Energy Logistics Shifting Focus to Shale Gas Downstream

Company Participants

- Lee Klaskow, Senior Transportation Analyst
- Taylor Robinson, President

Presentation

Lee Klaskow {BIO 16957183 <GO>}

Hi, thank you for joining us today. Welcome to Bloomberg Intelligence Webinar on the Changing Energy Landscape Implications for the Rails. We'll touch upon the impact from coal secular decline and the disappointing growth of crude on rails. We'll also dive into the opportunities from shale gas projects may provide the rail industry over time. This is our disclaimer. So, read it carefully.

For those who don't know me, my name is Lee Klaskow, and I'm Bloomberg Intelligence's Senior Freight Transportation and Logistics Analyst. My team and I cover the North American railroad and trucking industries as well as the global marine shipping and airfreight markets. Prior to joining Bloomberg, about 5 years ago, I was on the sell side for 12 years. Most recently, I was the Senior Transportation Analyst on Longbow Research and Prudential Equity Group.

I'm excited to have with me today, Taylor Robinson, President of PLG Consulting. PLG Consulting is a bulk logistics expert focusing on rail transportation and logistics, energy and chemical markets and provides investment strategies as well. Since 2001, PLG has partnered with clients design or improve their logistic strategies and operations utilizing a team of over 30 industry veterans.

Over the past 5 years, PLG has worked extensively throughout the unconventional energy supply chain, providing strategic design and operational advice. Taylor joined PLG in May 2012, after spending 25 years leading global supply chain organizations in a broad range of industries. Mr. Robinson's career included (inaudible) in the automotive, aerospace and food industries with Honda, Honeywell and HJ Heinz. He is a graduate of Bowling Green State University and is a Six Sigma Black Belt.

So just some housekeeping notes here, before we get started with the presentation. The webinar today will be recorded and available for replay using the same link to access the live event. A copy of the slides are available upon request following the webinar. At the bottom on the slide window, you'll notice that you can adjust the volume and maximize your screen. We recommend you maximize the screen for best quality with the slides. And lastly, feel free to ask questions by using the Q&A panel to the right of the PowerPoint slides. We'll address questions at the conclusion of the prepared presentation.

And for those of you that aren't familiar with Bloomberg Intelligence or BI, it's an exciting research platform available to terminal customers. Bloomberg introduced a new approach to industry and company analysis by putting the data, analytics and in-house research at your fingertips. Bloomberg Intelligence's dashboards facilitate peer comparisons, support investment analysis and provide insights into industry and company fundamentals, given Bloomberg Intelligence's depth and breadth, users were able to research and analyze complete supply chains from basic materials to consumer discretionary sectors.

We're also getting deeper since we added regulatory and credit research the platform. Currently, we have over 120 sectors and over 1,300 companies in North America, Asia and Europe under coverage. Covering these sectors are 30 teams headed by senior analyst with an average of 17 years experience in the buy or sell side, that are accessible to Bloomberg customers.

Our transportation dashboards have data from a number of third-party providers, they're household names, as it relates to the freight economy. Some of our partners include FTR, Internet Truckstop, Truckloadrate.com, ATA, AAR, IANA, SSY and many, many more. Most of the charts that I'm going to be showing are snapshots from the terminal.

All right. Well, after a number of years of outperforming the market, 2015 was a difficult year for transportation companies. They significantly underperformed the border markets, which were off 1%. A lot of transportation company such as Truckload, western truckload and rails were down about a third or 30% during the year, while integrated logistics providers fared a little better. They were only down 14%. This year the stocks have rallied a little bit and rebounded since last year's route [ph] given that the S&P is flat to up 1% so far this year.

Railroads have been leading the charge in terms of outperforming the market. In 2016, they were up about 8% followed by truckload carriers, which are down -- which are up about 7% and then you have integrated logistic providers like FedEx and UPS that are up 5%. LTLs have really been the laggers in the group so far this year kind of leading the decline last year and this year, they're down 4% year-to-date.

Consensus expectations for the various sub segments are pretty muted this year. Expectations really are for earnings to start -- growth start reaccelerating in 2017, but we have seen a lot of analysts taking down their numbers throughout the year. So I guess we'll have to really wait and see, how this ends up playing out. And the operators are operating against the backdrop of a pretty tepid economic growth after spending 2.4% in 2014 and '15, GDP growth may average just about 2.2% through 2018 based on consensus. The recovery hasn't been broad-based as we've seen some areas of the strength and pockets of weakness in the US economy and among various modes of transportation.

Unfortunately for rails, we've been in a -- we've been in what some are calling a commodity depression and a manufacturing recession. Also, high inventories are eliminating demand for retailers in the form of intermodal traffic. Weak demand from these markets have been slightly mitigated by strong automotive markets, which do not

appear to be sustainable. Unemployment has been one of the biggest roadblocks to faster expansion, though it is expected to decline to about 4.8% this year, after dropping from a high of 9.6% in 2010.

April's recent disappointing jobs report may delay the acceleration in consumer spending that many have been waiting for. Economic growth expectations are lower. Though truck freight rates [ph] have outpaced GDP expansion in the current recovery and that trend may continue this year, according to FTR forecasts.

Earnings season exceeded low expectations for class I rails; weak energy related volumes; and lower fuel surcharges among other factors hurt rail revenue growth in the first quarter. Three of the six public class I rails recorded EPS declines, while revenue fell for all carriers. Some rails were able to mitigate lost volumes and preserve margin growth through network efficiencies and better pricing. Average core pricing gains of 3% were bright spot, as were [ph] Norfolk Southern exceeding expectations on its ability to improve operations and margins. CSX and UP margins deteriorated slightly in the quarter.

Operating ratios improved on average about 300 basis points for the public class I rails in the first quarter compared to last year and hit a first quarter record. Of the six carriers, four achieved all-time lows in the first quarter, including CN, CP, KSU and Norfolk Southern, which began 2016 with a bang lowering its operating ratio by over 600 basis points through strict cost controls and productivity gains. Kansas City Southern overcame flooding that impeded its network for much of March to improve margins by over 200 basis points.

Consensus 2Q EPS expectations for the rail fell about 4% after earnings season concluded given the fact that many are expecting weaker than expected volume. Many of the rail managements are expecting weaker -- weaker volume. Consensus dropped the most for CSX, after management said it expected 2Q, EPS to decline and a -- at a mid to high single and have volumes dropped in mid to high single rate.

CN's second quarter estimates decreased about 4% after management changed its full-year guidance instead of mid single digit growth, management now expects EPS to be flat in 2016 amid a 4% to 5% carload decline. Norfolk Southern and Kansas City Southern were the only two rails with slightly raised estimates in the low single digits really given their performance in the fourth -- in the first quarter and their ability to improve their overall productivity in terms of the fluidity of their networks.

Rail carloads are down about 7% year-to-date has declined since the first quarter, have accelerated in 2Q. Even intermodal, which has been one of the few bright spots is down 1% this year. US railroad traffic may slip 4% this year, according to FTR falling well below GDP growth expectations. Commodity carloads are expected to decline the most 7% in 2016 with coal volumes really driving the growth -- driving the decline.

Motor vehicles and Ag products are expected to be the best performing commodities in 2016 with gains of less than 1%. FTR is forecasting intermodal growth of 1% this year, driven by domestic volume strength. Weak energy related carloads appear to be the

biggest headwind faced in North American rails over the next six months. Total class I coal carloads have dropped about 33% so far this year and the rate of decline has accelerated into the second quarter. The bottom appears elusive given a number of secular and cyclical trends weighing on coal demand.

Railroad shift -- shift away from coal carloads will continue to be a painful evolution for the industry. Coal was once a reliable source of revenue and carried above average margins given the efficient nature of these unit trains. This helped rails fund growth project outside of coal, which the industry is now leaning on more for growth. The growth in crude and related traffic was supposed to help temper the secular decline in coal. Energy carload demand went from bad to worse with the collapse in oil prices.

Coal could benefit from carrying additional plastics, chemicals and fertilizers as well as gas resulting from new shale projects. Additional downstream carloads will account for less than 1% of railroad traffic, but represent a bright spot for energy related carloads that is facing a number of challenges. Burlington Northern accounts for the largest share of coal carloads at 38%. Its volume is down 37% year-to-date, while regional competitor, Union Pacific has fallen about 35%. Market share of coal carloads increased the most for CP, which hauls mostly met coal, which has been less impacted by the declines in coal. And then also NS has gained a little bit just to -- just due to market share shifts.

Burlington Northern was the most leveraged to coal at 22% of its revenues, while CN is the least at only 5% of its revenues. Over the last four quarters, coal accounted for about 16% of revenues for Class I rails and this is down from about 25% in 2011 and it accounts for about 24% of originated commodity carloads. The secular decline in coal has been driven by regulations and the abundance of natural gas, as a cheaper alternative. Regulations from the Obama Administration aimed at coal has forced electric utilities to choose between either installing costly new pollution controls or retiring certain coal plant. The eventual fate of coal-focused regulations including the EPA's Mercury and Air Toxics Standards and the clean power plant could affect the pace of coal retirements.

Electric utility, plants retire, plants with 18 gigawatts worth of coal-fired capacity are about 16 -- are about 6% of the installed base between 2016 and 2020. These were concentrated East of the Mississippi, where CSX and Norfolk Southern operate. The closures will hurt their originator and receive carloads.

Revenues and volumes of class I rails have suffered amid the ongoing cyclical decline and the route could continue into next year. CN, whose volumes of 31% in the quarter estimated that coal carloads may reach the bottom late in 2017. Eastern US rail, CSX and Norfolk Southern, they faced the most pressure with each expecting steep drops in utility and export coal volumes this year due mainly to its exposure to dirtier Appalachian coal and weak export markets given the stronger dollar.

FTR projects a 24% drop in US coal carloads this year. Carloads were also impacted by mild weather, cheap natural gas, high stockpiles and excess global supplies. After declining 7% in 2015, petroleum related carloads are 17% lower year-to-date. Petroleum products include crude oil and refined products such as jet fuel and asphalt. Burlington

Northern carloads fell 32% costing the carrier about 600 basis points in market share from last year, while rival, Union Pacific gains a little bit of share about 30 basis points despite having their volumes declined 17%.

Burlington Northern remains the share leader at 33% of petroleum products followed by CN at 23%. CSX carloads are the -- rose the most, jumping 20% and gaining 150 basis points of share, due in part to its proximity to the market, shale and Bakken oil heading to East Coast refineries. Kansas City Southern doesn't originate any crude carloads. It only hauls interchange loads mainly from Canadian carriers.

Following the explosive growth between 2010 and 2014, crude by rail volumes were down 17% in 2015 from 2014 highs and should remain under pressure through this year. Fewer production rigs and tighter spreads have made rail transportation less economically viable, importing Brent oil costs about $3 a barrel, while Bakken crude cost as much as $14 a barrel to ship on rails, that's according to PLG Consulting estimate.

This has been driven -- this has driven increased crude imports, especially from waterborne supplies even as the US has ramped up oil production. And rails carrying crude oil to and from destinations, where pipelines lack the capacity or simply can't reach and can transport oil two to three times faster than pipelines.

Crude by rail volumes out of the Bakken Shale remain challenged by thin Brent-WTI spreads despite recapturing about 100 basis points of share in February from January. Wells also remained the secondary mode of Bakken crude transport at 41% of shipments, trailing pipelines, which have about 51 share. Pipelines are the most economic -- are more economical than rails especially, amid tight oil spreads that contracted about 72% this year. There were 26 oil rigs in the Williston Basin, as of April 15th, a new low according to Baker Hughes, and a 69% drop versus last year.

Originated or fracing was supposed to be a source of carload growth for rails with increased demand for crude, chemicals and sand. However, the collapse in oil price stop that from happening. Originated industrial sand carloads fell about 18% in 2015 after peaking at about 500,000 carloads in 2014. They account for less than 1.5% of the industry's total carloads. Rails like CN, CP, Kansas City Southern and CSX were hoping crude layer carloads might mitigate coal declines.

The global oil glut and falling rig counts are pressuring frac sand demand and rail carload growth in North America. US Horizontal rig count could end the year down 50% to 60% from last year, based on BI analysis after falling 58% in the first quarter. PLG Consulting's frac sand carloads could decline 10% to 20% in 2016, if WTI oil prices stay in the range of 40 to $51 a barrel. The decrease in the sand demand may be mitigated, if wells are refracing or if oil produced just have more uncompleted wells.

Now, that we heard about all of the headwinds, I'm going to hand over the presentation to Taylor now, President of PLG. He is going to provide us with a deep dive about the opportunities available for rails from the growth and the production of shale gas in the US. Taylor?

Taylor Robinson {BIO 19470118 <GO>}

Thank you, Lee. I appreciate the opportunity here to share. Lee has given us some great top level metrics that coincide with some of our charts, but I'll -- I think share a flavor of what PLG sees on going throughout the market and we will focus much further downstream today. And shale gas related, I think the part that PLG helps a lot of our clients better understand is the complexity as well as the global inter-relationships between energy and petrochemical and there is optionality throughout that adds to the variables. And then finally, the logistic flows change with the shale gas downstream, as it did with the upstream activity, we saw three to four years ago.

So some similarities here between shale gas and shale oil. Some lessons learned and I'm going to highlight a lot of differences between those different supply chains. Lee told you a little bit about PLG, we'll quickly get into the slides. Today, we're going to just do a quick overview of understand the big picture of the shale supply chain, all three big product types, natural gas, NGLs and crude oil. We'll do a quick highlight on kind of some industry trends in frac sand and crude by rail, and then we'll spend the majority of the time talking about shale gas, sources impacting coal volume, then get much deeper into the NGLs in the further downstream.

So with that, let's talk about the last three years at a high level. And as I said, three different products come out of shale and there is a lot of differences that are related to shale that we are learning still especially, as we get further downstream. But as you're going to see, the shipment trends for rail proppants was huge growth and then followed by a large drop in the past year and a half and very similar on crude, and the shale gas impact to coal, of course, has been extremely negative. Today we're going to talk much more about how we see these things playing out in the future further downstream.

So quick overview of the history of frac sand. We see five different phases here over the past couple of years. And the end hereof of decrease we think may happen this year, we'll see. What's interesting is, the rig counts are down by more than two-thirds; the sand volume is only down by a third, we'll get into that here on the next slide as why the sand volume is not down more.

So quick overview of this market, extremely challenging conditions probably capacity right now, actual running capacity is probably 30% to 40% of capability throughout the industry. So many, many plants were shutted. Prices are approaching cash cost levels just unseen cost price levels for processed sand. The large sand producers are extremely challenged right now, but they are gaining share at these levels and will lead to consolidation of the industry. High intensity fracking continues to grow. Logistics is now over 75% of the total delivered costs and rail sticks out like a sore thumb, it's now the largest portion is, other parts of the logistics network has reduced their prices significantly, rail is now the largest aspect of the cost structure.

Unit train conversion still going on. The Northern Rail [ph] franchise in under extreme challenge right now, due to the cost of moving that sand to Texas especially and local sand is starting to take share. Small covered hopper market is vastly oversupplied.

Looking forward, will there be a bottom this year and a recovery in the coming several years, really highly dependent on oil price and completion of wells.

The industry will continue to consolidate. High-intensity fracing is going to continue to grow. The -- my big question is, when volume returns and there is a need for more sand, will the local mines in Texas continue to take share from the Northern Rail franchise, as they've proven that that sand works. So that will be an interesting thing to watch here in the next couple of years. And this hopper markets may take three to five years to recover and return to equilibrium is vastly oversupplied.

Let's look at crude. Very similar type of curves to frac sand and again, this is on a quarterly basis, we showed it to you on an annual basis. So you can kind of see a little bit more shorter-term trends. Interesting to know here, LPG shifts from processing factories, steadily growing and at some point, it might actually overtake crude by rail. So, again, not an exciting growth path, but that's as a result of more and more processing of shale gas.

The crude flows, as Lee talked about the East Coast is challenged right now with the spreads. The only reason, many of those contracts that are in place are driving crude by rail with take-or-pay contracts, so there is still a good portion of the volume coming from the Bakken to the East Coast. Almost shut off here in the Gulf Coast. West Coast still has volumes, but right now growth in the Pacific Northwest is really held up by the terminal regulatory challenges to get their terminals approved. So that that aspect is one of the growth potential, but is also challenged by differentials with Alaska North Slope.

Canadian oil sands has never taken off. It's got plenty of capability to shift to the Gulf Coast and there's plenty of demand down there for heavy, but due to spreads as well as pipelines coming on a little bit better than expected, this volume has never taken off. So it is definitely a challenged environment. As we look at crude by rail going forward, we do a five-year forecast and as you can see, 2016 further declines from '15 and if oil would stay in the 40 to $50 range, we think it's going to continue to fall off, led by Bakken and also -- I'm sorry, Western Canada, this is Bakken and Western Canada is second. So quite disappointing. Two years ago, the thoughts were that we're going to be well over 1 million barrels a day on rail for the foreseeable future and it hasn't panned out that way for sure.

Slide 26, we'll move on to shale gas and we'll start out with dry gas or natural gas. Of course this was the original fracking. The majority was dry gas 10 years ago. And what it has led to is, is an oversupply in the market and of course, prices are quite depressed. The good news, shale gas, I'm sorry, overall US natural gas demand is going to grow, as more plants are converted from coal especially, industrial use, we'll talk more about that today and then exports to Canada and Mexico via pipeline is going to continue to grow. And then finally, the LNG exports are going to kick in and start to drive demand. So in the upper right, as you can see, production will keep pace with the demand growth.

One of the phenomenal things in the lower right has been the productivity. And as you can see, at one point in the Marcellus, the rig count was probably close to 100 -- or just close to 150 rigs, now we are down in the 60 rig range and the production volume goes up, the reason is productivity. So as you can see over the past several years, productivity

on a new well is four to five times higher than it was. So therefore, we've got a forecast of low cost gas for the foreseeable future with this productivity of shale gas. And as I saw, I think in a recent EIA article now over 70% of gas supply is shale gas, so it's no longer unconventional, it's the conventional way here in the US, quite a change in the past five years.

Of course Lee talked about the dramatic loss of share of coal. If you look back, recent forecast from last year, EIA was saying that coal might be down to 27% of generation by 2030. Actually February ended up at 30%. So the descent is faster than forecast. We'll see how this future 2030 really unfolds. We're in 2016 and it's already down in the 30% range. So it will be interesting to see what happens in the future there.

One thing that we've looked at is, let's go back to the beginning on slide 28. Go back to beginning of the shale gas boom. And as you can see, coal was running on a four quarter average around 1.7 million carloads. At that time, mostly industrial sand and some frac sand and a little bit of petroleum was moving at about 75,000 carloads per quarter.

As you can see, we had a lot -- massive losses in the coal movements, but we've only added about 125,000 for frac sand and crude by rail. So, quite a deficit that that's not been made up by -- by the shale supply chain for the rail industry. So far this year, just further declines at a more rapid rate. This is going to be an area of interest to see, where the bottom really is. I think, I think people are challenged to think it's going to slow down here at this point.

Let's move into the NGL area or natural gas liquids. This is where the complexity, I think for non-chemistry majors gets to be real challenging. And we put together some slides and analysis that we'd hope people -- help people better understand what might -- may happen and why. We've got six petrochemical industry veterans on our team that really understand this industry 25 to 30 years to 40 years in the industry. So that's how we're able to put together this analysis and understand the market and as well as logistics impacts.

So let start out with natural gas liquids and help you understand that as it goes through processing and fractionation, you come out with these products. The key products coming out of the fractionators that drive further downstream products are ethane and propane. Ethane is by far, the largest some of [ph] the shale plays with such a 65% of the product coming out of the fractionator. Ethane is a very valuable product that can be made as, we're going to show you into many, many products downstream. This shale oil boom has led to an abundance of ethane. This -- this graph from last fall looks like there is going to be -- still be quite an abundance of ethane. But as production flows of oil and gas slow, the NGL that comes out as the byproduct is slowing also. So the big question here, is this over supply. Will it be offset and will there actually be an undersupply at some point in the next several years, still a developing picture that's very important for further downstream growth. Slow in production, more exports coming online, more usage domestically. So that's where we're going to drive into -- dive into today here.

So again top level, you've heard of crackers, steam crackers right now, there are six in North America either in progress or just one went online in Mexico. Most of the new crackers are going to use ethane because of that abundance that we talked about. And as you can see, the profile of products coming out of the ethane cracker is quite different as you've seen in ethane, you get a very high large amount of ethylene compared to the rest of the world normally uses naphtha or of course, the crude feedstock gives you quite an abundance of different products, but not as much ethylene. So this is -- this mix is causing some challenges globally because of the competitiveness of North American ethane.

So, again to help you understand a little bit very simply at a top level, the fractionators are going to get -- put ethane into a pipeline and it will be sent to steam crackers. Most of them are going to be in the Gulf Coast. This decade, five world-scale facility is going to be built. After it's cracked, it goes by pipeline as ethylene to many times to a polyethylene facility that maybe attached or within 10 or 15 miles of that facility. There is other products that come out. And as you can see, further and further processing required, but the majority is going to be turned into polyethylene, which is the largest plastics that we'll show here in a minute.

How people understand this isn't black and white, but most of the movement -- logistic movement up till this point until you move out of the ethane cracker is by pipeline or within an integrated facility, but as you move further downstream generally, more and more rail shipping and then further, further downstream, more truck shipments. This is where -- this cease [ph] an industry and consumer products, as you can see with all kinds of different products.

So again, as we can imagine, quite a bit of transportation required to do these big products, but further downstream more and more movements are required, as the products are further transformed.

So at PLG, we saw this trend coming a couple of years ago and we put together this three-phase top level approach to help people understand what we think really is happening. Phase I, you could almost call it the dry phase. So that phase is converting dry gas many times into either electricity or directly into other products like fertilizer or methanol. That phase started kicking in 2014 and '15 as facility started coming online.

The next big phase and actually the biggest phase is going to be, this downstream phase which I would -- I termed the wet phase or the natural gas liquids phase, as products are turned into petrochemicals and resins. And then our belief is, this sorry (inaudible) problem. Further downstream, as we have competitive materials, it's going to drive more and more manufacturing back to the US. So again that's going to take a number of years as you're going to see, we're going to have very, very competitive chemicals, resins and some other products, as a result driven by competitive shale gas. In this oil to gas ratio over '15 is favorable. I checked at the other day, it's about 23. So that is projected to stay very positive for US shale gas for the coming near-term.

One of the things at PLG, we did and you're going to see here a number of charts, some of the top level output. We spent about nine months researching this impact to the industrial economy. We have over 290 projects in the database, detailed information on those projects, their statuses, where they're at; volumes that are likely will be coming out and more exclusively what's going to be the logistics impact. So this product is now for sale, but I'll be showing you here the rest of the slides some real interesting insights that we see that we haven't seen anywhere else.

First of all on a top level, we just released our first forecast of these projects, these downstream projects all related to shale gas in some way or another. As I said, 209 [ph] projects in total, we think that I'm sorry, our database already includes projects that were recently commissioned. As you can see -- actually a rather small portion has already been commissioned and we call this the likely phase, which is 2015 to 2019 and we've forecasted that over 100 of these projects will be completed this decade; about 80 million -- $80 billion of investment. Another 55 billion or so we think it's going to be in a second wave from 2020 to 2025, at least 75 billion will not be actually built.

So again, that's our forecast and this gives you, this graph here on the bottom right gives you an idea of the type of products, heavily petrochemical related, these ethylene crackers and the further downstream polymers and resins and as you'll see over here some other propylene related. So a good portion is going to be petrochemical, ammonia, fertilizer et cetera is the next largest portion and then followed by methanol. So we'll show a little more detail in that here as we go in the remaining slides.

LNG exports of course have been making the news. We track that in SHIELD. It's not quite as interesting to us because of the impact of logistics is very specific. Pipeline feeds these export terminals and highly specialized supercool tankers take it away. So we track that. And as you can see, a number of projects are going to happen in this decade and potentially more next decade.

Fertilizers quite interesting product. As you can see here in the upper right, right now in the 2016 timeframe roughly if you look at the whole nitrogen market, it's about 50/50 domestic and import. That is going to have a dramatic change in the next two to three years, a number of new world-class, world-scale facilities are coming online and more next decade, which will push out imports.

Imports are going to be about cut in half, still remain some imports and then there will be some small growth in exports as well, all this driven by low cost feedstock. It's also going to change the trend and the type of fertilizer used here over the next 10 years. So quite an evolving market all driven by the shale gas competitiveness.

Back into the plastics area. Help you understand again at a very high level in the global environment polyethylene and polypropylene almost account for half of the global plastics demand. The next slide makeup another third or so of the demand. As we saw earlier, polyethylene is going to be the big product coming out in new ethylene crackers. And the big question is going to be, we've got five more of these crackers coming online here in the next three years. The domestic demand is only for about one to two of those

crackers. So where will be -- the rest of it end up and how is it going to get there is quite a question in the industry. And our next insight and trends report will analyze that -- those trends and provide a forecast of what's going to happen there. That might be the largest logistics impact project, I'm sorry, area that you're going to see here over the next three years.

So to help you understand a little bit better. What we see happening from the trucking haul aspect. This is coming out of these new facilities, the first leg of the transportation. These are the movements coming out. So as you can see, out of these likely projects about 700,000 new truck shipments will be moving out of these facilities and just under 200,000 rail carloads. We have to understand that we can't calculate the further downstream movement, as these products are transformed.

But as you can imagine, it can become quite a large number, as more and more products are derived. But this is really the first level impact of these new projects coming on stream between now and 2019. Again, not as exciting as frac sand and crude by rail, people love to see these 30, 40, 50% growth rates, but this is a very different industry. These projects are built for 30 to 40 year lives. They very rarely shutdown once they're built they start pumping out the product and it has to move.

And as you're going to see, there is going to be domestic ground demand growth for many products in the chemical and petrochemical area, but also exports are going to drive more movements. We also believe there is going to be about 30,000 more railcars, many are the large covered hopper for -- to move the plastic pellets. And then, again, in the first order -- in the first movement, about another 9,000 tank cars.

To give you a quick idea again, these are originations UP and BNSF get a majority, the other carriers are not going to get the original movements. But as you can imagine on the East coast, the West Coast carriers originate based on the location of the facility and then further downstream other folks get movements. Where is this production going to happen? Texas, Louisiana, Gulf Coast win about 70% of that business, which is consistent with the current petrochemical market as far as the volumes.

So to sum up here at a top level, what we see in the next two to three years in volume and then into next decade, highly directional, but again to help sum up and help people understand a better idea. Coal, we think continuing to be hurt by the regulatory environment as well as shale gas competitiveness. Crude by rail, as you saw, pipelines are going to win due to cost, due to regulatory challenges as well as the risk. Pipelines are going to win in the end.

Frac sand, there might be some recovery in the next two years. The question mark is, how much and what's the angle of that recovery. Based on higher oil prices into next decade, could be some substantial growth in frac sand. The challenge there is, there is quite an upside, but the supply chain is so oversupplied, it's really just going to be turning to get back on. There is not going to be, for example, demand for small covered hopper cars for the foreseeable future. So that's really just turning back and the industry back on, but could be significant growth from the lower levels this year.

Chemicals, as we saw steady domestic and export growth. Similarly with plastics, a much higher proportion of that's going to be export growth, as we saw from polyethylene. Fertilizer, we're really replumbing that supply chains that had lost its competitiveness over the last 10 years is going to regain it; and exports will be pushed out and I'm sorry, imports will be pushed out and not as much domestic demand growth in fertilizer. And then finally LPG, there is going to be some export growth continue especially for propane, but the question is, later this decade, will the supply be able to support the domestic use as well as that export growth. So we think that might flatten out into next decade.

So to sum it up, this replumbing is going to change the logistic flows and volumes and is going to cause some displacement in some areas. And as I said earlier, quite complex. I will -- open for questions here in one more minute. I wanted to show you a couple of slides that are available in appendix that you can read at your leisure after you receive them. First of all, we've just built shale intelligence for folks like the investors like this audience has. It's a annual subscription and we give you a number of different reports and information throughout the year to attract some of these really unique trends that are happening. Also, we've developed this table and if you'd like to better understand all the different chemistries, different shale gas components, how they can be exported, what are the applications for these different products and what are the use as well we did a forecast of export growth, it's in the appendix. And then we also outlined what happens in a PDH facility, which is fed by propane.

So those -- those are available in the appendix. Love to entertain any questions or any comments. Thanks.

Questions And Answers

A - Lee Klaskow {BIO 16957183 <GO>}

Thanks, Taylor. That was great. So we're going to open up the floor to some questions for people on the webinar. You should see a Q&A tab on the viewer that you have. Feel free to type in any questions you might have. So the first question would be about the regulations. What would -- what were the implication of a permanent stay of the clean power plant have on the rail sector? Taylor, do you want to try to answer that or --

A - Taylor Robinson {BIO 19470118 <GO>}

Lee, I mean, why don't you [ph] go ahead on that that's not something that we're -- we're heavily involved in right now.

A - Lee Klaskow {BIO 16957183 <GO>}

Okay. I -- honestly that would be more for our regulatory analysts that we have with the BI. So we're going to, I guess we'll pass that one. And then, somebody wanted to know, what the decline in coal shipments. What are the railroads plan to adjust the railcar fleet sizes, a lot of the railroads they don't necessarily own the rail cars, they either lease them or a lot of the time, the shippers on the assets that was kind of like the early innings of the rail renaissance that happened in early 2000, when the railroads began to really focus on costs.

There are some railroads like Norfolk Southern that has more exposure to owned railcars, they've spoken about plans in terms of retiring, selling and the like. So they are reducing their feet, they are adjusting their network to kind of meet the new normal and I think all the rails have embraced that this is a secular decline, some are a little later like Norfolk Southern in terms of embracing that, but they've definitely embraced that. And then we have another questions? Are railroads aggressively increasing rates on other commodity shipments to offset revenue declines from coal?

Are the rails on average have been increasing rates of rail inflation, which is, been around 2, 2.5%,so coal pricing has been about 3%. The rails will consistently leverage on price increases and that will include even on the coal industry even with lower demand because I mean, they do have to -- they will say earn a decent rate a return on their investment and to also re-invest in the network, they are -- experience a deleveraging effect from shipping less.

So in order to mitigate that even with coal customers they're going to have to increase rates above rail inflation and that seems to be a trend that should continue. The rails in general, a posture ensuring that they had to have pricing discipline and they're not really willing to aggressively use price as a vehicle to offset declines in volumes from other places.

A - Taylor Robinson {BIO 19470118 <GO>}
Lee, Lee maybe could I -- can I come on there now.

A - Lee Klaskow {BIO 16957183 <GO>}
Sure. Yeah absolutely.

A - Taylor Robinson {BIO 19470118 <GO>}
Yeah, I think -- yeah, I think in the rail rates that's a really challenging time for the railroads to take out price increases, as their volume is down and they're selling to challenged markets like energy. So as you can imagine, when the E&P companies were trying to cut costs last year, the railroads were really trying to hold firm on the frac sand pricing as an example, on their -- on those movements. And the rest of the supply chain to move sand end to end took out 25% to 40% of the cost.

So as you can imagine, when all the other pieces shrunk, the rail held firm and it became a target. And what the producers are doing is, sourcing the sand locally in Texas, so that they don't have to move it by rail. So in areas like that it's going to further challenge their volumes, but they're going to try to hold firm on pricing, I'm sure.

A - Lee Klaskow {BIO 16957183 <GO>}
Okay. And then there is a question about really barges, do you cover barges, Taylor?

A - Taylor Robinson {BIO 19470118 <GO>}

Yeah, yeah, we're definitely in the frac sand and some of the NGL areas, we have some good knowledge.

A - Lee Klaskow {BIO 16957183 <GO>}

So the question pretty much is, how the barges play into the US or Gulf Coast petrochemical expansion?

A - Taylor Robinson {BIO 19470118 <GO>}

Yeah, that's a really good question. There is going to be some areas that are going to get hurt as imports go down. Traditionally, some of the products came into the Gulf Coast, as an import, such as ammonia and then it's transported up to -- up to Mississippi River by a pipeline or barge. And as more and more production in the US, as you saw with the ammonia facilities won't be needed to be moved up. But then again, there will be other new movements as more facilities are built.

So it's really on a case-by-case basis, whether it's inland barge or intercoastal or waterway barge is going to change based on the supply and advanced factors. But in most cases, there is going to be a decline in imports, which the logistics flow might turn around as a result.

A - Lee Klaskow {BIO 16957183 <GO>}

Do you see barges having an opportunity to win share from rails?

A - Taylor Robinson {BIO 19470118 <GO>}

Yeah, in some limited cases, I believe so. It was and for example, frac sand was gaining until this recent downturn and again, because of cost competition. But on the frac sand side as an example, they've had to back away from barge because, they're trying to use these sand cars that are -- that are sit around. So they are trying to maximize how many sand cars they can use and they've turned off the barge as an example.

A - Lee Klaskow {BIO 16957183 <GO>}

Right. There was a question specifically about Norfolk Southern in terms of their outlook for coal. I mean, they're expecting utility coal to decrease by 11% in the second quarter and about 14, 15% this year, export coal is expected to decline 32% this quarter, in the second quarter and about 26% in 2016. It's really some of the rails like CN, they don't think the bottom is going to hit to 2017. I really think that's probably more or less consensus right now, so 2016 is going to remain extremely weak. And then, I guess the optimistic people out there hoping that we're going to get bounced in 2017, but that's really going to be dependent on where the dollar is, in terms of demand for on the export side and what Mother Nature throws at us in terms of summer weather and winter weather?

A - Taylor Robinson {BIO 19470118 <GO>}

Yeah, I think one other quick point on that Lee is --

A - Lee Klaskow {BIO 16957183 <GO>}

Sure.

A - Taylor Robinson {BIO 19470118 <GO>}

Natural gas prices are going to be, if they would get to $3 people are going to start drilling again, because they can be very -- they can make profitability. So if natural gas prices even start going up at any rate, there, I think the price will be quickly depressed with more volume. So it makes it a very challenging market for coal, when you've got 2 to $3 gas.

A - Lee Klaskow {BIO 16957183 <GO>}

We have -- we have a question here about in terms of how things gets -- get moved along in terms of building a greenfield chemical facility or ethane cracker. Why are things moving so slowly and what needs to happen to move these projects forward more rapidly?

A - Taylor Robinson {BIO 19470118 <GO>}

Yeah, well, lot of regulatory preparation can take 2 to 3 years at a minimum. While they're doing the regulatory, they're doing feasibility studies and so forth as well. But regulatory even in the Gulf Coast takes a lot of the -- a lot of the lead-time. And then as five of them are being built at one time, there's the EPC firms are limited too. But, I think we're still going to build as an example, ethylene crackers more than we need for domestic demand. So really it's not held up by any one thing, it's just that -- that's the nature of that industry. It takes start to finish five to seven years from steady start to production coming out. And nobody has figured out a way how to do it much faster.

A - Lee Klaskow {BIO 16957183 <GO>}

Okay. That appears to be all the questions from the audience. I want to thank Taylor for joining us and then providing his insight on the shale gas and the energy markets, as it relates to transportation that was pretty interesting, I know, I learned a lot. And I want to thank everyone for joining us. And again, if you want to listen to the replay, you can just click on the link that you used to register. Also in a couple of days, the transcript will be available on -- on Bloomberg, you can just go to CSX or UNP and type CF for the filings then it will be on there in a couple of days. So with that, thanks again for joining us and again Taylor, thanks a lot for sharing with us your insights.

A - Taylor Robinson {BIO 19470118 <GO>}

Thank you, Lee.