OIL TRAINS AND THE PA PUBLIC UTILITY COMMISSION

Pathways to Enhanced Crude-by-Rail Safety in Pennsylvania

Christina Simeone | April 5th, 2015

Introduction

The public and policymakers increasingly are expressing concerns over transportation of crude oil by rail cars (i.e. crude-by-rail) in Pennsylvania. This crude oil is coming from North Dakota's Bakken shale formation for processing in Philadelphia-area refineries, especially the Philadelphia Energy Solutions refinery in southwest Philadelphia. Concerns about crude-by-rail stem from increased crude-by-rail traffic (as pipeline capacity has not developed to accommodate increased production from the Bakken) and an increase in derailments and accidents involving Bakken crude being shipped by rail. The federal government has exclusive regulatory jurisdiction over most aspects of rail transportation, and indeed the federal government has taken steps to address concerns over crude-by-rail safety.[1] However, state and local policy makers may feel they have limited options in addressing persistent public concerns over crude-by-rail. This paper examines some tools available through the Pennsylvania Public Utility Commission (PUC) that can potentially enhance crude-by-rail safety, and how local governments may be able to promote the use of these tools.

Background on Pennsylvania Rail System and Crude-By-Rail

According to the PUC, in Pennsylvania there is approximately 5,600 miles of track (700 miles of which trains carrying crude oil currently use), 5,600 public at grade rail crossings (e.g. when a rail line intersects with a road, at the same level), 1,500 public highway above grade crossings (e.g. an intersection point where the rail line crosses the road using a bridge), 1,685 public highway below grade crossings (e.g. an intersection point where the rail line crosses the road using a tunnel), and approximately 65 railroad companies operating in the state.[2] According to the PUC, Pennsylvania boasts the largest number of railroad companies operating per state, in the nation.[3]

U.S. crude oil production has risen significantly in the past few years as a result of extraction technology improvements making shale oil economically competitive. Much of this new production is in areas that are underserved by existing pipeline infrastructure, so output is being moved by rail. According to the Association of American Railroads, in 2008, U.S. Class I railroads originated 9,500 carloads of crude oil. By 2013, they rose to originating 407,761 carloads.[4]

1 Pipeline and Hazardous Materials Safety Administration, Chronology of Safe Transportation of Energy Products (STEP) actions. Accessed April 2015

2 Pennsylvania Public Utility Commission, Rail Safety Section

3 Pennsylvania Public Utility Commission, Rail Safety Section

4 Association of American Railroads, "Moving Crude Oil by Rail", September 2014

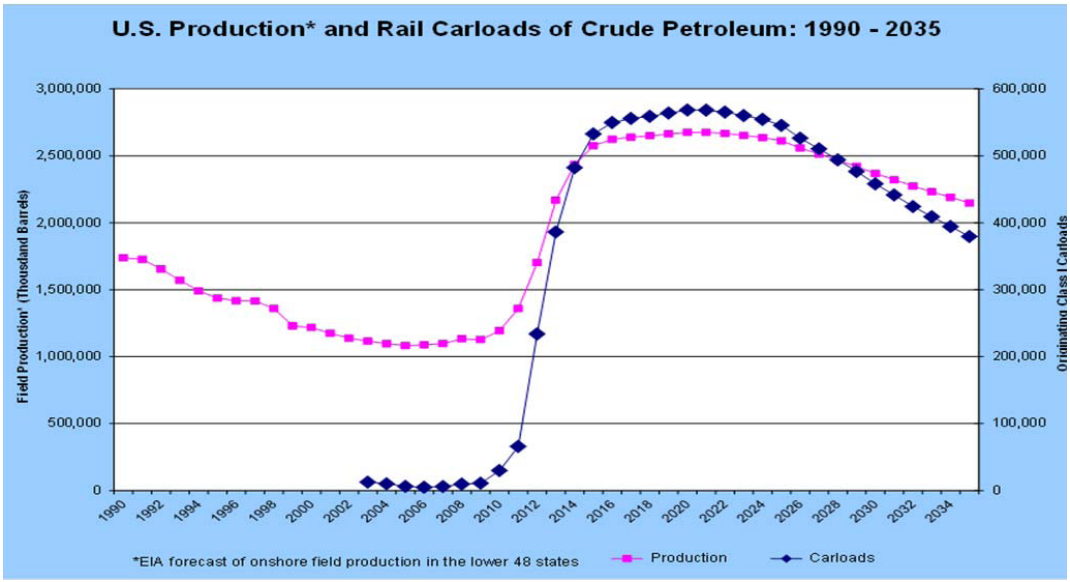
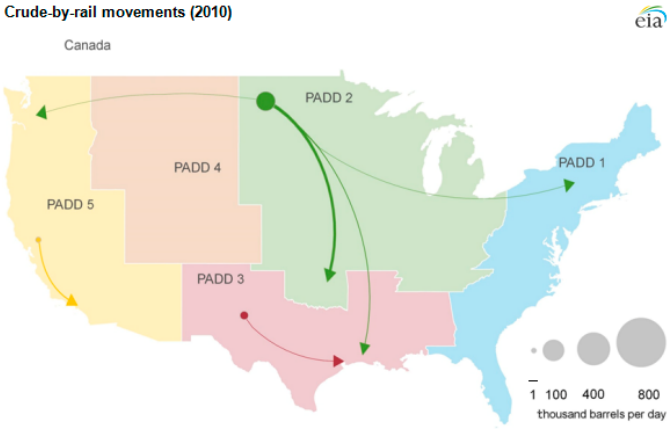


Image Source: US DOT/PHMSA Draft RIA for "Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains", Notice of Proposed Rulemaking

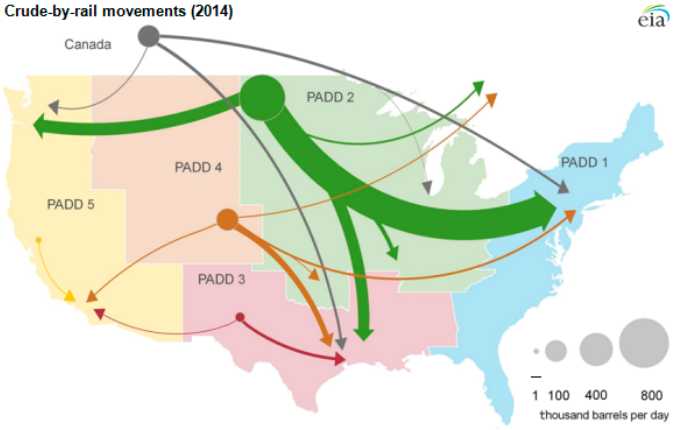
According to data from the U.S. Energy Information Administration (EIA), the Bakken formation is currently producing over 1 million barrels of oil per day.[5] This is a very light sweet type of crude oil, most of which is being transported by rail to refineries for processing. Due to the type and quality of the unconventional Bakken crude, or light tight oil (LTO), it is well suited for processing by many East Coast (e.g. as opposed to Gulf Coast) refineries that are built to process lower sulfur, lighter density crude. Federal regulators have also noted that this type of oil may be more flammable than traditional heavy crude, complicating concerns over crude-by-rail transport.

As you can see from the charts below, from 2010 to 2014, crude from the Bakken formation (in PADD 2) has largely moved to PADD 1. In 2014, there were 10 operational refineries in PADD 1, with four located in Pennsylvania, three in New Jersey, and one each in Delaware, Georgia and West Virginia.[6] The Philadelphia Energy Solutions (PES) refinery is the largest oil refining complex on the east coast with the capacity to process 335,000 barrels of crude oil per day.[7] According to PES, in the first nine months of 2014 the refinery processed approximately 14% of the crude oil produced from the Bakken region.[8] According to the PUC, there are nearly a dozen, mile long trains carrying 70,000 barrels each of crude oil traveling from the Dakotas on rail to the Philadelphia refineries (both PES and the Eddystone refinery in Delaware County) every day.[9] Prior to the surge of domestic oil production in various oil shale formations, many PADD I refiners relied on higher priced foreign crude and refining overcapacity from the Atlantic basin.[10] PES is planning to move towards 80% reliance on domestic crude feedstock, further increasing its reliance on Bakken shale.[11]

5 U.S. Energy Information Administration, Petroleum Reports, Drilling Productivity Report, April 13, 2015
6 U.S. EIA, Number and Capacity of Petroleum Refineries
7 Philadelphia Energy Solutions website
8, 10, 11 Philadelphia Energy Solutions Form S-1 registration statement with the Securities and Exchange Commission for approval of initial public offering, (8) p. 35 of 278, (10) p. 120 of 278, (11) p. 35 of 278
9 Testimony of PUC Chairman Powelson before the PA Senate Appropriations Commission, March 23, 2015
10 PES S-1 Form, p. 120 of 278
11 PES S-1 Form, p. 35 of 278



The Williston Basin in North Dakota (PADD 2) was the primary origin of 55,000 bbl/d of CBR shipments in 2010, with most shipments remaining in the Midwest region. Rail tank cars were used mainly to move Bakken crude oil to the Cushing, Oklahoma, storage and pipeline hub. The remaining volumes of Bakken CBR shipments went to Gulf Coast and East Coast refineries (PADDs 3 and 1, respectively).



Growth in total CBR movements slowed in 2014, but the average CBR volume exceeded 1 million bbl/d. Bakken crude from PADD 2 continued to dominate flows, making up 70% of CBR volumes. Niobrara crude from PADD 4 grew in importance as the second-largest origin for rail shipments. East Coast refineries (PADD 1) were the primary destination for CBR receipts in 2014.

Source: U.S. Energy Information Administration based on data from the Surface Transportation Board and other information
Note: Crude-by-rail movements greater than 1,000 barrels per day are represented on the map; short-distance movements between rail yards within a region are excluded.

Recent crude-by-rail derailments carrying Bakken oil have occurred, for example, in Lac-Megantic, Quebec; Aliceville, Alabama; Casselton, North Dakota; Lynchburg, Virginia; and Philadelphia, PA. The outcomes of these incidents range from casualties and significant economic damages, to minor derailments with few direct impacts. Crude-by-rail concerns have been expressed by a wide variety of Pennsylvania policymakers, including by not limited to: Governor Wolf's February 27, 2014 letter to President Obama asking for help in addressing crude-by-rail concerns; Senator Casey's letter to the Office of Management of Budget urging finalization of rules to strengthen oil tank car standards, Philadelphia's City Council passing a resolution expressing concerns over crude-by-rail and urging greater action by local rail companies, and hearings held by the PA General Assembly. In spite of these concerns, state and local policymakers have little existing authority to address issues related to crude-by-rail transport, as these activities are largely reserved for federal regulators. In fact, many local attempts to restrict rail activities have been invalidated by federal courts. States, such as California, New York and Minnesota, have been more successful in developing reports on crude-by-rail concerns, issuing executive orders, coordinating multi-agency investigations and actions, and even passing laws to improve emergency response, increase inspection resources and improve first responder training. Most recently, the U.S. and Canadian governments announced new regulations to improve the safety of transporting flammable liquids by rail, and Governor Wolf announced the temporary hiring of a rail expert to provide advice and recommendations on rail safety and risk.

According to conversations with the PUC, rail inspectors have increased oversight and inspection of track and routes that carry oil. ***State and local government may find the PA PUC's existing authorities provide valuable tools in examining crude-by-rail concerns, especially since these authorities currently exist and can be exercised with minimal delay.***

PUC Authority Over the Rails

Interestingly, the origins of the PA PUC actually trace back to the regulation of railroads. In 1907, the PA General Assembly created the PA State Railroad Commission, the Commonwealth's first public regulatory agency – that held jurisdiction over railroad, streetcar and telegraph corporations.[12] The Railroad Commission was replaced by the PA Public Service Commission in 1917, and in 1937 the General Assembly established the PUC.

The PUC's Rail Safety division has two distinct functions: 1) dealing with various construction and engineering issues related to public highway railroad crossings, and 2) monitoring railroad company compliance with federal laws through inspections and surveillance.

Per state law, the PUC has "exclusive jurisdiction over the construction, relocation, suspension and abolition of public highway railroad crossings".[13] Some of these authorities include determining the grading of the public highway railroad crossing, authority to order immediate alteration, improvement or suspension of the crossing to provide for public safety, appropriation of property for any crossing improvement, and determination of multi-party cost allocation for construction, relocation, alternation or abolition of crossings.

Some of the main state-granted duties of the Rail Safety (Engineering) Section of the PUC include processing applications for changes (abolition, alternation, suspension or new construction) to highway railroad crossings, processing formal complaints about highway railroad crossing safety, recommending that the PUC institute an investigation into the safety of highway-railroad crossings, and recommending that the PUC issue an emergency order if a situation presents a clear and present danger to life or property. [14]

The Rail Safety (Inspections) Section of the PUC also conducts inspections, surveillance, and investigations to determine compliance with certain federal regulations established by the Federal Railroad Administration (FRA). These authorities are provided pursuant to a State Rail Safety Participation Program (SRSPP) authorized by the Federal Railroad Safety Act of 1970.[15] The PUC has a cooperative agreement in the national railroad safety program, which enables applicable state and FRA inspectors to determine the extent to which the railroads, shippers and manufacturers have fulfilled their obligations with respect to inspection, maintenance, training and supervision.[16] The national railroad safety program is also carried out through routine inspections, accident investigations, formal and informal educational efforts, complaint investigations, safety assessment, special inquiries, regulatory development research and other initiatives.[17]

12 PA PUC Website, "History of the Pennsylvania Public Utility Commission"
13 PA PUC Website, "Rail Safety Jurisdiction and Regulations"
14 PA PUC Website, "Rail Safety Responsibilities"
15 49 C.F.R.§ 212
16 49 C.F.R.§ 212.101(b)(1)
17 49 C.F.R.§ 212.101(b)(2)

According to the "Managers Handbook" for the SRSPP, some relevant benefits to states of joining the program can include:

- **Increasing the Number of Safety Inspections** – the FRA does not reduce the number of inspection efforts in a state that is part of the SRSPP, so the addition of state inspectors will result in net inspection gains.

- **Anticipate and Address Future Rail Safety Issues** – Enhanced track inspections (track condition is the primary factor in many rail accidents); walking track inspections to compliment automation efforts; equipment, yard and other inspections and audits to ensure hazardous materials regulation; hazardous material storage and security; and ensuring compliance with worker safety provisions are all actions that state and FRA inspectors can engage in to help prevent rail safety issues.

- **High Profile State Rail Safety Concerns** – state inspectors can "…provide the nation with critical supplemental inspection capability to ensure that railroads strictly adhere to safety regulations governing the safe transportation of dangerous commodities".[18] For example, hazardous material inspectors can ensure that tank cars are properly loaded and unloaded and that valves, fitting and closures meet specifications. The SRSPP allows "…state governments to be proactive in addressing the rail safety concerns of its citizens",[19] for example, through enhanced capability to investigate train accidents or highway-rail grade crossing accidents.

- **Non-Regulatory Complaint Resolution** – state rail safety inspectors can address legitimate concerns from the public that may not be covered under existing programs.

- **Security** – State inspectors can help ensure hazardous materials shippers have viable security plans that address personnel security, facility access and shipment or storage security.

Pennsylvania's status as an SRSPP state provides a potential advantage in addressing crude-by-rail transportation concerns. According to the U.S. Department of Transportation and FRA, the SRSPP "… provides states an excellent opportunity to participate in rail safety, and that's especially valuable now when we're experiencing significant growth in transporting products such as crude-by-rail."[20]

18 Association of State Rail Safety Managers (in Partnership with the Federal Railroad Administration, State Rail Safety Participation Program, Managers Handbook, pg. 5

19 Association of State Rail Safety Managers (in Partnership with the Federal Railroad Administration, State Rail Safety Participation Program, Managers Handbook, pg. 5

20 U.S. Department of Transportation, Fastline, "State Inspectors Help FRA Improve Rail Safety", Joseph Szabo, August 27, 2014

Potential PUC Actions

There are various actions the PUC could engage in to improve crude-by-rail safety, given its existing authority. For example, the PUC could work with the Pennsylvania Department of Transportation to use state-based authority to examine public railroad crossings and determine if improvement or suspension of the crossing is needed to provide for public safety in light of increased oil and hazardous material transportation. Minnesota took similar actions by releasing its December 2014 report on the "Improvement to Highway-Rail Grade Crossings and Rail Safety".

The PUC could also use its authority under the SRSPP to increase safety inspections, increase track inspections, ensure compliance with federal laws (e.g. hazardous material security and storage, worker safety), conduct safety assessments, etc. The PUC could even launch a special investigation of crude-by-rail transportation in the Commonwealth, to examine if safety concerns exist and better define the nature of these concerns and potential solutions. ***What is more, concerned local governments, organizations and citizens can formally request (via petition) the PUC take these actions.***

However, there is a catch. The PUC only has six (6) inspectors trained to provide oversight in the federal SRSPP program.[21] Currently, that equates to over 930 miles of track per inspector. Of these six, each is trained to focus on a particular discipline (track, operating practices, hazardous materials, motive power and equipment, and grade crossings). This means that a single inspector may or may not have the training to provide oversight of all the facets of rail safety that may be needed, further stretching the ability of these resources to provide comprehensive management over PA's 5,600 miles of rail. According to the PUC there are two vacancies in the rail safety inspection division that they are seeking to fill, which would focus on track inspection in the eastern portion of the state and operating practices in the west.[22]

Conclusion

The PUC has an important role to play in addressing crude-by-rail concerns, especially while the federal government endeavors to improve safety provisions. State and local policymakers and concerned entities have the ability to formally request the PUC to enhance its crude-by-rail oversight activities. However, adequate resources must be provided to enable the PUC to support and staff such activities.

21 Testimony of PUC Chairman Powelson before the PA Senate Appropriations Commission, March 23, 2015
22 Testimony of PUC Chairman Powelson before the PA Senate Appropriations Commission, March 23, 2015

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