.S.C. § 15901(c).

⁹⁰ 49 U.S.C. § 15901(b).

⁹¹ 49 U.S.C. § 15503(a); 49 U.S.C. App. § 15(1) (1988).

⁹² 49 U.S.C. § 15503(b).

justifying other changes, whereas ICCTA does not provide procedures for pipelines to update rates or practices set by the STB following a hearing.

3. Maintenance of Records

ICCTA empowers the STB to promulgate regulations imposing recordkeeping obligations on miscellaneous pipelines.⁹³ However, the STB has not yet done so. In contrast, FERC has promulgated regulations imposing recordkeeping obligations on oil pipelines.⁹⁴

4. There Is No Federal Authority Over the Siting of Hydrogen Pipelines

Neither FERC nor the STB has authority over the siting, location, or certification of interstate hydrogen pipelines. This absence of federal permitting authority makes it crucial for hydrogen pipeline developers to understand relevant state law.

While the Natural Gas Act (NGA) does not apply to hydrogen infrastructure,⁹⁵ authority over siting and abandonment under the NGA may separately be relevant in natural gas-to-hydrogen pipeline conversions. This is because the NGA requires natural gas pipelines to receive permission from FERC to abandon a service before the infrastructure can be employed in another use.⁹⁶ Therefore a developer seeking to convert a current natural gas facility to hydrogen use will need to demonstrate the abandonment of that natural gas use is in the public interest. In contrast, conversion of oil pipeline infrastructure will not require any authority from FERC. State abandonment requirements, however, may present an obstacle to oil-to-hydrogen pipeline conversions.⁹⁷

5. No Preemption of State Law

ICCTA's pipeline provisions expressly do not apply to intrastate transportation or preempt state policy.⁹⁸ In this way, it is very similar to the FERC's power over oil pipelines.⁹⁹ In addition, ICCTA states that remedies available against miscellaneous pipelines are "in addition to remedies existing under another law or common law."¹⁰⁰ As discussed below, under either ICCTA or the ICA framework, state regulation remains critical to pipeline developers.

6. The STB Can Exempt Hydrogen Pipelines from ICCTA Requirements

ICCTA gives the STB the authority to exempt hydrogen pipelines from some or all of its requirements. ICCTA states that the STB "shall exempt" a pipeline in whole or in part when it finds two conditions are met. First, the Commission must find that

93 49 U.S.C. § 15722.

94 18 C.F.R. § 356.3.

95 See *Magnum Gas Storage, LLC*, 171 FERC ¶ 61,069 (2020) (granting request to vacate NGA storage certificate where salt cavern would be converted to hydrogen use).

96 15 U.S.C. § 717f(b).

97 See *Laurel Pipe Line Co., L.P.*, 167 FERC ¶ 61,210 (2019) (rejecting a tariff for interstate service when the state agency had rejected the required pipeline reversal).

98 49 U.S.C. § 15301(b) and (c).

99 See, e.g., *Laurel Pipe Line*, 167 FERC ¶ 61,210.

100 49 U.S.C. § 15103.

enforcement of a particular provision against that carrier is “not necessary to carry out the transportation policy.”¹⁰¹ Second, one of two things must be true: either “(A) the transaction or service is of limited scope, or (B) the application, in whole or in part, of the provision is not needed to protect shippers from the abuse of market power.”¹⁰² These exemptions may be limited for a set amount of time¹⁰³ and may later be revoked.¹⁰⁴

There is no precedent carrying out the pipeline exemption provisions of ICCTA. However, there is an analogous provision giving the STB authority to exempt rail carriers.¹⁰⁵ In that sector, the STB has developed a body of precedent that favors exemption and presumes that new infrastructure is in the public interest.¹⁰⁶ This precedent would likely guide the STB in its exemption of hydrogen pipelines. But again, the STB has no authority of siting or market entry to exempt pipelines from, it primarily regulates the economic terms of transportation.

As we begin to see investment in interstate hydrogen pipelines, one would expect savvy developers to pursue this provision as an avenue to allow contracts or other means to encourage investment. The STB could also use this statutory provision as a tool to achieve the sort of incremental moves toward market-based rates and contract carriage undertaken by FERC in the oil pipeline sector.

G. Other Considerations: State Regulation and the Common Law

As a final consideration, developers and potential shippers on hydrogen pipelines should be mindful of applicable state law. Slightly more than half of all current hydrogen pipeline miles are located entirely within Texas, so it provides a good example. The Texas Natural Resource Code specifically lists hydrogen pipelines as possible common carriers.¹⁰⁷ Common carriers in Texas are regulated by the state’s Railroad Commission.¹⁰⁸ For pipeline developers, common carrier or utility status can be critical in obtaining eminent domain powers.¹⁰⁹

¹⁰¹ 49 U.S.C. § 15302(a) and (a)(1). STB transportation policy for pipelines includes: “(1) to recognize and preserve the inherent advantage of each mode of transportation; (2) to promote safe, adequate, economical, and efficient transportation; (3) to encourage sound economic conditions in transportation, including sound economic conditions among carriers; (4) to encourage the establishment and maintenance of reasonable rates for transportation without unreasonable discrimination or unfair or destructive competitive practices; (5) to cooperate with each State and the officials of each State on transportation matters; and (6) to encourage fair wages and working conditions in the transportation industry.” 49 U.S.C. § 15101.

¹⁰² 49 U.S.C. § 15302(a)(2).

¹⁰³ 49 U.S.C. § 15302(c).

¹⁰⁴ 49 U.S.C. § 15302(d). It is unclear if this may be done *sua sponte* or only upon complaint.

¹⁰⁵ See 49 U.S.C. § 10502.

¹⁰⁶ See *Seven County Infrastructure Coalition—Rail Construction & Operation Exemption—in Utah, Carbon, Duchesne, and Uintah Counties, Utah*, Docket No. FD 36284, at 4 (S.T.B. Jan. 4, 2021).

¹⁰⁷ Tex. Nat. Res. Code Ann. § 111.002(6) (“but only if such person files with the commission a written acceptance of the provisions of this chapter expressly agreeing that, in consideration of the rights acquired, it becomes a common carrier subject to the duties and obligations conferred or imposed by this chapter”).

¹⁰⁸ *Westlake Ethylene Pipeline Corp. v. R.R. Comm’n of Texas*, 506 S.W.3d 676, 686 (Tex. App. 2016).

¹⁰⁹ See, e.g., *Denbury Green Pipeline-Texas, LLC v. Texas Rice Land Partners, Ltd.*, 510 S.W.3d 909, 916 (Tex. 2017), as revised on denial of reh’g (Apr. 7, 2017) (“the Texas Constitution requires at least some objective evidence that a pipeline will probably serve the public for its owner to gain the power to condemn private property under the authority of eminent domain”).

Interested parties should also be mindful of common law considerations, especially when regulation is still nascent, and many states do not have any intervening statute regulating hydrogen pipelines. The common law of common carriage is well developed but now largely displaced by the statutory schemes based upon it. However, the Texas common law of common carriage remains in full force as applied to carriers.¹¹⁰ The Texas Railroad Commission is responsible for enforcing pipeline carriers' common law obligations as well as their statutory requirements.¹¹¹

H. Conclusion

It remains to be seen exactly how and when renewable hydrogen will become a part of our economy. But the next few years will likely be critical. It is incredibly fortunate, then, that the basic framework for regulating hydrogen pipelines is already in place. Although nuances will develop over time, existing regulations and statutes can provide the certainty needed to support investment in a hydrogen pipeline network while keeping the infrastructure open and accessible enough to foster widespread adoption of this pivotal resource.

¹¹⁰ *Westlake Ethylene Pipeline v. RRCT*, 506 S.W.3d at 682.

¹¹¹ *Id.*