



**Airlines
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Jet Fuel: From Well to Wing



JANUARY 2018

Abstract

Airlines for America (A4A) is the nation's oldest and largest U.S. airline industry trade association. Its members¹ and their affiliates account for more than 70 percent of the passenger and cargo traffic carried by U.S. airlines. According to the Energy Information Administration, U.S.-based jet fuel demand averaged 1.6 million barrels per day in 2016. Generally, fuel is supplied to airports through a combination of interstate multiproduct pipelines, third-party and off-airport terminals, and dedicated local pipelines. The last few years have continued to demonstrate the fragility of this complex system and the threat it poses to air-service continuity.

The current interstate refined products pipeline system, constructed many decades ago, is both capacity-constrained and vulnerable to disruptions that typically require a patchwork of costly, inadequate fixes. New shippers have difficulty obtaining line space and long-established shippers have difficulty shipping all of their requirements. It is likely that demand will continue to outpace the capacity of our outdated distribution system for liquid fuels.

Given the increasing demand to transport liquid fuels, it is imperative that we take steps to overcome existing bottlenecks and prevent future ones. These fuels are essential to aviation, trucking and rail, among others, which help power our twenty-first century economy. As shippers and consumers of significant quantities of refined products on pipelines throughout the country, airlines and other users of liquid fuels have a substantial interest in addressing the nationwide deficiency in pipeline investment.

Surely, expedited permitting for fuel distribution-related infrastructure projects could help pave the way to upgrade existing pipeline assets and expand throughput capacity into key markets. But this deficiency is largely tied to a ratemaking system that lacks both transparency and effective regulatory oversight, resulting in a lack of incentives for pipelines to upgrade or expand their existing networks.

Accordingly, A4A calls on the Federal Energy Regulatory Commission (FERC) to increase the transparency of pipeline data submissions, strengthen oversight of over-recoveries and excessive returns and recognize fuel shippers and consumers as key constituents.

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Introduction

In 2016, U.S. passenger and cargo airlines consumed more than **19 billion gallons of jet fuel**, powering some **27,000 daily flights carrying 2.2 million passengers and 50,000 tons of cargo** across hundreds of airports worldwide. Globally, airlines consumed **81 billion gallons of jet fuel**.² According to the Energy Information Administration, U.S.-based jet fuel demand averaged **1.6 million barrels per day** in 2016.³

Jet Fuel Pricing

The price of jet fuel is linked to the commodities markets principally through ultra-low sulfur diesel (ULSD), a refined product that is similar in consistency and traded on public exchanges. The price of ULSD is highly correlated to the price of jet fuel and therefore is often used as a reference point for supply contracts. In addition to the ULSD market, other factors impacting the price of jet fuel may include: inventory levels; transportation costs; refinery dynamics; environmental regulations; surges in regional demand; seasonality; and supply disruptions caused by natural disasters, military conflict or geopolitical events.

Just as motorists pay different prices for gasoline in different parts of the country, airlines pay different prices regionally for jet fuel. Generally the Gulf Coast has the lowest prices in the country as the region produces more than it needs. Other areas trade at a premium that mostly represents the transportation costs from the Gulf Coast. However, the premium in some regions is higher than this as pipelines don't exist or do not have adequate capacity to meet demand. Although the United States has become a net exporter of jet fuel, the West Coast, Florida, and the northeast typically require imports due to expensive domestic freight options.

Air carriers buy fuel from multiple suppliers at differing rates and in different locations. Not every supplier operates at every domestic airport that a carrier may serve, so multiple arrangements are necessary, including transporting fuel from a market center to the airport.

Historically, the price of jet fuel has been very volatile, and due to the airline industry's dependence on fuel, the industry is particularly susceptible to fuel price risk. An airline may choose to hedge a portion of its jet fuel requirements to mitigate financial uncertainty caused by pricing volatility.⁴

Average Spot Price of U.S. Jet Fuel by Region: 2012-2016
Cents per Gallon



Source: Argus Media Inc. (<http://www.argusmedia.com>)

² <http://www.iata.org/publications/economics/Pages/industry-performance.aspx>

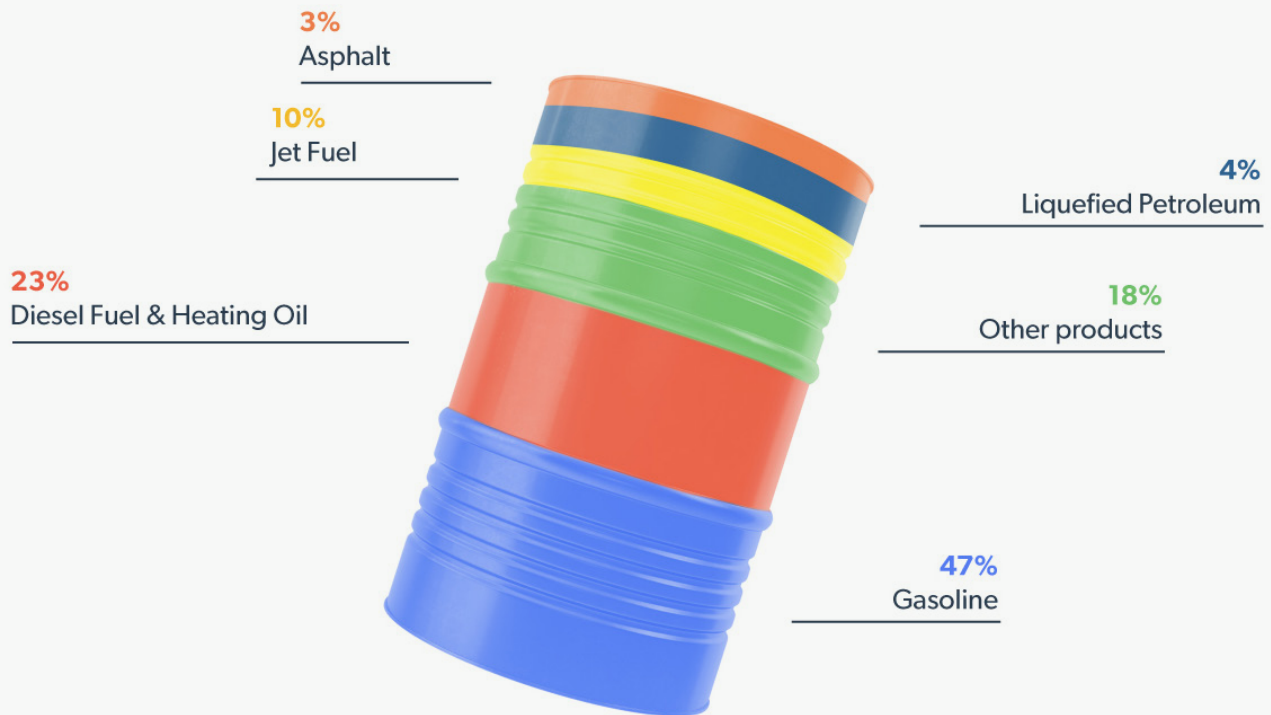
³ <http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MkJUPUS2&f=M>

⁴ Hedging requires a willing counterparty and, at times, a sizable upfront transaction cost. An airline also must consider whether it could find itself at a competitive disadvantage if its competitors have not hedged and the energy market price drops below what it has agreed to pay in a hedge contract.

Refining and Distribution

At the refinery, crude oil is separated into usable petroleum products, including gasoline, distillates such as diesel and jet fuel, petrochemical feedstocks, waxes, lubricating oils and asphalt. Jet fuel represents less than 10 percent of U.S. refinery yield, but could be as much as 25 percent at a specific refinery depending on its configuration and source of feedstock.⁵ Specifically, commercial aviation turbine fuel used in the United States is a kerosene-based product meeting the requirements of the applicable ASTM International specification (e.g., composition, volatility, fluidity, combustion, corrosion, thermal stability, contaminants, additives).⁶

PRODUCTS MADE FROM A BARREL OF CRUDE OIL IN THE UNITED STATES, 2016



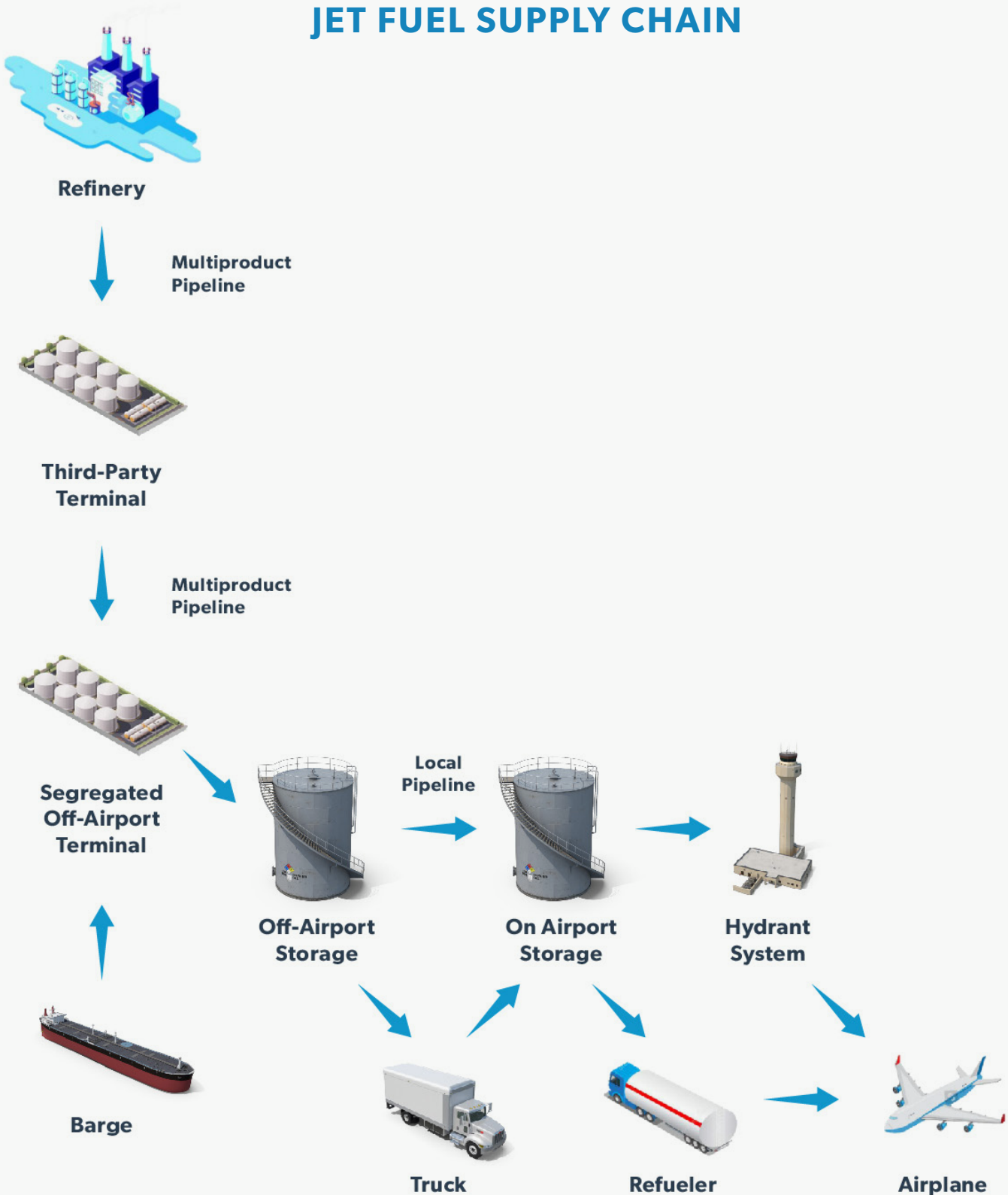
Note: A 42-gallon (U.S.) barrel of crude oil yields about 45 gallons of petroleum products because of refinery processing gain.
Source: U.S. Energy Information Administration

⁵ https://www.eia.gov/Energyexplained/index.cfm?page=oil_refining

⁶ <https://www.astm.org/Standards/D1655.htm>; other standards may apply outside the United States

From the refinery, jet fuel typically travels by pipeline or oceangoing vessel to storage terminals, from which it is further transported by truck, barge or pipeline to airports. From the airport storage tanks, fuel is distributed to aircraft via truck or via an underground hydrant system that carries fuel to the airport apron, where hoses span the final distance to the wing of the airplane.

JET FUEL SUPPLY CHAIN



MAJOR U.S. REFINED PRODUCTS PIPELINES CARRYING JET FUEL



With demand to transport refined products such as gasoline, diesel and jet fuel on the rise, steps must be taken to avoid bottlenecks. These fuels are essential to aviation, trucking and rail, among others, which help power our twenty-first century economy. Expedited permitting and/or a streamlined approval process for related infrastructure projects could help pave the way to upgrade existing pipeline assets and expand throughput capacity into key markets.

Fuel Efficiency and Environmental Performance

Simply put, environmental excellence and sustainability are a vital part of the airlines' business model. Even as the number of passengers has tripled since the mid-1970s,

U.S. airlines have improved fuel efficiency by

120%

and reduced aircraft noise exposure by

95%

They have achieved this level of environmental performance by relentlessly pursuing and implementing technological, operational and infrastructure-related measures to minimize environmental impacts.

With the price of jet fuel significantly impacting route profitability, airlines constantly strive to improve jet fuel efficiency. Fuel conservation measures include reducing and more accurately measuring onboard weight, cruising longer at higher altitudes, employing greater use of flight-management systems, and conducting more in-depth analyses of weather conditions. In addition, airlines are modernizing their fleets and investing in drag-reducing winglets.⁷ **Use of twenty-first century satellite-based navigation systems to direct aircraft, across the globe, is also a critical means of minimizing fuel burn for airline flight operations.**

The most recent data available from the U.S. Environmental Protection Agency (EPA) shows that less than 2 percent of domestic greenhouse gas ("GHG") emissions is attributable to commercial aviation and the sector exhibits much lower growth from 1990 levels (8 percent) — and from a much smaller base — compared to the transportation sector (16 percent) and on-road sources in particular (23 percent).⁸

Lastly, through the International Civil Aviation Organization's Committee on Aviation Environmental Protection, A4A and its member airlines continue to support the development of economically reasonable, technologically feasible international aircraft-and-engine standards governing noise, oxides of nitrogen (NOx), particulate matter (PM) and carbon dioxide (CO₂).

As a result of the successive, increasingly stringent NOx standards, **aircraft engines produced today must be about**

50% cleaner

than under the initial standard adopted in 1997.

⁷ https://en.wikipedia.org/wiki/Wingtip_device, <https://www.grc.nasa.gov/www/k-12/airplane/winglets.html>

⁸ Domestic transportation only, from "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015," Table A-116, U.S. Environmental Protection Agency

Fuel Supply Risk

Given the 24/7 nature of flight operations, the continuity of air service is highly dependent on an uninterrupted supply of on-time, on-specification jet fuel at large, medium and small airports around the world. Passengers and shippers depend on our industry for global connectivity, and the airlines in turn depend on a fragile supply chain.

Primary Types of Supply-Chain Risk

Airports may experience disruptions on-airport and off-airport. While an on-airport disruption can have an immediate impact because it may prevent the airlines from accessing their stored fuel, the exposure is low since most issues can be controlled. The primary off-airport threats to fuel supply are 1) loss of use of a fuel terminal or pipeline that feeds the airport and 2) systemic unavailability of fuel caused by the catastrophic loss of refining capacity as a result of natural disasters or geopolitical shocks.

PHYSICAL CONSTRAINTS

The last few years have continued to demonstrate the fragility of this complex system and the threat it poses to air-service continuity. For example, pipeline explosions caused stoppages that threatened to shut down airports that were dangerously close to running out of fuel. Another fuel supply chain risk involves product terminals, where scarcity of storage often leads to cancellation of fuel shipments – placing airports in a precarious fuel shortage situation.

THIRD-PARTY ARRANGEMENTS

Additionally, bulk fuel supplies can be sourced from intermediary fuel purchasers or directly from refiners. Intermediary fuel suppliers purchase fuel from refiners and can be responsible for the transport of fuel to the airport where it is then purchased by the airline. These third-party arrangements eliminate the airline's burden to secure transportation and quality control of the fuel. However, the lack of direct control of the supply chain often leaves the airlines in the dark when disruptions occur.

To mitigate the risk of supply chain disruptions, whenever practicable, many airlines source fuel directly from the refinery, take title of the fuel at the refinery gate and ship it to where it is needed, therefore omitting third parties. Having direct access to capacity on pipelines is an important fuel-disruption mitigation strategy; for example, if a pipeline goes off-line, the airline receives direct notification of a potential problem, allowing the longest possible time to react. However, this can also be expensive since all costs to redirect the fuel are typically borne by the shipping airline.

Operational Remedies

When pipeline operations are disrupted, alternative means of transporting jet fuel to airports are generally inadequate. Oceangoing vessels or barges have finite capacity and require airports to be located near a waterway. Additionally, the Jones Act⁹ requires that those vessels be U.S.-built, -owned and -operated to ship fuel within the United States, further limiting the volume of fuel that can be transported over the water, and are dependent on terminals that cannot easily handle additional volumes of jet fuel on short notice unless already serving the jet market.

In the event of an off-airport fuel disruption, the airline industry responds quickly to ensure minimal impact on flight operations. Impacted suppliers and airlines will first seek alternate supply. If alternate supply cannot be acquired, each airline serving the affected airport would have to consider the following options:

Trucks are another mode of delivering fuel to airports; however, the relatively small volumes a truck can carry require an unreasonably large number of trucks to supply major airports. There are neither enough fuel trucks to supply the needed volumes of fuel to U.S. airports nor capacity at airports to unload them. Finally, there is transportation by rail; while rail can offer sufficient volumes, the U.S. rail infrastructure and the available rail cars for transporting jet fuel are not sufficient to meet the airline industry need. In short, operational remedies are extremely limited and costly.



Tankering

Carrying extra fuel on inbound aircraft to reduce the amount needed at the affected airport



Technical Stops

Stopping at an intermediate airport to refuel



Schedule Reductions

Canceling flights and rerouting passengers through other airports

Tankering can be a very effective means of supplementing inventory and alternative supplies. However, it is expensive and environmentally inefficient to carry more fuel than otherwise needed to reach the destination. Accordingly, airlines strive to avoid operational tankering whenever possible.

⁹ See http://www.maritimelawcenter.com/html/the_jones_act.html and <https://www.marad.dot.gov/ships-and-shipping/domestic-shipping/>

Pipeline Capacity Constraints

As indicated above, the airline industry — and the air travelers and shippers who rely on it — is heavily dependent on interstate pipelines to deliver jet fuel for daily operations. Ensuring a reliable supply of jet fuel at the nation’s commercial airports is a critical element of reliable, cost-effective flight operations and is inextricably tied to the logistics and costs of transporting jet fuel across pipelines.

Jet-fuel demand in the United States — driven by U.S. and foreign airlines, business aviation and military aviation — has grown substantially over the past few decades. Although significant fuel-efficiency gains slowed the rate of consumption growth from 2000 to 2016, the underlying economic demand for air travel and shipping have boosted daily U.S. jet-fuel demand to a level more than double what it was just four decades earlier, when multiproduct pipelines were relatively new on the scene.

Daily Jet Fuel Consumption in the United States¹⁰

The vast majority of this fuel is disseminated to airports via pipeline, but many major pipelines are already shipping the maximum amount of fuel that their system’s physical constraints allow. Today, new shippers can have difficulty obtaining line space and long-established shippers have difficulty shipping all of their requirements.

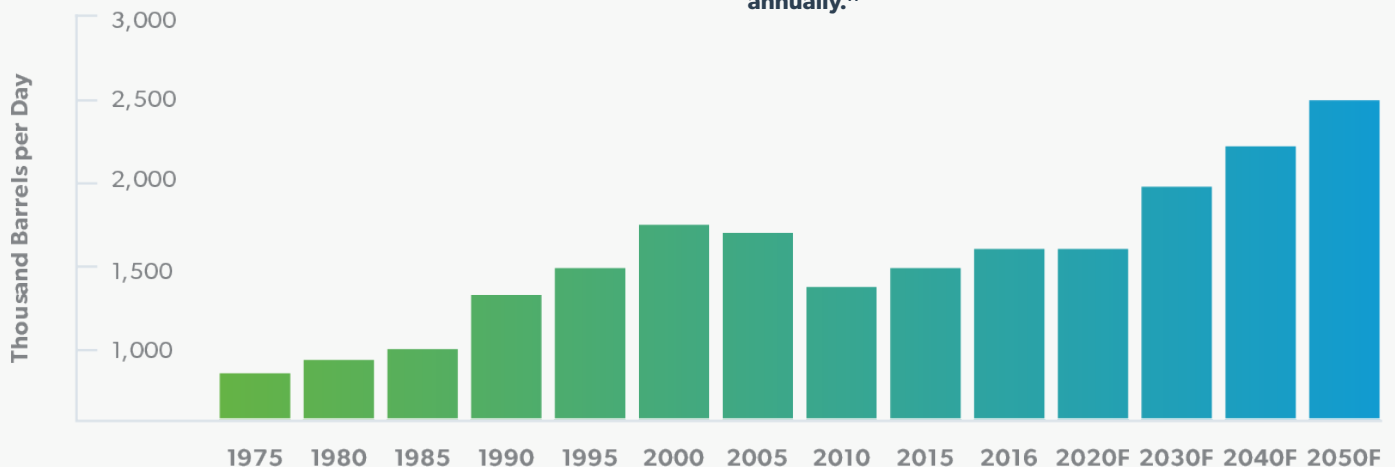
The Federal Aviation Administration expects passenger traffic to grow

2.5%

annually over the next 20 years and cargo traffic to grow

2.8%

annually.¹¹



It is thus quite likely that demand will continue to outpace the capacity of our outdated pipeline distribution system.

¹⁰ https://www.eia.gov/dnav/pet/pet_cons_psup_dc_nus_mbbldpd_a.htm and <https://www.eia.gov/analysis/projection-data.cfm#annualproj>

¹¹ https://www.faa.gov/data_research/aviation/

The current interstate pipeline system, constructed many decades ago, cannot meet current demand and is vulnerable to disruptions. Following are selected issues across the country:

MID-CONTINENT

- Explorer Pipeline is at full capacity north of Tulsa, Oklahoma, most months at all destinations except Wood River, Illinois; Explorer chooses to allow jet fuel shipments only every other cycle
- Badger Pipeline to Chicago has been at full capacity most months except winter
- Buckeye Pipeline has been at full capacity every month to Indianapolis and Pittsburgh
- Enterprise Pipeline stopped shipping jet fuel to Chicago

EAST COAST

- Plantation Pipeline is at full capacity to the Washington, DC area, forcing some users to buy half their volume from resellers and opportunistic sellers exploiting the market
- Colonial Pipeline's main line and several spur lines are at full capacity
- Buckeye Pipeline to New York City airports is periodically at full capacity
- Florida is disconnected from U.S. pipeline infrastructure and wholly reliant on waterborne imports

WEST COAST

- Kinder Morgan Pipeline to San Francisco is limited to existing infrastructure under San Francisco Bay; installing a new pipe is essential to future growth at the airport
- Olympic Pipeline is at full capacity; to Portland, Seattle and Vancouver
- Kinder Morgan Pipeline capacity to San Diego is barely adequate for current needs, restricting future growth; although the pipeline could alter the delivery schedule, they choose not to due to concerns for other shippers
- Shippers in Phoenix are often limited, seemingly at random, with respect to the amount of jet fuel they can send via pipeline

Pipeline Economic Oversight

Per the Interstate Commerce Act (ICA),¹² as natural monopolies,¹³ interstate pipelines are regulated by the Federal Energy Regulatory Commission ("the Commission" or FERC), which in turn has a statutory responsibility to ensure that rates are "just and reasonable."¹⁴ As shippers and consumers of significant quantities of jet fuel on pipelines throughout the country, airlines have a substantial interest in ensuring that pipeline tariffs are derived and maintained on a just and reasonable basis and in a manner that is not unduly discriminatory or preferential.

Moving jet fuel from the Gulf Coast to the Midwest costs nearly \$2.50 per barrel, a 72 percent increase over the past 10 years. Even before the products are moved on those pipelines there are costs associated with the movement of crude oil to the refineries – a cost passed-on to end users.

The pipeline industry has consolidated substantially since 1995 when the Commission began allowing automatic index-based rate increases and market-based rates, but there has been no systematic review of individual carrier rates and costs. Meanwhile, the cumulative index increase from 1995 to 2017 exceeded 80 percent. During this period pipelines have consistently reported excessive returns on existing assets. A4A considers a pipeline company's annual return to be "excessive" or reflecting an "over-recovery" when it reports to the Commission total interstate operating revenues greater than total cost of service (which cost of service already includes an allowed return). To address this issue, if any pipeline has an "excessive" return or an "over-recovery" exceeding 7.5 percent for two consecutive years, the Commission should require the company to show cause as to why its rates are just and reasonable.¹⁵

Perversely, because the current regulatory framework — now in place for more than two decades — effectively allows pipeline owners to systematically charge rates that over-recover costs on existing assets, they have little, if any, incentive to invest in expansion and/or upgrade of existing interstate pipeline networks. The pipeline perspective is that such projects or investments dilute the return from existing pipeline assets, making new investments comparatively unattractive. This is another reason why a systematic review of pipeline rates and costs and a show cause process are needed. These disincentives would be eliminated if the Commission

addressed the "over-recoveries" that exist under a structure that has been in place for more than two decades.

It is in the interest of all consumers of liquid fuels — including the flying, driving and shipping public — for the Commission to increase the transparency of pipeline filings, tariffs and rate-making processes. Such transparency is especially critical within a regulatory framework that relies almost exclusively on the shippers to police pipeline rates and initiate administrative actions to ensure that rates and services are provided on a just and reasonable basis. But consumers of gasoline, diesel, propane and home heating oil, for example, typically lack the resources to monitor and contest pipeline rates and services, so airlines are in the forefront of policing them.

Further, the pipeline's routine excess recoveries distort market forces and create barriers — not incentives — to needed infrastructure investment. Additional and more transparent information will enable effective regulation of the nation's interstate pipelines and promote investment in the infrastructure required to support a thriving, efficient pipeline industry and a thriving, affordable commercial aviation system. For more detail on pipeline regulatory issues, see Appendix A.

Congress and or/federal agencies could take the following steps to improve the reliability of our nation's jet-fuel supply: establish incentives to increase refined product pipeline capacity, increase the transparency of pipeline data submissions to regulators, and increase oversight of pipeline over-recoveries and excessive returns.

¹² See ICA sections 1(4) and 1(5) and <https://www.ferc.gov/industries/oil/indus-act/handbooks/volume-III/8.pdf>

¹³ Per "Regulation of Natural Monopoly" (Ben W.F. Depoorter, Center for Advanced Studies in Law and Economics, University of Ghent, Faculty of Law): "Under perfect competition prices of goods equal marginal cost, as firms engage in a competitive bidding process. Under conditions of monopoly, the profit-maximizing behavior of the incumbent firm will lead to a higher price charged to consumers and a lower output. It enables the seller to capture much of the value that would otherwise be attained by consumers. Monopoly pricing thus results in a wealth transfer from consumers of a product to the seller."

¹⁴ *Ibid.* "Allowing regulated firms to acquire a total sum that consist of annual expenditure plus a reasonable profit on capital investment, the so-called 'fair' rate of return, was constructed by American courts and the regulating bodies in order to meet constitutional demands of utilities to set prices on a 'just and reasonable' level."

¹⁵ See Joint comments of Airlines for America, National Propane Gas Association and Valero Marketing and Supply Company and Affidavit of Daniel S. Arthur, Principal of The Brattle Group, Docket No. RM17-1-000, "Revisions to Indexing Policies and Page 700 of FERC Form No. 6" (Jan. 19, 2017)



Increase the Transparency of Pipeline Data Submissions to FERC

As noted above, under the ICA the Commission is responsible for regulating the rates, terms and conditions that oil pipelines charge for interstate transportation. The ICA prohibits oil pipelines from charging rates that are unjust and unreasonable and permits shippers and the Commission to challenge both pre-existing and newly filed rates. To assist in the administration of its jurisdictional responsibilities, the ICA authorizes the Commission to prescribe annual or other periodic reports. Through Form 6, the Commission collects annual financial information from crude and refined product pipelines subject to the Commission's jurisdiction. Page 700 (Annual Report of Oil Pipeline Companies) of Form 6 provides a simplified presentation of an oil pipeline's jurisdictional cost-of-service and serves as a preliminary screening tool to evaluate oil pipeline rates. To increase the transparency of pipeline data submissions, the Commission should take the following two actions:

1

Require pipelines to file separate financial and rate data (i.e., data on Page 700) if they have (a) both crude oil and petroleum product systems, and/or (b) multiple established and unrelated recognized segments within a crude oil or petroleum product system which correspond to how a pipeline's rates are established or designed. In addition to enhancing transparency and preventing cross-subsidization, requiring pipelines to disaggregate costs and revenues by pipeline, system or distinct segment will ensure that Form 6 requirements are internally consistent. Specifically, this change would conform the reporting requirements for total cost, revenue and throughput information to the practice of requiring pipelines to segregate information on carrier property, depreciation rates and crude-oil and product movements. Additionally, this change should require that pipelines with market-based and nonmarket-based rates provide separate Page 700s for each set of rates in order for shippers and the Commission to determine whether there is any cross-subsidization.

2

Require pipelines to make available to shippers (upon request) work papers that fully support the data reported on Form 6, Page 700, including the total cost-of-service calculations. Despite shipper requests, the Commission recently declined to make Page 700 work papers available to shippers when revising its Page 700 reporting rules, meaning that pipelines are still only required to make this information available to Commission staff on a confidential basis. Without access to these work papers, shippers cannot verify the information reported on Page 700 or determine whether accounting and allocation gimmicks have obscured the pipeline's true cost of service.

Strengthen Regulatory Oversight of Over-Recoveries and Excessive Returns

As in the natural gas industry, the Commission should require pipelines showing over-recoveries or excessive returns on their Form 6 to show cause why their rates should not be considered unjust and unreasonable. For many years, dozens of pipelines that have filed for index rate increases reported cost over-recoveries or excessive returns on their Form 6 annual/quarterly reports. And, a number of other companies that did not file for an index adjustment, or which maintain market-based rates, are reporting cost over-recoveries or excessive returns. This is a clear signal that the rates are excessive, or market-rates are ill-defined, and warrant investigation. Under circumstances like these, the Commission should exercise its authority under the Interstate Commerce Act to require pipelines to show cause why their rates should not be found unjust and unreasonable. The Commission should do this on its own and not require shippers to file review petitions or complaints.

Also, the Commission should require pipelines to file a complete Form 6 before they file for an index rate increase. In the past, pipelines who “qualified” for automatic index rate increases did not file or filed incomplete annual reports. Further, the Commission should revise the FERC interest rate for refunds and reparations as provided in 18 CFR §340.1(c)(2)(i) to reflect, at a minimum, the pipeline’s rate of return (i.e., weighted average cost of capital) as reported on Form 6, Page 700 [or preferably a rate that reflects the shipper’s cost of capital, almost certainly higher than the pipeline’s cost of capital]. Otherwise, the pipeline will continue to be rewarded for charging unreasonable rates and for delaying final Commission action by all means available.



Finally, the Commission should monitor the rates charged by pipelines with market-based rate authority to ensure these rates remain within a just and reasonable range. The Commission grants pipelines the authority to charge market-based rates on the theory that, where there are sufficient alternatives to the services provided by a pipeline, competitive forces will restrict the pipeline’s ability to increase its rates above just and reasonable levels. But because the nature and effect of competition within a market cannot be predicted in advance with perfect accuracy, it is important to continue to monitor market-based rates to ensure that the market forces are having the effect the Commission expected when it allowed the pipeline to charge market-based rates. In the absence of such regular oversight and cost-based regulations, pipelines may increase their rates far above just and reasonable levels. These increases are particularly problematic as a pipeline with market power has the incentive to under-develop or restrict capacity in order to sustain higher rates. In addition, the Commission has not clarified the reparations available to shippers associated with the significantly higher burden imposed by filing a complaint against market-based rates.

Recent positions by FERC stating that it will not review the reasonableness of committed shipper rates on oil pipelines and the Commission's method for evaluating whether oil pipelines possess market power provide another incentive for oil pipelines to under-develop capacity and maintain or create capacity constraints. First, because airlines are supply-sensitive, restrained capacity induces airlines to enter into committed shipper contracts to ensure a reliable supply of jet fuel. Because the rates associated with committed shipper contracts will not be reviewed by FERC, and the shippers entering into the contracts are bound to support the rates, the pipeline is incentivized to limit capacity expansion to a level less than it would in a competitive market because the pipeline can capture higher committed rates. Second, if a pipeline is applying for market-based rates, or has market-based rates, the Commission's approach to used alternatives also incentivizes pipelines to limit capacity development. In this case, if the applicant pipeline is constrained, shippers are likely to use less attractive alternatives as well as the applicant pipeline. The Commission has in the past presumed that "used" alternatives are always competitive alternatives to the pipeline even though, in reality, there are many instances in which such alternatives would not be used if adequate pipeline capacity were available. It has also fallen into the "Cellophane Fallacy" of equating the competitive price in a market with the highest cost of any "used" alternative. While the Commission has recently recognized some flaws in this reasoning – including that the Supreme Court has expressly warned agencies not to fall into the "Cellophane Fallacy" – it still has not fully reconciled its past precedents, and the potential for future erroneous decisions on market-based rate applications remains.

Recognize Fuel Shippers and Consumers as Key Constituents

To ensure adequate investment in our pipeline infrastructure and fair costs for shippers, the Commission needs to be proactive on issues affecting airlines and other shippers/consumers. It should expedite review of pipeline rates where over-recoveries or excessive returns persist and, like the Commission's policy with respect to complaints against rates charged by natural-gas pipelines, it should treat all complaints against oil and product pipeline rates on an expedited basis.

The Commission also should use its oversight jurisdiction to determine whether pipelines have improperly disaggregated certain pipeline transportation in functions such as terminaling and storage to generate significant additional revenues to the detriment of shippers/consumers. Overall, the Commission should factor into its actions the reality that many shippers and consumers, as a practical matter, simply are not capable of monitoring and challenging rates, and recognize that middlemen do not adequately protect most consumers.



Importantly, the Commission should focus on terms and conditions of service that affect the airlines and other shippers/consumers. It is critical that the Commission recognize the real operational and financial impact that these issues have on airlines, as well as on the customers and communities they serve.

Conclusion

Jet Fuel Infrastructure Is Essential for Safe, Reliable and Cost-Effective Commerce


Pipelines play a critical role in supplying our nation's jet fuel and ensuring air service — for passengers and cargo — to small and large communities. Unfortunately, our national pipeline system today is fragile. It lacks adequate capacity for future growth to efficiently transport critical fuels around the country and address the nation's increasing demands. Shippers, including airlines and their suppliers, among others, continue to pay more, in the form of higher tariffs, while receiving less in the form of transparency, quality data, timeliness and security of supply.

In the highly competitive airline industry, we depend on regulators to ensure that cost inputs for critical and finite resources are just and reasonable. Given the fact that fuel is among the airline industry's largest expenses (along with employee wages and benefits) and that the U.S. air-service network is so dependent on pipelines, the actions and inactions of the Federal Energy Regulatory Commission have a significant impact on the airlines' everyday business.

The Majority of Pipelines Are True Monopolies and Should Not Be Subject to “Market Based Rates”

The Commission today has an opportunity to recognize and adapt to the substantial consolidation in the pipeline industry that has occurred since the 1995 inception of





indexing rules. Pipelines have consistently reported excessive returns on existing assets and yet there has been no systematic review of individual rates and services. Further, since 1995 pipelines have removed many assets and services from their FERC jurisdictional rates and drastically increased the costs for use of those assets and services, with little or no review.

Accordingly, in the interest of the flying and shipping public and all consumers of liquid fuels, Airlines for America calls on FERC to increase pipeline oversight to eliminate and prevent over-recoveries and excessive returns. It also should increase the transparency of pipeline data submissions and recognize the airlines and other shippers/consumers as key constituents.

Pipelines Are the Safest, Most Efficient Mode of Transporting Liquid Fuels¹⁶

As set forth in this document, it is in the interest of all consumers of liquid fuels for the Commission to increase the transparency of pipeline filings, tariffs and ratemaking processes. Such transparency is especially critical within a regulatory framework that relies heavily on the shippers themselves to ensure that and services are provided on a “just and reasonable” basis. The current regulatory framework, as applied by the Commission, creates a disincentive for pipeline companies to invest in the infrastructure needed to ensure that airlines and airports can meet the needs of the traveling and shipping public. It also shows that some pipelines are excluding critical infrastructure from regulatory oversight. These cases illustrate why FERC should play a more active role in ensuring that pipelines earn just and reasonable — not excessive — returns.

¹⁶ See <http://www.aopl.org/wp-content/uploads/2015/10/Safety-Record-Pipeline-Issues-Series.pdf>, <http://www.marketwatch.com/story/pipelines-are-the-safest-way-to-transport-energy-2013-03-29>

Appendix A. Economic Oversight of Pipelines and Ratemaking Methodology

For interstate pipelines, the persistent over-recovery of ongoing costs and excessive returns on legacy assets are significant factors reducing the flow of capital into new petroleum pipeline assets, especially for pipelines serving highly congested urban areas. Importantly for the United States, this problem is discouraging upgrades or expansion of critical infrastructure, a consequence that is likely antithetical to the aims of the Federal Energy Regulatory Commission (FERC).

LACK OF COMMISSION OVERSIGHT, CURRENT INDEXING METHODOLOGY AND MARKET BASED RATES

Since the mid-1990s, the Commission has allowed pipelines to adjust their rates each year based on an inflation-adjusted index tied to the U.S. Producer Price Index for Finished Goods (PPI-FG).¹⁷ On May 23, 2011, over the objections of many shippers, the Commission established a new pipeline index level of PPI plus 2.65 percent for July 1, 2011 through June 30, 2016 (the highest percentage increase over the PPI level ever set). This rate increase added billions of dollars to existing pipeline over-recoveries and significant additional costs to shippers and consumers. Cumulatively, from June 30, 2011, to June 30, 2016, index rates rose 31.9 percent. On December 17, 2015, the Commission revised the annual PPI adjustment downward, from 2.65 percent to 1.23 percent, effective July 1, 2016.¹⁹

FERC Action	Period	PPI-FG ¹⁸	PPI Change (Percent)	Adjustment (Percent)	Eff. Change (Percent)	Indexed Rate (6/30/11=100)
	n/a	124.7	n/a	n/a	n/a	n/a
	1/1/95-6/30/95	125.5	1.2175	-1.00	0.2175	70.980
	7/1/95-6/30/96	127.9	0.6415	-1.00	-0.3585	71.134
	7/1/96-6/30/97	131.3	1.9124	-1.00	0.9124	70.879
	7/1/97-6/30/98	131.8	2.6583	-1.00	1.6583	71.526
	7/1/98-6/30/99	130.7	0.3808	-1.00	-0.6192	72.712
	7/1/99-6/30/00	133.0	-0.8346	-1.00	-1.8346	72.262
Dec. 14, 2000	7/1/00-6/30/01	138.0	1.7598	-1.00	0.7598	70.936
Feb. 24, 2003	7/1/01-6/30/02	140.7	3.7594	None	3.7594	71.475
Feb. 24, 2003	7/1/02-6/30/03	138.9	1.9565	None	1.9565	74.162
Feb. 24, 2003	7/1/03-6/30/04	143.3	-1.2793	None	-1.2793	75.613
May 14, 2004	7/1/04-6/30/05	148.5	3.1677	None	3.1677	74.646
May 17, 2005	7/1/05-6/30/06	155.7	3.6288	None	3.6288	77.010
May 18, 2006	7/1/06-6/30/07	160.4	4.8485	1.30	6.1485	79.805
May 16, 2007	7/1/07-6/30/08	166.6	3.0186	1.30	4.3186	84.712
May 21, 2008	7/1/08-6/30/09	177.1	3.8653	1.30	5.1653	88.370
May 14, 2009	7/1/09-6/30/10	172.5	6.3025	1.30	7.6025	92.935
May 19, 2010	7/1/10-6/30/11	179.8	-2.5974	1.30	-1.2974	100.000
May 12, 2011	7/1/11-6/30/12	190.5	4.2319	2.65	6.8819	106.882
May 15, 2012	7/1/12-6/30/13	194.2	5.9511	2.65	8.6011	116.075
May 15, 2013	7/1/13-6/30/14	196.6	1.9423	2.65	4.5923	121.405
May 14, 2014	7/1/14-6/30/15	200.4	1.2358	2.65	3.8858	126.123
May 14, 2015	7/1/15-6/30/16	193.9	1.9329	2.65	4.5829	131.903
May 19, 2016	7/1/16-6/30/17	191.9	-3.2435	1.23	-2.0135	129.247
May 12, 2017	7/1/17-6/30/18	TBD	-1.0315	1.23	0.1985	129.504

¹⁷ See <https://www.ferc.gov/industries/oil/gen-info/pipeline-index.asp> and 18 CFR § 342.3

¹⁸ See <https://www.ferc.gov/industries/oil/gen-info/pipeline-index/RM15-20-000.pdf>

¹⁹ Bureau of Labor Statistics Producer Price Index Commodity Data Series WPUFD49207, as originally published

The most fundamental problem with current regulation of interstate pipelines is the lack of Commission oversight combined with the current FERC indexing methodology. The Commission has chosen to allow pipelines to increase their rates each year through automatic indexing adjustments while relying solely on shippers to challenge rates. Pipelines have not been required to show that rates are just and reasonable prior to increasing those rates by the index – the increase is automatic. On the other hand, to challenge an index increase, shippers must show not only that the resulting rates are not just and reasonable but also that there is a substantial divergence from the last approved rate increase.

As noted earlier, this regulatory framework effectively allows pipeline owners to systematically charge rates that over-recover costs and consistently achieve excessive returns on existing assets. This in turn disincentivizes investment in expansion and/or upgrade of existing interstate pipeline networks because such projects dilute the return from existing pipeline assets and make new investment look comparatively unattractive.

These effects are compounded on pipelines the Commission has granted authority to charge market-based rates. Once the Commission determines that a market is competitive and allows the pipelines in that market to charge market-based rates, it essentially abandons oversight of those rates. While shippers may still bring rate complaints, the Commission has not plainly articulated the standards for evaluating such complaints. Consequently shippers have been reluctant to expend resources to challenge market-based rates. Because of this limited oversight and insulation from challenge, pipelines have increasingly sought market-

based rate authority, often supporting their applications with “alternatives” that are not, in practice, viable substitutes for the pipeline’s services. The Commission rarely rejects an application that is not protested, so it is, once again, incumbent on shippers to protest and point out the deficiencies in market-based rate applications. Shippers, however, are hindered by inadequate disclosure of information by pipelines and conflicts of interest.

On October 20, 2016, at the request of A4A and others, FERC issued an Advanced Notice of Proposed Rulemaking regarding potential modifications to its policies for evaluating oil pipeline indexed rate changes and regarding potential changes to FERC Form No. 6 (“Annual Report of Oil Pipeline Companies”),²⁰ Page 700 (“Annual Cost of Service Based Analysis Schedule”).²¹ As to indexing, FERC is considering a two-part evaluation of index filings. FERC proposes to deny any indexed rate increase for pipelines if (a) the Page 700 revenues exceed total costs by 15 percent for both of the prior two years or (b) the proposed index increases exceed by 5 percent the annual cost changes on Page 700.

²⁰ Per <https://www.ferc.gov/docs-filing/forms/form-6/form-6.pdf>, the FERC Form No. 6 (FERC Form 6) is an annual regulatory reporting requirement (18 C.F.R. §357.2), designed to collect both financial and operational informational from oil pipeline companies subject to the jurisdiction of the Federal Energy Regulatory Commission.

²¹ FERC requires that each regulated oil pipeline provide certain annual information relating to cost of service and revenues as part of its annual Form 6, commonly referred to as “Page 700.” Page 700 provides data for the end of the reporting year and for the immediately preceding year including: Annual Cost of Service (as calculated under the Order No. 154-B methodology), operating revenues, and throughput in barrels and barrel-miles.

MANY SHIPPERS LACK THE KNOWLEDGE AND RESOURCES TO CHALLENGE THE ESTABLISHMENT

Many shippers lack adequate and transparent information regarding pipeline operations, financial performance, and assets. Airlines are among few end-users that have engaged in Commission proceedings. In effect, airlines are the most significant voice of the shipper/consumer in FERC proceedings involving the transportation of liquid fuels. The Commission has entrusted to shippers the job of ensuring that pipeline rates and services are just and reasonable.

Unfortunately, the only publicly available information is annual/quarterly pipeline reports, designated as Form 6. Currently, little can be gleaned from FERC Form 6. Page 700 of Form 6 has undergone only minimal revisions since 2000, despite multiple shipper requests for additional changes. In 2013, to facilitate the determination of a pipeline's realized return on equity, the Commission directed pipelines to provide some additional information regarding individual cost elements. However, as discussed further below, shippers do not yet have access to all the necessary information to determine whether specific rates on individual systems or segments are just and reasonable. Since the Commission relies on shippers to monitor whether rates are just and reasonable, it is only fair that the Commission facilitates the process by providing them with all the information and tools necessary to undertake this task.

FERC has simplified and expedited the pipelines' ability to obtain automatic rate increases but the ability of shippers to determine if the resulting rates are just and reasonable has not kept pace. Since the indexing rules were instituted in 1995, the pipeline industry has consolidated further, resulting in larger and more complex entities filing (in many instances) a single combined Form 6 for all pipelines, systems and distinct segments operating within their company. This information aggregation has thus, unfortunately, made the task of monitoring and challenging rates on individual systems more difficult and, in some cases, impossible. The inability to determine whether rates on individual systems are just and reasonable also creates cross-subsidies between systems where rates on one system lie significantly beyond any zone of reasonableness.

In that October 20, 2016 Advanced Notice of Proposed Rulemaking, as to Page 700, FERC is considering a requirement that pipelines file supplemental Page 700s for (a) crude oil and product systems, (b) non-contiguous systems and (c) certain major pipeline systems.



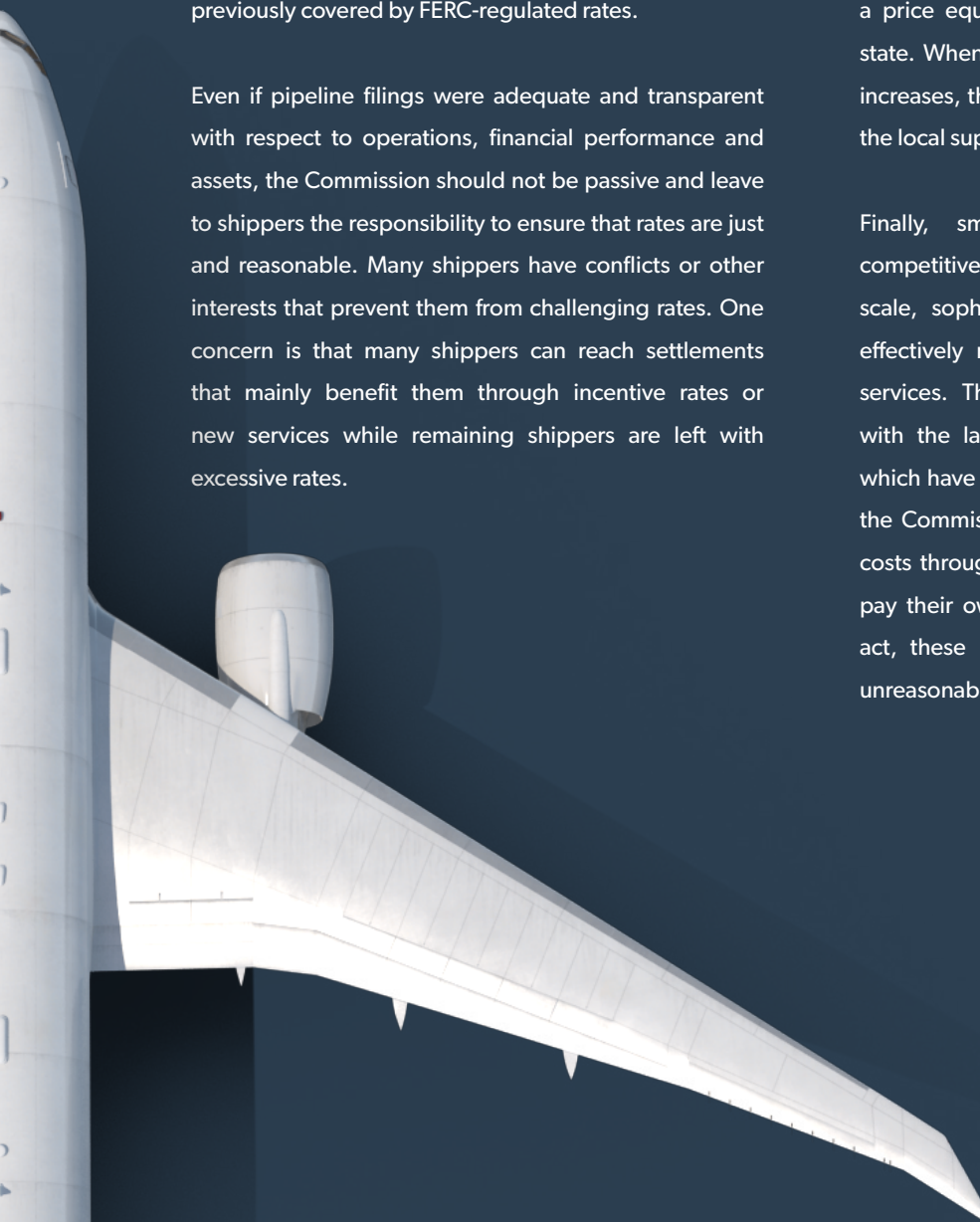
THE CURRENT REGULATORY CONSTRUCT INHERENTLY FAVORS PIPELINES

Not only has the pipeline industry consolidated and become more complex – it also holds terminaling, storage and other assets outside of the pipeline entities in so-called “non-jurisdictional entities.” These developments raise questions as to whether assets that are an integral part of transportation, increasing the efficiency of operation and capacity of the pipeline, are being improperly used to create additional revenues for the parent company of pipelines at significant additional costs to the shippers/consumers – costs that were previously covered by FERC-regulated rates.

Even if pipeline filings were adequate and transparent with respect to operations, financial performance and assets, the Commission should not be passive and leave to shippers the responsibility to ensure that rates are just and reasonable. Many shippers have conflicts or other interests that prevent them from challenging rates. One concern is that many shippers can reach settlements that mainly benefit them through incentive rates or new services while remaining shippers are left with excessive rates.

Another concern is that many shippers, or their affiliates, also have an ownership interest in interstate pipelines. Yet another is that many shippers on petroleum-product pipelines simply pass along pipeline costs to consumers such as individual motorists or truckers. Furthermore, in a given destination market, some shippers have alternative sources of local supply, meaning that they might actually benefit from higher rates on a given line. For instance, if a refinery is located in an area that requires fuel to be brought in from out of state, the local market must reach a price equilibrium that will attract fuel from another state. When the cost of moving fuel from another state increases, the price equilibrium must increase, enabling the local supplier to sell its fuel at the higher price.

Finally, small shippers and new entrants are competitively disadvantaged because they lack the scale, sophistication and/or financial wherewithal to effectively monitor and challenge pipeline rates and services. This diffusion of interests contrasts sharply with the large integrated oil and product pipelines, which have substantial financial wherewithal and, under the Commission’s current rules, can recover their legal costs through their rates. Until the shippers, who must pay their own legal costs, can get the Commission to act, these pipelines enjoy the benefit of unjust and unreasonable rates.



Appendix B. Case Studies in Pipeline Regulation and Infrastructure Development

The following four case studies help illustrate the disincentives to investment that stem from the aforementioned shortcomings in pipeline regulation. The first three cases are real-world examples where needed investments were not made. The fourth represents a case where addressing excessive recoveries enabled infrastructure investment. As shown, however, the investment was made only after a complaint by shippers against excessive rates.

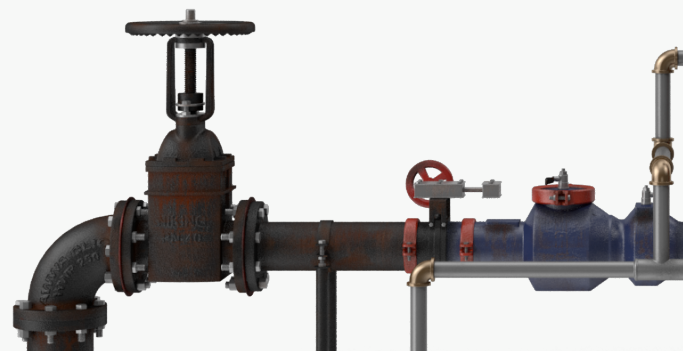
CASE STUDY 1: THE WRONG INCENTIVES ARE IN PLACE

An efficient and customer-focused pipeline company is earning revenues significantly above its costs and is at constant risk of losing these premiums if a customer were to complain to FERC. The pipeline has achieved these revenues partially by expanding capacity proactively and efficiently, by creating services to enable customers to better manage risks and by ensuring that resources, such as over-subscribed line space on the pipeline, are allocated fairly. Even with this positive track record, the pipeline has invested in very few, if any, new services. Why? Because without customer guarantees and commitments that provide a very high, risk-free return, the pipeline company is concerned that 1) new investments would not increase its returns given the extraordinary returns it already earns on existing investments, and 2) it would remain at risk of a customer filing a complaint with FERC.

Meanwhile, another pipeline company takes the opposite approach. Tariffs on one of the company's systems have been challenged multiple times in the past decade. Rather than reduce and keep tariffs at rates that would prevent over-recovery, the company prefers to maintain rates well above the reported cost-of-service levels, defend itself against complaints, and eventually settle with the few shippers that understand the process and can afford both the legal costs and the management time associated with a complaint. The unintended consequence is that shippers who simply sell their fuel at the pipeline destination have no incentive to challenge the rate adjustments, since these costs are often a direct pass-through to the customer.

They know they are paying too much to ship their fuel, but they also know that they will be able to recover the shipping costs through the wholesale price of fuel at the destination. They know this because the market frequently sets prices at the destinations based on the wholesale price at the origin plus the existing tariff to the destination.

Even when a shipper files a complaint that is eventually settled – years later – for a cash refund payment, the shipper receives its confidential portion of the over-recovery back and is able to pocket the savings. The purchaser of wholesale product at the destination never receives any of the excess tariff. Even a savvy consumer who has bulk purchasing power, but is not a shipper, cannot fully recover its share of the over-recovery because the settlements remain confidential and because there is no incentive for a supplier to pass through any settlement monies.



CASE STUDY 2. EXCESSIVE RETURNS ON EXISTING CAPITAL BASE DISCOURAGE INVESTMENT

Despite their divergent customer policies, neither of the above pipeline companies can make new investments in its systems with confidence that the current regulatory environment alone will enable it to recover its costs and earn the kind of return its shareholders have grown to expect. It is true that the new investment will raise their respective cost bases and the amount that they can earn, but their shareholders and executives expect them to continue to achieve returns consistent with their existing capital base and risk profile. Under that set of expectations and the current regulatory culture, new investments simply cannot gain approval without the throughput-and-deficiency agreements that enable the pipeline companies to achieve desired returns and eliminate the risk of shipper-initiated challenges filed with FERC. The current system provides tremendous leverage to the pipelines based on their natural monopoly position and the limited [cost and revenue] information pipelines must file combined with remarkably light regulatory oversight of rates and services.

At an airport that traditionally had depended on two separately owned pipelines, one pipeline was required by the U.S. Department of Transportation to shut down. Over several years, the airlines engaged in dialogue with the owners of these two pipelines to explore numerous alternatives. Eventually the airlines decided to rely solely on the only existing pipeline even though it was buried deeply below a river and could be subject to significant interruption because it would take months to repair a problem.

The owners of the shutdown pipeline had offered to build a new replacement line only via a guaranteed throughput-and-deficiency agreement of at least five years. The airlines offered to commit 100 percent of airport demand to the new replacement pipeline, which exceeded the pipeline's minimum volume commitment and would have allowed the pipeline to earn more than 100 percent of its capital investment within five years.

At the insistence of the airlines, the pipeline company offered to allow the airlines to buy the new pipeline after five years of operation. However, the pipeline's best offer included a premium of 80 percent of the estimated original cost of construction at the end of five years and ignored all of the capital recovery that would occur over the five-year period. In short, the pipeline refused to take on any investment risk. It could take this position because the project would have been dilutive to its existing capital base. In other words, since FERC policy allowed the company to collect millions per year of tariffs on a completely depreciated pipeline that ran from one side of the river to the other, it was in the company's financial interest to do nothing rather than to take prudent risks and earn returns below expectations set in their legacy businesses.



CASE STUDY 3. CRITICAL INFRASTRUCTURE HAS BEEN CARVED OUT FROM FERC OVERSIGHT

There are many circumstances around the country where pipeline companies have re-classified storage and terminals as non-jurisdictional, meaning that the rates and charges are no longer subject to regulatory oversight even though the pipeline cannot operate without their use. This provides the pipeline companies with unfair leverage and the ability to shift profits to an unregulated entity. Presumably this is allowed because, at a minimum, potential for competition exists. However, the following cases demonstrate instances where 1) carve outs have been granted despite the absence of meaningful (i.e., economically equivalent) competition or 2) carve outs remain in effect after consolidation of assets has resulted in elimination of competition.

In one circumstance, a western U.S. airport was entirely dependent on one pipeline, which happened to be approaching full capacity. Accordingly, the airlines serving this particular airport agreed to pay an additional fee — above and beyond the regulated tariffs — for two storage tanks to be built at a nearby terminal owned by an “unregulated affiliate” of the pipeline company. This construction would enable the same pipeline company to use another pipeline segment to deliver to the airport from another direction. Further blurring the lines between the regulated and non-regulated businesses, the pipeline charged the airlines a surcharge over 10 years to completely reimburse the pipeline’s sister company for the cost of the tanks. Even though the airlines had agreed to these terms, the pipeline company nonetheless refused to allow shippers to nominate deliveries to the two new tanks, insisting that the pipeline would utilize the tanks only when the capacity of the original pipeline configuration became inadequate.

The 10-year period of the airlines’ agreement with the pipeline, and the fees charged, were negotiated to provide for the complete reimbursement of the original cost of the two tanks. However, upon expiration of the agreement, instead of simply allowing the tanks to remain in service of the pipeline to access the airport, the unregulated terminal affiliate insisted that the

airlines would have to pay a new fee to the unregulated affiliate to lease these same two tanks. The pipeline also refused to allow the airlines to use the tanks as they wished. The unregulated terminal affiliate insisted it could use the tanks for other purposes, meaning that the airport would again be completely dependent upon the original configuration of the pipeline that utilized a single smaller pipeline to make deliveries to the airport, which by this time had become both less reliable and less efficient, taking up to three times longer to ship products the same distance. Fearing the loss of infrastructure and recognizing that it would take too long to build a new terminal to compete with the existing one, the airlines agreed to pay the new lease fees to the unregulated terminal affiliate upon expiration of the original agreement with the pipeline company.

Meanwhile, on the opposite side of the country, an unregulated terminal operator owned by a parent that also operates a regulated pipeline that was the sole source of petroleum products delivered to the unregulated terminal was allowed to purchase the only other terminal supplied by the pipeline in the vicinity. These terminals are located in a densely populated corridor where there is little chance of building competing terminals that can access the pipeline. One major U.S. airport is completely dependent upon these terminals and pipeline for its supply. There is no other conceivable way to deliver jet fuel to the airport that would receive the necessary environmental and governmental approvals in a reasonable period of time, if ever. In order to deliver fuel to this airport, the pipeline first delivers product to the unregulated terminal upstream of the airport, whereby a shipper must have an agreement with the unregulated terminal to pay fees to enable the pipeline to restage its fuel for the last short pipeline segment to the airport. In addition, the regulated pipeline imposes a re-injection charge to reach the airport in addition to requiring the shipper to pay its sister company for use of the terminal. Of course, all revenues collected by the unregulated terminal have been treated by the unregulated terminal as non-jurisdictional and thus beyond the regulatory reach of FERC.

CASE STUDY 4: ADDRESSING EXCESSIVE RECOVERIES ENCOURAGES INVESTMENT

At airports served by only one pipeline, shippers constituting the majority of volumes transported to these airports filed a complaint to reduce rates and eliminate over-recoveries. At these airports demand for transportation capacity exceeded or would shortly have exceeded the current capacity of the existing pipeline infrastructure. Although this situation was known for some period of time, no additional infrastructure or capacity was built, in part, because the pipeline and the shippers could not reach mutually agreeable terms, especially regarding the cost and return required on the needed infrastructure investment.

After several years of litigation over rates, a settlement on rates and on providing new infrastructure was reached. Without the pressure on rates applied through litigation to obtain more reasonable rates and return, it is doubtful that any agreement would have been reached under which the pipeline would have agreed to add additional infrastructure to increase capacity. Thus, in this case litigation to eliminate over-recoveries and aligned rates with reasonable return led to the development of new infrastructure. Such litigation would not be needed if FERC had policies in place to assure that pipelines were afforded reasonable, versus excessive, returns.





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