U.S. DEPARTMENT OF TRANSPORTATION

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SURFACE TRANSPORTATION BOARD

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STUDY OF COMPETITION IN THE FREIGHT RAILROAD INDUSTRY

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PUBLIC MEETING

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THURSDAY,
NOVEMBER 6, 2008

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The meeting was convened in the first floor hearing room at 395 E Street, SW, Washington, D.C. at 10:00 a.m., Charles Nottingham, Chair, presiding.

SURFACE TRANSPORTATION MEMBERS PRESENT:

CHARLES NOTTINGHAM, Chairman
FRANCIS MULVEY, Vice Chairman
W. DOUGLAS BUTTREY, Commissioner

PANELISTS:

MARK MEITZEN, Christensen Associates, Inc.
KELLY EAKIN, Christensen Associates, Inc.

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P-R-O-C-E-E-D-I-N-G-S

(10:04 a.m.)

CHAIRMAN NOTTINGHAM: Good morning. I'd like to call to order this morning's meeting of the Surface Transportation Board. The Board is meeting this morning to discuss the comprehensive study of competition and related issues in the freight rail industry recently completed by Christensen Associates and released to the public this past Monday on schedule, the first working day of the month of November when we said the study would be out.

The study is available for downloading from the Board's website. Christensen carried out its study under a contract the Board awarded in September of 2007 following a competitive procurement process.

We engaged Christensen to undertake a comprehensive analysis of a wide range of issues, including competition and capacity in the freight rail industry and the interplay between the two. The Board commissioned this study because of the important role that competitive considerations play in much of the Board's work.

Indeed effective competition is a recurring theme in the national rail transportation policy, the set of principles enacted by Congress that guide the Board's regulation of the rail industry. For example, that policy provides in part that in regulating the railroad industry it is the policy of the United States government to ensure the development and continuation of a sound rail transportation system with effective competition among rail carriers and with other modes.

The rail transportation policy, or RTP, also includes allowing to the maximum extent possible competition and the demand for services to establish reasonable rates for transportation by rail and avoiding undue concentrations of market power.

Every day competitive forces are at work in the freight rail industry as railroads compete against other railroads at other transportation modes, such as truck and barge for customers' business. Indeed the rail shipment of certain types of commodities, including, for example, all commodities shipped via intermodal traffic, the fastest growing category in recent years, is exempt from our rate regulation because of the effective competition available to shippers of those commodities.

Moreover, rail traffic that moves at common carrier rates producing revenues that are less than 180 percent of the variable cost of the move are presumed by law to be subject to competitive forces. A substantial percentage of freight rail movements fall into one of these categories.

This, of course, is not to say that all rail customers enjoy competitive options. Far from it. Many rail shippers do not have effective access to more than one rail carrier or to other modes of transportation.

Indeed in October 2006, the Government Accountability Office, the GAO, expressed concerns over competition and shipper captivity in the rail industry. The GAO recommended that the Board conduct a rigorous analysis of competition in the industry and consider actions to address problems associated with abuses of market power.

So it is altogether fitting that the Board chose to engage Christensen to provide a thorough and independent examination of this important issue. Over the past 14 months, Christensen has not only undertaken significant quantitative research, but has conducted extensive qualitative research as well, interviewing numerous shippers, railroads, and other stakeholders.

Today, we are pleased to welcome two representatives of the Christensen team that conducted the study, Dr. Mark Meitzen and Dr. Kelly Eakin. Dr. Meitzen earned his Ph.D. at the University of Wisconsin-Madison and is a vice president at Christensen Associates. His specialty is amongst other areas is in the cost and pricing analysis area.

Dr. Kelly Eakin earned his Ph.D. at the University of North Carolina Chapel Hill. He is a senior vice president at Christensen and Dr. Eakin specializes in the economic and financial aspects of competitive product pricing amongst other areas.

Dr. Meitzen and Dr. Eakin will first give a presentation generally summarizing the study process, its results, and recommendations. Following that presentation, my colleagues and I will have an opportunity to ask questions and engage in what I expect will be a lively dialogue.

I look forward to this morning's presentation and discussion. And before turning the floor over to Dr. Meitzen and Dr. Eakin, I would now like to turn to my colleagues for any opening remarks that they might care to offer. Vice Chairman Mulvey.

VICE CHAIRMAN MULVEY: Well, thank you very much. I have a few opening remarks.

First of all, I would like to say that I am in the process of following a current fashion here in Washington amongst economists and to start out by saying I was wrong. My error was probably not as great as some other economists' mistakes, but in this case I was wrong because I was originally skeptical about the utility of this study.

I thought that there should be a study more focused on the STB and how we have been regulating over the last dozen years or so and I was concerned whether a broader study overlooking the railroad industry at large was going to add much. And I'm happy to say that I have been more than pleasantly surprised.

This is an excellent piece of work. I don't think the Board could have gotten a better job from Christensen, so I want to thank you all for your work.

I'm especially pleased with, not only the quality of the work, but also the detail of the work. It is very easy to follow what the Christensen Associates has done. People who want to replicate what you've done and check it can do so. Everything is laid out, including all the econometric methodologies of how things were done, and the results. It's just a first class piece of work, so I want to thank you.

And with that, I'll turn it back over to you, Mr. Chairman.

CHAIRMAN NOTTINGHAM: Commissioner Buttrey.

COMMISSIONER BUTTREY: Thank you, Mr. Chairman. Good morning, everyone. The long awaited Christensen Association study competition of the freight rail industry is on the street and I might add that it's so popular it's also available in DVD already, so you can it get it either way.

Those working on the study should be commended for documenting an impressive number of interview responses and producing some very interesting graphic presentations. While I had no input into the study, I have read the Executive Summary and appreciate the effort that went into its completion. In fact, I think it is quite remarkable.

With this in mind and while I have a somewhat captive audience, I thought I might share some purely personal thoughts about the presumed subject of the study. In my humble opinion, the thought of a study conducted to look into the state of competition in the freight rail industry strikes me as almost humorous.

Now, why is that you say? Because in my view to say that there is or is likely to be competition, real classical competition in the freight rail industry, is to indulge in a legal fiction. The fact is that freight rail has become so efficient that it has virtually no effective competition.

So we're presuming to study something that essentially in my view doesn't exist. Only in Washington would we be studying something that does not exist. This is one of the reasons why the Christensen study is so remarkable to me.

We actually have before us a document

whose unstudied conclusion is that the subject of the study does not exist. Are we in New Mexico? The basic conclusions I have drawn from the study are three.

That competition in the classical sense does not exist in the current freight rail industry and when there is market dominance there is the potential for misbehavior in the marketplace. And when there is misbehavior there should be an accessible process to address that misbehavior.

That process resides here at the Surface Transportation Board. In a perfect world, there would be no need for the STB, but we do not live in a perfect world. And as the Austrian economists, often quoted economist, Joseph Schumpeter, warned, "There is always the temptation for monopolies to act like monopolies."

So what is monopolistic behavior? Mr. Justice Potter Stewart was once asked, "What's hard core pornography?" He responded by saying, "Well, it's hard to define, but I know it when I see it."

So when is monopolistic behavior in the rail industry? Well, there are a lot of folks running around town who say they know what it is and they've seen it and someone needs to stomp it out before it spreads, like Smokey Bear stomping out a forest fire.

But they have another name for it and that name is "profit," but profit is not a bad word. How much profit is enough? How much capital investment is enough? How much in dividends is enough? How many dedicated railcars is enough? How much liability limitation is enough? How many customers on the line is enough? How much coal or grain or intermodal traffic is enough?

Do we really want the Congress answering these questions? I don't think so. I think a lot of folks are asking the wrong question. The question is not how do we get more competition, it's how do we get more infrastructure and more efficiency where we need it and thereby get better results for everyone?

So how do we get better results? Well, one answer is this. We have a process at the Surface Transportation Board where applicants can come in and get authority to build a new rail line to compete with existing rail line.

And I can assure you that any entity that avails itself of that process will get a fair hearing. That is not pie in the sky. It is reality evidenced by recent Board actions.

The regulatory barriers to entry are minimal and there are not regulated rates of return like those in other regulated industries. Is that a feasible answer to the lack of competition in the freight rail industry? Perhaps, although the cost is high.

Short of that, I would suggest that the parties who feel they are aggrieved by monopolistic behavior, that is market dominate behavior, would be much better off working together with their rail partners for the common good rather than conducting guerilla warfare, which is just dilutes everyone's financial resources and energy.

But, of course, the problem is that the rail competition issue has been very good business for lobbyists. The patient never dies and it never gets well. On the other hand, I'm beginning to sound like an economist, there is a process in place at the STB.

It is being used and it is working. If you are a shipper that has problems with your rail provider that cannot be worked out through private negotiations, come see us. Of course, if you are happier spending your hard earned money to hire lobbyists to run around pursuing remedies which have virtually no hope of being implemented, go for it.

But if you have the courage of your convictions, which means to me that you actually have an evidentiary case, then file it. In the meantime, we have yet another study. Thank you, Mr. Chairman.

CHAIRMAN NOTTINGHAM: Thank you, Commissioner Buttrey and Vice Chairman Mulvey. I want to now turn the floor over to Drs. Eakin and Meitzen. I look forward to your overview. Take as much time as you feel you need.

If we get to the point where you -- we feel we're losing the, the panel here or the Board members, we'll jump right in. But we do want you to have plenty of time to -- you spent 14 months on this, it's a 700 plus page report last time I counted, so I want to give you ample time to, to give us the highlights.

I'm sure this Board will want to focus in on some of the policy recommendations that you arrived at and related issues. So without further ado, thank you, and the floor is yours.

DR. MEITZEN: Thank you, Mr. Chairman and members of the Board. If we could have our presentation up. It is a somewhat daunting task not only to have done this study over the last 14 months, but also to try to summarize this in a concise manner in the time we have here, so we'll do our best. As soon as we get used to the technology here, I'm sure we'll -- there we go.

We'd like to briefly talk about some of the underpinnings, the economic underpinnings of the study, and then talk about some of the issues that we addressed in the study. So we'll talk some, briefly about some background issues on railroad economics, but then get into the heart of the study, and I understand the interest in our policy conclusion.

So we'll -- we expect to have some back-and-forth on that and we'll briefly introduce that and then, you know, answer whatever you'd like to ask us. And I would also say both Kelly and I would say feel free to interrupt at any point when a question seems to arise, that would be fine with us.

Again, as you said, Mr. Chairman, we were retained to perform an independent assessment of the U.S. Freight Railroad Industry, and among the issues that we investigated were the competition and captivity issues, capacity and service quality, and also an economic analysis of policy proposals.

We had two primary phases to this project. The first being a stakeholder input phase which many in this room are familiar with. We talked to numerous industry stakeholders from all ilks and interviewed in person over 60 stakeholders, also a number over the phone. And also through our website, we obtained a number of emails and participation in the form that we set up.

And I will tell you and I think as I have mentioned many times in other forms, we took everything we heard to heart. We considered everything thoroughly. It influenced the design of our research and I think also we mention in our study there are some issues that did come up that were either outside the scope of our project or daily limitations really prevented a thorough investigation that we think are important and we did note many of those in our study and its conclusions.

Just a background on railroad economics and maybe a way of getting some terminology out of the way that often tends to get introduced in these types of discussions. One of the key factors driving railroad economics is something called "economies of density," which means that as you get more and more traffic over a given network, your costs tend to go down, you become more efficient.

And because of that and the fixed costs involved in the railroad industry, as is the case with many other network industries, pricing at marginal costs will not allow you to cover total costs. So by necessity, prices are set somewhere above marginal cost and by definition price greater than marginal cost is by definition market power.

But market power and the exercise of market power is something different than the abuse of market power, however you want to define that term. Also, I think it's a well-accepted policy and acknowledged by most that are familiar with the railroad industry, the way that you cover total costs in the industry is through differential pricing, different shipping groups, different customers, different commodities pay different markups over their marginal costs so that the railroads recover their total costs.

DR. EAKIN: Okay, so we -- in our analysis, looked at the margin between the rate or what we call the "revenue per ton-mile," and marginal costs are data that we, the data that we used come in this analysis in this particular graph come particularly from Rail Form 1, or known as the "R-1" data.

The top series in this graph is the revenue per ton-mile and that is calculated from the R-1 data and the lower series is the marginal cost, which is estimated from -- it's obtained from an econometric cost function that is estimated for the freight railroad industry.

What we see is the pattern of -- from the period 1987 to roughly 1995, `96, `97 that rates came down, but costs, marginal costs, came down even more rapidly. So what we will see later what is documented in the report is that is the period of time when the so-called, "exercise of market power" increased the most in this industry, but it is also as we will see the time that the railroad was moving up toward what we call "revenue sufficiency," so we're sort of disentangling the exercise of market power and the achievement of revenue sufficiency throughout this report.

What we see in this graph also of the last few years of interest is from about 2004 on the rates, the revenue per ton-mile has taken what we often call "a dramatic turn upward," and that's what I think lots of the shipper community, if not all the shipper community, has felt. We also see that corresponding to that, that the marginal cost has also gone upward.

And so through our analysis, we focused particularly on these last few years because that seemed to be the charge of the GAO report and the assignment that we got is what has been going on in the last few years? Has this been markets operating the way markets operate or has it been a so-called, "abuse of market power?"

So sort of coming to the bottom line conclusions on this, we conclude that recent years rate increases are due to declining productivity growth and increasing costs and not the increase in the exercise of market power. Now, market power is exercise, but its exercise did not increase over the last few years is what we will see.

In the conclusion on the exercise of market power and whether it's remaining constant or increasing is based on the market power index. A classic measure in the economics literature is called the "Lerner Index" of market power or the Lerner Markup Index is also sometimes its name, which is basically the markup of the rate per ton-mile over marginal cost as -- based upon or as the dominator being the revenue per ton-mile, so price minus marginal cost over price is what the economists say.

What we see again was that throughout the last 20-year history is that market power increased most when both marginal costs and the revenue per ton-mile were falling, not the last few years when they were both increasing.

And so in fact the picture that captures it all is on the next slide. And here is the sort of history of the Lerner Index that it increases sort of peaks out in the 1995 period of time then comes back down at the end of the last decade and then slowly climbs or climbs back up for the first few years of the 2000s, but from 2002 on, it is relatively flat.

And so this is just sort of a summary of the finding that it's not the increase in the exercise of market power that has been driving the rates up the last few years, but instead what we further document is that it is the decline in productivity and the growth in input prices.

So the recent declines in productivity growth and -- in productivity growth and the increases in prices are what has led to the recent years' increase in the revenue per ton-mile or the rates that the shippers pay. This is probably reflective of less ability for the railroads to absorb the costs' increases through productivity gains and that's reflected -- it's corroborated by a different data source, which is the upturn in the adjusted RCAF series.

And so the -- what we also see in this period of time is that the increases in average and marginal costs have gone up in these recent years. And we've also seen a little spike in fixed costs and as fixed costs go up that adds the overhead collection burden by the, to achieve revenue sufficiency.

So we see spike in fixed costs, increase in marginal and variable costs, and we also see differences in marginal costs by commodity over time. So just again pictures that sort of verify the statements I just made is here the RCAF-A graph that over the period of time of the -- what is the -- I think this is just the last few years, right? Okay, just from `89, that it declines over the -- till about year 2000, stabilizes, and then in the last few years, the RCAF has started to go up, which is reflective of a productivity slowdown within the industry.

Now, we can go further into that. Is that just reflective of sort of a general slowdown of productivity in the economy? Is it railroad specific? And those are some of the issues that we could go into deeper.

So the way this gets translated as reflected in the R-1 data is by looking at the railroad costs. And here we have, again, three series. The top series is the average total costs, so that is the per unit cost faced by the railroad, the middle series is the average variable cost, and the bottom series is the average fixed cost, so they add up.

And so, again, on this lower series, you can see that spike in the 2004-2005 period of average fixed cost going up a bit and adding upward pressure on the average total cost.

What we see how these get translated into recent trends and commodity rates is that rates and markups over marginal costs vary by the commodity groups and also within the groups, so there's locational differences. We find that there are relatively larger markups for the agricultural commodities.

The sort of big commodity groups we looked at were coal, chemicals, agricultural, and intermodal, but we went beyond that, but those are sort of the big, the big groups. There's been some ability by shippers to adjust to counteract these increases by changing the nature of their shipment characteristics, such as length of haul or car loading, but that's limited and that also doesn't capture the costs that are borne by the shippers to take those mitigating actions.

So I want to make sure that we're not, you know, being dismissive of that that while the shippers have been able to counteract these increases, they probably done so at some cost borne by themselves. However, not all shippers can adjust.

And we do note at this point, and we'll probably come back to it later in the policy and further research recommendations, is that there seem to be some data problems with the intermodal data and that most of the intermodal traffic seems to be lumped into category STCC 46, which is called "miscellaneous and mixed shipments," and probably that can be better separated and some improvements made in data collection along those lines.

The next slide, which is terribly small and difficult to read these numbers, just shows the estimated marginal cost and the markups by commodities. Here we break it out into a 2001 through 2006 time period, but we break into 2001 and 2003 and 2004 to 2006.

We show what the markup index is, the Lerner Index, and we also show the marginal cost, which is adjusted by shipment characteristics. And by and large, most of the markups between the two sub periods, the two sub sample periods, stay relatively stable. There are just a handful that go up and, again, they tend to show up in the agricultural commodities over this period of time.

We then turn to the idea or the concept of railroad revenue sufficiency, which is creating a measure of the revenue per ton-mile divided by the average cost per ton-mile, so this, an index of one or a hundred percent would say that the railroad as an industry is just earning normal profits.

For most years of the study, that is from 1987 to 2006, the Class I railroads do not appear to be earning above normal profits as reported in the R-1 data. Now, these results vary by railroad.

Some railroads do have apparent positive profits. Other railroads have apparent negative profits. And for those interested in the railroad-by-railroad details, the appendix to chapter ten presents the same graphs that we're going to see on revenue sufficiency on a railroad-by-railroad basis.

What we see -- well, what we also note is that our findings using the R-1 data to come to these conclusions is consistent with what we found from our financial market assessment coming from completely different, actually non-railroad more financial market statistics, looking at PE ratios and earnings per share. And we find that the performance over this period of time of the railroad industry as a whole has some similarities to that of electric utilities in terms of their returns.

So, again, the picture of this revenue sufficiency is this graph, which shows that for most years the revenue sufficiency statistic appear, for the industry as a whole, appears just below 100 percent, usually in the high 95, between 95 and 100 percent. There are just a few years where it has exceeded 100 percent, but the most -- the greatest amount by which it exceeded 100 percent, in fact, was the last year 2006.

And so that really raises the question of are we beginning to see a trend, a very strong railroad profitability at this point or was that just one data point? And so we urge you to keep a watch on that and as we will also of what's going on in 2007 and 2008.

So on the railroad, on the railroad sufficiency issue and bringing it back to the market power issue because those are really sort of two separate issues, but they come together in terms of, you know, the regulatory policy that we find that there's been no increase in market power in recent years as revenue sufficiency has improved and that the greatest increase in market power actually occurred in the late `80s and early `90s when the industry was mostly below in trying to achieve the revenue sufficiency levels.

So we put these two curves, these two series together just, and again, this was the same, the top graph is the revenue sufficiency graph that we just had up. It's a little bit more collapsed because of scaling, but it's the exact same curve or the same series.

And the lower graph was the previous graph of the Lerner Index, but we think it's telling to sort of put these up together on the same graph so one can see the relationship between revenue sufficiency and the exercise of market power on the lower series.

DR. MEITZEN: The next area we'd like to talk about is the issue of shipper captivity. Now, certainly comes as probably no surprise to anybody that within commodity groups, shippers with no, or limited transportation options, pay more than shippers that basically have the same shipper characteristics and better transportation alternatives. That's the way the markets work.

But, again, there is a question of, at some point, shippers with no alternatives -- there are two issues. One is how do we really identify them, and the second one is once they're identified, what policies are implemented to maybe mitigate some of the issues that occur from shipper captivity.

So regarding the measurement of shipper captivity, the R/VC ratio, we understand is a statutory measure that's used as the measure to assess whether there is an investigation of market dominance. But our research, one of the things we wanted to investigate is how well do R/VC ratios compare to maybe an economic analysis of market dynamics in terms of trying to assess shipper captivity.

So we took a look at from our pricing models, we had a number of different market characteristics in terms of competitive transportation options or lack thereof and we aligned these with R/VC ratios.

And some of the conclusions that we came to is that R/VC is weekly correlated with market structure factors, the economic factors that would tend to define whether or not a shipper is captive or not.

And not only do we find that it's not a reliable indicator of market dominance from a data point of view, but I guess indications that would tend to say it's not on its own a reliable indicator are things such as from an economic point of view, and I think we'll have an illustration here in a few minutes, is that there are cases where you could pretty much say a shipper was relatively captive when their R/VC ratio is actually less than 180.

So it's not all above 180. There are instances that could be investigated below 180 as well. And then another thing, a table I'll put up here in just a second, shows that we actually found that the percent of traffic going at R/VC ratios below 100, meaning if you take it literally, revenue less than its variable cost are -- those percentages are often greater than the percentages of traffic traveling above R/VC of 300.

So in other words, at both extreme ends of the distribution you have issues in terms of measurement and proper alignment of costs is one our conclusions is regarding this. And just to illustrate that point -- I think I just turned off -- I apologize. I hit the wrong button. There we go.

Again, this may be a little bit hard to read, but the point here is to take from this chart is if you take a look at we've broken down the percent of traffic by both tons and ton-miles for two different time frames from the waybill sample data we had, the 2000-2001 time frame and 2005-2006 time frame.

And at the left-hand side of the table, it's a proportion of traffic with R/VC ratios less than 100. And you can see in the case of the upper table as an example, both in 2000, 2001, and 2005, and 2006, 14 percent of the ton-mile -- of the tons were actually traveling below a revenue less than variable cost figure.

On the other hand, if you take a look at the other extreme, R/VC greater than 300, you'll see 12 percent and 17 percent, so roughly the same proportions of traffic over 300 that are less than 100. And when you convert it to a ton-mile basis, the second, the lower panel, you'll actually see the proportions of R/VC less than 100 much greater.

In fact, three times approximately greater, three to four, two to three times greater than the proportion of traffic traveling above 300, which indicates to me and to us that it's not a very reliable indicator of what we're trying to measure here. In other words, extreme rates over variable cost.

I did it again. Again, another -- I'll just briefly say what this table is about. We can -- you can find this table actually in the Executive Summary. It's a table that said -- we looked at our various economic indicators of competition and captivity.

For example, the distance to water alternatives either at origin or destination, whether or not there was railroad competition at origin or at destination, and we correlated these economic factors with the R/VC ratios. And across the board, these are very low correlations.

In other words, the R/VC ratio, the bottom line doesn't correlate well with when you take an economic analysis of markets and look at what may be constraining rates, whether there's competitive options constraining rates, the R/VC ratio doesn't correlate very well with those types of measures.

Now, we did illustrate also in the Executive Summary, we took the case of wheat, and I'll throw up the maps here and then I think Kelly has some numbers he can expand on this with. This shows R/VC averages by county for wheat shipments. So the very dark areas represent the highest R/VC ratios. And if I had my --

Greater than 300, okay, thanks. I didn't want to pull out my glasses. So you can see just a very few dark spots of, by county where the R/VC ratios are greater than 300. And I think the next, the next darkest color would be between 180 and 300.

So you see some darker areas in the upper plain states, which you might expect where you'd see R/VC ratios greater than 180, but now, if we take a look at our economic factors in the next map, I think we see a very different picture, darker areas there.

And basically what you're picking up there are a lot of, you might consider them insular areas, for example, that don't have access either to a second railroad or to water transportation. And so the economic factors we'd pick up basically a greater measure of -- basically, a relatively greater markup for commodities of wheat originating in those counties.

Kelly, did you want to --

DR. EAKIN: Yes, and we do similar analyses in maps for the other commodities. We find that the wheat, this example was sort of the most obvious example of the disparity between the traditional R/VC ratio and what we would call the market structure analysis.

But we also find similar differences in the coal market. We will note that in the coal market it is the destination as opposed to the origin that seems to be the more relevant market. What are the alternatives at the destination where the coal is going?

VICE CHAIRMAN MULVEY: Can you spell out a little bit how the market metric is calculated?

DR. EAKIN Yes, the -- we did pricing equations to where we estimated, tried to explain the differences in the revenue per ton-mile coming off the waybill sample is what we're using at this point. And we have two sets of variables.

One set of variables is a set of variables that is related to the cost characteristics of the shipment. And the other set of variables is the variables related to what we'd call the "competition or the market structure," such as number of competitors, distance to waterway, and so forth.

From the set of parameter estimates that we get on the competition or the market structure variables, we are able to isolate the impact on the revenue per ton-mile because of the competition variables. Then we are able at that point to, on a county-by-county basis compare how much a county, for a commodities, how much the revenue per ton-mile is marked up relative to the lowest cost or the most competitive county if you will. That becomes our benchmark.

And so then that's what in this picture we have the different color schemes, and so for wheat, for example, the, the fourth quartile are the highest markup, other things the same except for the competition issues it's 87 percent higher than in the more competitive market. For coal, it's 78 percent higher at the fourth quartile. For chemicals, 65 percent higher, but interestingly enough for corn, it's only 13 percent higher.

So those are the -- that just gives you flavor of the type of analysis that's here.

And we can break those, I mean we just broke them into quartiles for right now for presenting here, but in fact, you can, you can draw the line. It's like a assigning grades, you can draw the line wherever the critical point is.

We can't necessarily answer where that critical point is, where does it become a problem, where does it become abusive, or whatever, but that's a judgement that's made, but you can have this method, methods to be able to sort all the counties by commodity and decide where the critical line is to where it warrants some sort of further investigation.

Did that give you -- okay. So, so we do these for the other commodities and find that, you know, there are differences across commodities, but this gives you a flavor for both the sort of differences -- differential pricing across commodities and also the differential pricing within commodities across counties or across different markets depending upon market structure.

I think that's --

DR. MEITZEN: Okay, moving on to other topics that we looked at. Briefly, wanted to talk a little bit about our investigation of capacity constraints. And capacity is a complex issue as it is in most network industries because various measures of capacity and ways of picking it up often don't really give the entire picture of what's happening.

And I guess the best analogy and we use it a few times in the report I can think of just like other network industries, such as communications or data networks, which are composed of switches, routers, and basically fiber optic cable, often you'll have unlimited capacity in fiber optic cable, but you'll find that throughput in the network is constrained by a node where there are switching constraints or constraints on router capacity.

So you've got a lot of capacity standing out there that's being, not being used fully because of constraints or congestion points in the network. And our assessment is, and I guess not surprising, that we find that's the case with the railroad industry. We didn't find, in other words, there was a network-wide or systemwide lack of capacity from a number of different perspectives.

You know, we harken back to the Cambridge Systematic Study, which was put out a year or so ago, where they looked at corridor capacity and they did basically a transportation engineering study of, you know, fairly comprehensive of railroad networks by corridor. And, you know, their findings were that 88 percent of corridor capacity was unconstrained and I think only three percent was near capacity and one percent was over capacity at the current time.

Now, of course, they then went on to say that future may change based on their demand projections, which again, I think we also say that we have to be very cautious of those future demand projections because there are a lot inherent assumptions in those projections that it's not clear that demand will ever reach the state that was presented in that study.

But, but looking at from both that engineering perspective and also we did some econometric work with our R-1 data that basically looked at the contribution of capital, its value versus its cost, and we found that overall the, the value of capital and there was no incentive for widespread network-wide investment in the networks because of, of what we found from our econometric study.

So, so basically the bottom line was if you look at it just globally, you'd say that there's capacity there, but then the real question is the capacity all in the right places? So it's basically a location-driven issue.

And the one thing we could do to investigate that issue somewhat is to look at terminal dwell time data to identify congestion points within each of the R-1's networks because the RPM data, which is collected, the Railroad

Performance Measures data, which is collected by the R-1s and they have a separate railroad performance measures website that has weekly data.

And we were able to obtain that data going back to the beginning of that series in 1999 through 2007, and looked at various measures of terminal dwell time. And what we found were that in like the 2003 to 2005 period, across most of the seven Class Is, there were spikes in terminal dwell time occurring during that time period.

In fact, the similarities between the western railroads in particular, BNSF and UP, remarkably similar patterns as you might expect. And not only that then we pealed back from the overall dwell time and looked at individual terminals and found out that there seemed to be for each railroad key congestion points in each one of the networks, which again, lends evidence to the fact that, you know, what's really the issue are these nodes in the network key points that can cause systemwide issues.

Now, sometimes we're not -- that begs the question, well, what's causing the increase in terminal dwell time? Again, that could be a multitude of factors. It could be outages in the network someplace.

Like that happened in the Powder River Basin in the 2004 or `05 time frame. It could be weather-related issues, and then things just get backed up at certain points in the network.

But nonetheless, I think the bottom line and two things, two conclusions is that these are localized issues. It's not a lack of overall network capacity that's occurring here, but then I think the second thing that we found is that these periods of capacity tightness were not related to an increased exercise of market power to kind of tie it back to one of the global questions that was on the table, are somehow capacity constraints and the exercise of market power linked somehow?

And we didn't really find evidence that either capacity was being manipulated to enhance market power in any way from what we saw. But then I think the bottom line is it certainly did have an impact on service during that time because one of the things that we also did if we move on to the next, actually skip ahead, we looked at service quality and capacity issues.

And, again, the rail performance measures also have some information on train speed, which is a rough indicator admittedly of service quality, but, you know, it is what it is. And what we found is a fairly high correlation between terminal dwell time and service performance based on these measures.

And we would suspect that if you had better measures of service performance that you would be able to corroborate these findings and show that, you know, the capacity obviously did have an impact on service quality over this time frame.

The one thing that we were able to do

with the train speed data, they have it broken down by various types of, types of trains, intermodal, multilevel, grain, manifest, coal. And, you know, to no ones' surprise, multilevel and intermodal are the fastest services.

But they did also from `99 through 2005, have the greatest decline in average speed. And one of the reasons may be partly due to some large scale construction projects that were occurring during those time frames. But then the other thing we did with the data were to look at variability in speed because, by type of train, because one of the things we heard a lot from shippers that we interviewed is, you know, service standards are one thing, whether it's five-day service, eight-day, or nine-day, that's one thing, but what really was more of an issue for shippers was the variability of the service.

In other words, it was one thing to promise a five-day delivery and that would be fine so that everything could be planned around that, but if there were, you know, turned out to be seven-day one time eight-day another time or four-day another time that was a bigger issue for shippers.

So we looked at variability of train speed as well by these various types. And what we found, again, maybe not surprising, the lowest variability tended to happen was intermodal. It was the most consistent of the services.

The greatest variability were with the grain and the coal. So from the R-1 data that's what we were able assess. Now, I think we put in the report and as I think we've alluded in some of our previous preliminary findings that we've heard from stakeholders and members of our advisory panel that there are probably better measures out there for service performance that either the railroads keep internally or shippers keep internally and some process of trying to get better reporting of data on service quality I think would be something we would recommend.

And, in fact, I remember when I was here for one of the meetings, and I can't remember if it was RETAC or RSTAC, at one time there was a subcommittee looking at service reporting requirements and what could be done. And I think we would say that those are probably worthwhile endeavors to pursue.

The final thing we'd like to talk to you about are some of our findings on the analysis of various policy proposals that have been recently forwarded for public discussion. Our starting point for this analysis was to look at what the GAO had said about various policy recommendations.

In other words, which ones had they laid out as potential things that could be done to enhance competitiveness of the railroad industry, things like reciprocal switching agreements, terminal agreements, trackage rights, the requirement to offer bottleneck rates, improvements in STB processes.

So we took that as our starting point and then we also looked at currently proposed, or recently proposed legislation to see what was being offered or being proposed in the various bills before Congress. And our job, again, was not to basically advocate one policy or another. It was to perform an economic analysis.

And from an economic point of view, from an economic efficiency point of view, try to analyze what were more favorable policies from an economic point of view, maybe point out what some of the distributional issues were, but not to say one was better than another.

So one of our major conclusions, again, based on the findings that Kelly reported a little while back on revenue sufficiency is that because of the status of the industry as of 2006, basically providing any kind of significant relief to one group would imply increases for other groups or threaten railroad financial viability.

Again, the caveat here is whether or not that increase in revenue sufficiency that Kelly pointed out for 2006 is a start of a new trend and it's something to keep an eye on.

Overall, our assessment is that incremental policies, and by that we mean not wide scale changes to railroad regulation, but incremental policies would have a greater likelihood of resolving shipper issues with a lower risk of adverse consequences.

For example, of the policies that have been proposed, the ones that tend to fit the bill here would be things such as reciprocal switching agreements and terminal agreements, and also keep improving the process at the STB.

Now, one thing that some of these policies may also benefit from is that to the degree that they can improve competitive responsiveness in the industry, in other words, actually enhance competition, it may actually expand the size of the pie that we're talking about here.

In other words, there may be from a distributional point of view, it may not be necessarily winners versus losers, but there may be gains for all parties in these policies. But

I think that we recognize that not all shippers will benefit from greater competitive options.

It's a case where some shippers are going to be captive regardless of whether or not there's greater competition among railroads or if other modes of transportation exist or not. And so in those cases, continued oversight will be necessary to protect those shippers.

One of the things that we did in our Executive Summary and also in chapter 22 of our report was to basically have a scorecard of various open access proposals that had been forwarded by various parties. The four being reciprocal switching, bottleneck rates, terminal agreements, and trackage rights.

And the way we came to our conclusion at the incremental policies, such as reciprocal switching and terminal agreements, would be, have the greater likelihood of resolving shippers at the lowest risk of adverse consequences was to basically go down the checklist of various economic aspects of these policies and ask the question, what would be the likely effects of these policies as they relate to, for example, economies of density, which would affect railroad efficiency, length of haul economies, what we call "vertical economies."

In other words, separating the operations from, train operations from the maintenance and operation of the roadbed, railroad investment incentives, railroad profitability, the coordination costs between railroads, and the likelihood of competitive responses by other railroads if these policies were implemented, and also shipper gains from these policies.

So based on our assessment of these factors that's basically how we came to our conclusion that these incremental policies basically create the least economic distortions in the system and also provide the greatest hope for shippers through competitive response in our opinion.

And I guess the other thing I would

add that's not on this chart, but that certainly is a key consideration is that in any of one of these proposals that deal with open access you have to deal with some kind of access charge. In other words, whether it be trackage rights, reciprocal switching, or any of these, what are you going to charge as the landlord to others to come in to use your facilities?

And the experience of other network industries with this and also with the railroads has been that this is usually a very thorny problem. Again, harking back to my telecommunications experience, you know, since 1984 when the telecom industry was first divested from the old AT&T days, which amazing how it's kind of reformed in recent years, but access charges have been an issue of contention since 1984, and also when they opened up networks to competition was the 1996 Telecom Act took a few Supreme Court cases to try to resolve these issues, so, so it's not an easy issue.

And, again, the more aggressive of

these policies, our opinion is that it's going to become a greater issue.

DR. EAKIN Okay, so then we conclude our study in chapter 23 with a discussion of future directions. And here we just list them and I think it might just be the easiest to just now open things up to your questions either on the future directions or further clarifications or other questions.

CHAIRMAN NOTTINGHAM: Thank you. That was a very thorough overview. We appreciate that and certainly some stimulus for questions. I've got a few and then I'll stop and let my colleagues ask some and then I'll probably come back and ask a few more.

First, I think it's important, we have the benefit as commissioners of having good staff, excellent staff, who have been able to help brief us, answer our questions about this study in the last couple of days. Some of our guests may not have that benefit and it's been a busy week with other minor matters being resolved around the country, and so they may not have had the time that we've had.

Some of my questions will be things I think I already know the answer to, but I want to make sure we get out sort of on the record so we all understand -- and a lot of it will go just to make sure we understand the data and the approach.

Maybe it would help to maybe start off with, you know, a more general question, the term "competition" does get used in different ways in economic circles, sometimes it's used a little differently in policy circles, and then really differently in sort of what I call "political/advocacy circles."

And I want to hear you as two distinguished economists just really elaborate on what you define as, you know, what is competition, competitive forces, you know, when you started this study, what -- how did you kind of circle that and define what you were looking for as you looked at the issue of competition?

DR. EAKIN Well, I'll start and say that competition in my mind is the, the structure of an industry where the producers or the sellers in the industry are sensitive to what others who are also selling are offering for a price so that there is some check on their behavior because there's an alternative that the customer can go to.

And so within the context of the railroad that would include both other alternative railroads that the shipper can go to and other alternative modes of transportation that the seller, I mean, that the shipper can go to. So it's mainly the sensitivity to recognizing that the customer either does or does not have those alternatives and the degree to which they do have the alternatives. It's not a all or nothing type of concept.

DR. MEITZEN: Yes, I would add to that part of your question was, well, how did we view this concept coming into this study, is that I think everybody knows the railroads are a very capital intensive industry where the textbook Econ 101 example of atomistic competition if you will hundreds of firms competing for the same customers is not going to happen.

So, you know, there's this realization I think that competition can be effective, but it doesn't necessarily fit the textbook case of what people learn in Econ 101 either.

DR. EAKIN: And so just to follow up on that, the implication of that reality is that, in fact, the price in a competitively operating network industry may exceed marginal costs by necessity, which pulls back in the revenue sufficiency issue.

CHAIRMAN NOTTINGHAM: Okay. You did some comprehensive historical research and, into the background of railroad regulation and economics, which was helpful in the report.

Did you come across anywhere in ancient times or more recent times that, especially in more recent times, that U.S.

Regulatory Policy has as a major focus guaranteeing a certain number of railroads in every community as the, sort of the magic goal that we want to get to, each person has at least two, two or more alternatives for rail service, easily accessible?

DR. EAKIN: I -- I don't recall ever seeing that as a criteria and I would say it would probably go against the sort of efficiency criteria to mandate anything like that.

VICE CHAIRMAN MULVEY: I think in the pre-1920s, before the Act of 1920, there was a policy of enforced competition --

DR. EAKIN: I was a young kid then, right.

VICE CHAIRMAN MULVEY: Since -- well, Doug and I recall these days, but since that time policy has really backed away from the enforced competition strategy.

DR. MEITZEN: But you know the one thing about that, it's kind of a side issue that I think we allude to in the study and I think it has implications for what the Board is weighing now with your common carrier obligation deliberations is that in a lot of industries, and I think we point this out in our chapter three of our study, when we look at other network industries, is that there are things called "universal service obligations" in some industries like telecom, electric, postal, that have certain implications about serving everybody at, in some cases at the same price.

And, you know, that's one kind of an obligation and I think in many cases there's a fine line between what is the railroad's common carrier obligation versus this idea of a universal service obligation. And I think, I think it's a very important issue, but I think it's one that's not very easily resolvable.

CHAIRMAN NOTTINGHAM: Just kind of getting back to my line of questioning, the -- so it seems to me when you embarked on the study, you probably didn't embark on it looking as a quest for trying to identify the proper number of

Class I railroads that ought to come into existence. We have about seven now.

Some people around town speculate that if we just have, had a lot more if past decisions by past Boards about mergers and stuff had been decided differently, there would be a great -- greatly improved competitive landscape out there.

Is that, was that the quest you were on to try to identify the right number if we just had instead of seven Class Is, ten or 15? Anything in your research that would lead us to believe that that's the goal we should be chasing?

DR. EAKIN: No, that was not the quest we were on. We were looking at particularly the recent years and whether the increase in rates was a reflection of increase in the exercise of market power or whether it was a reflection of changing market conditions and the response of a, you know, so-called "competitive industry."

You know, we could probably gain some insights by looking at the data that we analyzed as to whether mergers in the past appear to have had one effect or another, but we did not, that was not our charge as a thought.

DR. MEITZEN: Right, yes, it wasn't a charge to say X is a number of optimal number of railroads, but, but I think you can also look at things such as, we talked about before economies of density and, and basically the economics of, of the cost structure of the industry and kind of get at it, at it that way in terms of from an economic efficiency point of view.

And I think that also has implications for whether or not competition would really work or not in terms of the number of the effective competitors. In other words, what, what would be the economic properties, the cost properties, of these competitors, and would there be efficient competition or not? So I think, I think there are some implications that you could get out of the study in that regard by, by looking at, at those types of factors.

CHAIRMAN NOTTINGHAM: So it seems to me if we're looking at a market in an industry that by design and by regulatory and statutory design and oversight was never intended to guarantee multiple options for rail service in every community around the country, but also put in place in federal statute and regulation a number of priority considerations referencing competitive, the importance of competition and competitive effects.

We got to look for indicia of competition. We got to look for market forces. Substitutions, right, substitutions to that very basic notion that the first thing you look for when you're looking for competition is where's the guy next door selling the same thing or is there one?

If there's not, okay, let's look deeper than that. That's why we have economists. And that gets me to marginal costs versus total costs. Could you just give us a little bit of

Econ 101 or 102 about the distinction between marginal costs and total costs?

DR. EAKIN: Sure, the total cost is sort of adding up all the different costs associated with providing a service for however much is provided. The marginal cost is the cost of providing that last unit of service or the next unit of service.

And so the marginal cost is the concept that's connected to the, or is the major that's connected to the concept of economic efficiency having priced the equal to marginal cost is saying that the social value as represented by the price of the last unit just equals the opportunity cost to society of allocating resources to producing that unit.

The total cost comes more into play in terms of is the industry sustainable at the end of the day in that are there revenues? How do their revenues stack up to their costs? So one deals with sort of the sustainability in terms of making adequate profit. The other one deals with efficiency in terms of how the value of the good being produced relates to the opportunity cost of the resources to produce that good.

CHAIRMAN NOTTINGHAM: And turning to revenue sufficiency, how would you define that? What do you, what do you look for if you're looking for whether an industry is revenue sufficient? It's --

DR. EAKIN: Here we introduced that term and we, and we sort of steered clear of trying to -- there's another term out there in rate cases at revenue adequacy, so we were trying to steer around that just because we don't, we don't want to say that that's what we were, you know, weighing in on.

CHAIRMAN NOTTINGHAM: The questions steer around that too, but --

DR. EAKIN: Right, okay. But on revenue sufficiency, it's basically, are the revenues for the industry as a whole, how do those compare to the cost that the industry incurs, the cost as a whole?

And so from, for the graph that we put up showed for the industry as a whole sort of that it's been hovering right around 100 percent or that revenues just equal costs, which would translate into sort of normal industry profits.

But, again, I stress that that can differ on a railroad basis and you'll see those differences if you look at the individual graphs in chapter, the appendix to chapter ten. But, again, to answer your question, it's the, it's the revenue versus the cost. If revenues are greater than costs, the revenue is sufficient. If revenues are less than cost, it's revenue insufficient.

CHAIRMAN NOTTINGHAM: And then how do you factor in some allowance for profit, for reasonable profit, or however someone might define as reasonable profit, but enough, you know, enough to track capital and that kind of thing?

DR. EAKIN: In the measure that we

use, there was a sort of fixed cost or a fixed capital cost component in there, and so there's an implicit return on, or an explicit return on investment on the capital stock. And so as long as that sort of payment to the capital stock is covered along with the payment to the variable factors, like labor and materials and so forth, it's -- that is part of the, the -- that payment of the capital is the sort of normal return to investment.

CHAIRMAN NOTTINGHAM: There seemed to be in your data some interesting correlations or maybe the opposite of correlations between the rail industry approaching some level of revenue sufficiency and how shippers are treated rates and market power, market dominance, or evidence, it seemed that looking at one of your, or more of your tables, that in years gone by when the railroad industry wasn't quite as close to so-called, "revenue sufficiency," there may have been more exercise of market power being imposed.

Help me understand how that would

sort of loosely in, you know, non-economic circles, people figure, oh, well, if the railroads have had a few good years that means that it must be more likely to be flexing their pricing power compared to when they were losing money or laying people off, etc.?

DR. MEITZEN: Well, I guess the best example of that going back to the graphs that compare the revenue per ton-mile to marginal cost is that period up till the mid-1990s where both the revenues, the revenue per ton-mile, the price, and marginal costs were falling. But marginal cost was falling by more so that the margin between price and marginal cost, in other words, the measure of market power was actually increasing because, you know, for lack of a better term, prices were more sticky in the downward direction.

They weren't following lockstep declines and marginal price, marginal cost I should say. But, again, the context of that is that at that same time, I mean revenue sufficiency not only accounts for what's going on with marginal costs, but you've got a lot of other non-marginal costs namely your fixed costs and your returns to your factors of production, capital for example, that go into covering your total cost.

So at the same time while their market power is increasing, in other words, there was a wider divergence between price and marginal cost. They were still not able to cover their total cost and that's, you know, what Kelly was talking about before.

Once you move off of that perfectly competitive ideal of hundreds of firms competing in a perfectly competitive market, price at marginal costs no longer allows you to recover your total costs. So, so in any event regardless of whether we're talking about railroads or electric utilities or telecom, you're in what's known as a second best world.

You have to figure out a way where you don't deviate as much from the ideal of price equals marginal cost to cause too many economic dislocations, but yet you have to allow the firm somehow to sustain itself.

CHAIRMAN NOTTINGHAM: And it occurs to me you need to have, account in some way for an industry when you're looking at revenue sufficiency in any industry for that industry's sort of investment requirements and its only capital and infrastructure, for example, whether or not there are any mandates, for example, in law to invest in new technologies, deploy new technologies, the deadlines, all those variables I guess would go into would occur to me to kind of the cost of doing business which then of course impacts whether or not one reaches revenue so-called sufficiency.

DR. EAKIN: Yes, it would, it is in there. We, you know, are I guess somewhat presuming that they are choosing cost minimizing technology, but if they were mandated to do something that they wouldn't do if the railroad was mandated to make investment that it would not make otherwise, it would still be captured in those data.

And the calculation revenue sufficiency would still be that there would be a capital cost associated with that mandated investment that shows up in the data that if that is covered along with the other variable costs, well, then if the revenues exceeded that they would be deemed revenue sufficient.

CHAIRMAN NOTTINGHAM: Let me pause there. I have more questions, but I wanted to let others have an opportunity. Vice Chairman Mulvey.

VICE CHAIRMAN MULVEY: Thank you. It was an excellent presentation and I want to commend you again for an excellent study. I have a few questions. First of all, on the notion of economies of scale, I'm glad that, unlike times when we've had people unable to distinguish between economies of density and economies of scale, your report makes that distinction very well.

You seem to trace that the economies of scale that have occurred recently are really due to the change in train distance, the length of haul or average length of haul, but you note in chapter nine that that seems to be tapped out. And the econometric results suggest that this industry, as well as individual railroads, is achieving constant returns to scale and there really don't seem to be any more economies of scale available.

Is that an implication for future mergers, do you think?

DR. EAKIN: Yes, economies of scale are a central concept for merger analysis. We didn't go and directly make statements to that effect in this study, but if there, you know, if there are, were strong economies of scale, that would be an argument, an efficiency argument in favor of a merger to the extent that there's not evidence of strong economies of scale there would not be that efficiency argument.

VICE CHAIRMAN MULVEY: Well, as you

know, the Board recently, or not so recently now, reformulated its merger guidelines where we need to have positive public benefits in order to approve mergers of Class Is at this point, major Class Is anyway. And obviously, one of those benefits would be economies of scale and absent those from the econometric analysis then it does make the idea of further mergers down the line more difficult to envision. Would you agree?

DR. EAKIN: Yes.

VICE CHAIRMAN MULVEY: One of the things I was interested in is on the Lerner Index that you had on the chart going back to 1987. The Lerner Index back in 1987 seems to be around 12.5 percent, that does seem to be awfully low.

If you look at it, you could say, "Well, my God, given where it's coming from, it almost looks as though if you extrapolate it backwards, which is not always a good idea, but you would wind up with the railroad industry in the early `80s looking like perfectly competitive firm," and that's obviously not the case.

Do you have any reasons or any explanation as to why the Lerner Index was so low? Abba Lerner, by the way, was my professor Berkeley for microeconomics a long time ago, so --

DR. EAKIN: I'll watch what I say. Yes, I don't know absolutely, but I think, I mean, this isn't econometrically-based function and 1987 is that sort of the far end of the data, and so I think a lot of this is sort of, some of it is that the fit of the cost function itself from which this curve is derived is not as statistically strong at the tail end 1987.

And a lot of that's driven by the fact that you had lots of smaller railroads that were just in the data for one or two years that the sort of cost function estimates if you get down and the econometrics really stabilized starting in the `90s. So I think a large, I think there's a wide variance around that, so I'd just leave it at that.

VICE CHAIRMAN MULVEY: That leads me

to another question on data needs. You guys have mined a lot of data recently, you used the waybill sample, you looked at some of the cost data that the Board collects. And I was wondering if in your analysis that you found large gaps in the data, in the data bases that should be filled.

One of the things about deregulation is that deregulation did lead to a reduction in the amount of data reporting on the part of the railroads and this is true of all deregulated industries. That's a cost to those who continue to still need to regulate and to analyze these industries.

Did you identify any particular data series that might be useful to require again, especially since there's legislation in the Congress now that's going to look at the STB and the railroad industry and might in fact require some more reporting of some of these key data series?

DR. MEITZEN: Well, I think, I don't

know if I'd say again, but I think as I mentioned before, anything that can be done to collect better data on performance and service quality related issues I think is going to be really important because going back to what we heard in our stakeholder interviews, a lot of, a lot of shippers were concerned about the service quality they were getting.

And quite honestly, one of the things we heard is there seemed to be a correlation between service quality and inverse correlation if you will between service quality and rates. We're paying higher rates and we're getting lower service quality, things like that.

Now, those are certainly important issues to investigate, which, you know, is another aspect of whether firms are behaving competitively or not. Is there, is there enough competition to ensure proper service quality? But those types of issues were largely, you know, reported in the statements we received, but empirically there was no real way of investigating it beyond what we could do with the rail performance data.

DR. EAKIN: And on that particular set of data on service quality, you know, we've got pretty strong indications that the railroads do collect that information, so it's more of a reporting rather than reporting going out and having to collect something new. It's more collecting, I guess is what I'm saying.

VICE CHAIRMAN MULVEY: Well, the Board is looking at some of its data series, including the uniform system of accounts (URCS) to see whether or not that needs to be updated. I mean, some of the relationships that are used in URCS date back to the 1920s.

And obviously it would certainly help to improve those databases, albeit it's a big and expensive job. So we'll have to see whether or not the money is going to be available to do that. But clearly better data lead to better analysis and you guys did an excellent job with what you had.

I did notice that, for example, the Lerner Index for intermodal was negative, which is extremely difficult to understand.

DR. EAKIN: It is.

VICE CHAIRMAN MULVEY: But having said that, you also point out that the data that we have on intermodal was so broad you don't really know what's being carried in these boxes and, again, it might be useful if we could get more detail as to what constitutes intermodal shipments.

DR. MEITZEN: Yes, in fact, that was going to be the second, what I was going to mention off the top of my head is there were these issues in intermodal and I think we have some ideas of what was causing it and it has to do with what's reported in the waybill sample.

VICE CHAIRMAN MULVEY: The chart that you have at the end of the report where you have four proposals and show how they would affect various things like railroad profitability, coordination, etcetera. Now, that's not based particularly on an econometric analysis. That's based upon your knowledge and your thoughtful assessment of these impacts as opposed to being derived from any of the analysis done in the prior chapters, correct?

DR. EAKIN: By and large that's correct. I mean some of it we do draw from like on the economies of density type of stuff does, has some basis to the econometric function that's estimated in, in chapter nine, but no, a lot of this is qualitative theoretical.

DR. MEITZEN: Well, and also based on the results of other studies that we review.

DR. EAKIN: Right.

VICE CHAIRMAN MULVEY: One other thing and that is you talk about the negative productivity gains that we've had in recent years and you point out the possible reasons for that why productivity growth has slowed down.

You mentioned also the sizeable capital investments that the railroads have made recently and that maybe we will see those come to fruition and see those pay off in the near future. Would you recommend that five years from now say we go back and look at this again to see whether or not that is indeed the case?

DR. EAKIN: It would satisfy my curiosity, yes.

VICE CHAIRMAN MULVEY: Yes, it does because the railroad productivity gains were substantial following Staggers. And, in fact, I think some analyses show that railroads achieved more productivity gains than virtually any other industry for a while, but those seem to have slowed down.

DR. MEITZEN: Yes, and I think, you know, there's a couple things going on there. I think there's always a cyclical component to productivity and a lot of it has to do with the interaction as you point out between investments and when they pay off.

But then I think a lot of what happened after Staggers II was, a lot of it was one time. So the question is what's the real long-term trend? And I don't know if we've really seen it yet.

VICE CHAIRMAN MULVEY: You know, there were certainly major gains following Staggers as railroads were given freedom to do things they would have done if they could have beforehand. You also discuss the Cambridge Systematics Study and the forecast of the demand from rail services. This is brought up all the time that the demand for rail traffic is going to quadruple, quintuple, or what have you in the next few decades, and yet, absent sufficient infrastructure, that really can't happen.

You suggest that there's still a lot of capacity out there and that, that there's really bottlenecks in that capacity and that if we focus our investments on those bottlenecks, we may have the capacity to handle much of this expected growth. Is that a fair assessment?

DR. MEITZEN: Well, I think partly yes. I think the other part of that is how will those demand projections come to fruition? And I think that's a big question mark as well because I think there a lot, as I said before, there are a lot of assumptions that go into those and, and I think they're not always based on looking at economic reactions or incentives to various phenomena.

So I think critical analysis of those, as we put in our future research considerations, one of the areas is critical evaluation of these future demand projections.

VICE CHAIRMAN MULVEY: To often these projections are sort of straight lines assuming that tomorrow is going to reflect yesterday.

DR. MEITZEN: Yes.

VICE CHAIRMAN MULVEY: And I'm obviously already seeing changes in overall trade flows and these could continue, this could reverse themselves, and there were other things that could happen which could totally change the whole flow of logistics in this world and that would affect the demand for rail service, so thank you.

CHAIRMAN NOTTINGHAM: Commissioner Buttrey, questions?

COMMISSIONER BUTTREY: Thank you, Mr. Chairman. When you get down to the last commissioner it seems that most of the good questions have already been asked, but I dare say all of us in the room have a favorite political cartoon that we remember from some point in our life or our college years or whatever.

I remember one that was particularly fond of that showed a picture of Teddy Roosevelt with a huge club in his hand and he had it cocked back over his shoulder. Somebody shaking their hand out there, they seem to remember this one too, he's shaking his, he's got it cocked like he's a baseball player, he's going to hit something with that club.

And in front of him is this really ferocious looking lion looking character animal and written across the back of the animal is the word "monopolies." And he's got this big club drawn back like he's going to go after this, this roaring lion as it were.

I've always thought that was a really interesting and telling political cartoon. I thought of that cartoon while I was reading through your study. And I want to assure you that my opening comments today was not designed to cast any poor light on your efforts and your work because obviously you put a lot into this and I agree with the other Board members it is, it is a revealing document.

I just don't have much like of studies. In any case, I think we'd be better off if we were building things rather than studying things, but anyway, I'm just looking for maybe one takeaway from this, from this study.

There are probably several takeaways, but I'm looking for one in particular. And I know I'm going to ask you to do something that you really don't want to do probably, but you can take a shot at it and get as close to it as you can.

I seem to conclude from, from your

study that, that while you may not agree with me that the railroads are monopolies, that's an argument for another day possibly, but anyway, I'm looking for some thoughts from you on whether you think there is misbehavior if you will in the marketplace with respect to the rail industry and its customers.

And I seem to takeaway from this study that you don't find any particular grievances in general with respect to that issue. Now, maybe I read this study wrong and if I did you need to point out to me where I missed the point.

But what my takeaway is is that you don't really see any grievous behavior of a monopolistic traditional classical monopolistic style behavior based on your analysis. Can you speak to that as eloquently as you can and give us, give us a takeaway on that? Both of you --

DR. EAKIN: I'll start and say that, you know, there are two phases that we repeatedly saw or that come to mind. One is an abuse of monopoly power and the other one is fair price. And it is difficult for an economist doing economic analysis to define what is an abuse or what is fair or not fair and that's really a policy decision.

What we have tried to do with this study is inform that policy decision as much as possible so where one draws the line and says, "Over this line it's an abuse if a particular, you know, customer is, faces a markup more than a certain amount where that line is drawn we can help you determine, you know, how often that happens and which customers and which places and which pockets that happens at."

But drawing that line is something we don't do and it's not an economic conclusion. The fairness conclusion is a policy type of conclusion. So while you may, you know, have said the takeaway that you come away with is that we did not say that there was any evidence of abusive behavior that's because it's a hard thing for an economist to define and conclude on because it's a fairness concept, not an economic analysis concept.

It doesn't mean it's not there, but it's not our judgement, it's not our place to make the judgement that it's there. In fact, I would say that our study offers ways of however you want to define abusiveness of detecting it maybe better than the ways that are out there right now.

So I think we recognize there are rates out there for relatively captive shippers that are much in excess of rates for similarly situated shippers who have alternatives and I think we do point that out. But, again, I would echo Kelly's sentiment that whether that's right or wrong, it's really not our call.

We can help you identify and point those out, but it's really a policy decision as to where that line is. And I think again it gets beyond rates. Are there issues with how shippers and railroads interact with one another that are indicative of maybe not enough competitive pressures on the railroads to provide good service, for example?

You know, those issues I think we try to highlight where we could, but empirically we, we didn't have the data to really investigate it thoroughly how that connection may work.

And let me throw one more thing in there is that we do recognize that there are shippers due to their characteristics whether a lot of them are geographical characteristics that are inherently more vulnerable to higher prices, whether that's abusiveness or not is a different question, but, or, you know, not the judgement we're going to make, but that there is a vulnerability there that we can detect and recognize and to the extent that one is interested in protecting those who are vulnerable in that situation we can help you sort of see where those pockets in those particular instances are.

COMMISSIONER BUTTREY: You use the terminology "market structure" in some of your graphics. Would it be accurate -- would it do any damage to your analysis or your data graphics to substitute for market structure the term "captivity?"

DR. EAKIN: The reason we would probably resist doing that is because captivity is, is sort of determined by those structural characteristics and it's, and it's, again, not a clear point to where, where captivity is yes or captivity is no, but it's much more of a continuous variable or measure or concept.

So, and captivity also may carry connotations that mean different things to different folks. It might confuse the issue more, so I mean that's, I mean we deliberately chose structure to avoid the use of it, but --

COMMISSIONER BUTTREY: Captivity is kind of, you know, emotionally charged word.

DR. EAKIN: Right, that's what I'm trying to say.

COMMISSIONER BUTTREY: Going back to your economies of density concept, economies of density actually comes to a point where it actually hits a wall, does it not?

DR. EAKIN: It appears to. I mean the -- that's an empirical question, but yes, the empirical answer seems to be that, that economies of density do get exhausted.

COMMISSIONER BUTTREY: So you get into a situation where you become very efficient and more efficient and more efficient and more efficient and all of a sudden you find out the next day you're less efficient because you're trying to put more and more density on a, on a defined and limited infrastructure.

DR. EAKIN: Eventually, the sort of, the fact that things are getting more crowded on the system that cost, which is always increasing as you put more traffic on the system, that eventually outweighs the economies from, from putting that more traffic on the system.

So sort of a, it's at a margin where the last unit eventually adds more to congestion than it does add to the efficiency.

COMMISSIONER BUTTREY: Would you agree with the, with the idea that the quickest way, the best way to get better results for everybody is to have more infrastructure in the right places?

DR. MEITZEN: I think generally yes, we agree with that.

COMMISSIONER BUTTREY: Maybe that ties in with the stimulus package, Frank. Well, I think, I think that's, that's all the questions I have at the moment.

VICE CHAIRMAN MULVEY: I just wanted to follow up on one thing you talked about, a fixed network and if it gets overused eventually you begin moving up the short run average cost curve, but as you said before, if the industry indeed is experiencing constant return to scale then one can invest in infrastructure to expand the size of the capacity and still keep unit costs around the same, correct?

DR. EAKIN: Yes.

CHAIRMAN NOTTINGHAM: I'd like to

follow up on that too because as someone who's worked in the area of infrastructure policy for a number of years, I would like to think it's my first instinct to think that if we could just get additional infrastructure at all locations where it's desired, problem solved.

But when I read your report, when I go to school on the little more of economics, I get a little different impression that, in other words, if you look at impact on the industry and making attractive to go into the rail industry, if you were to magically, if the government were to come in or someone else were to, through policy incentives actually achieved the outcome of additional rail infrastructure at all locations where enough people, there's a certain threshold of customers desiring that additional infrastructure.

What does that do the, to the market as we know it today? And -- because there's some history for that in our country. We're just coming, you know, we're at the end of an era of it's still petering out, but, you know, a lot of abandonments, a lot of lines that crisscrossed America that are no longer in existence and presumably that's for a reason, but can you expand on that from an economics' perspective?

DR. MEITZEN: Well, I think it's partly economic and partly behavioral. Again, from some of the feedback we received to kind of expand on your point of after the experience of decades of downsizing and shedding what appear to be excess, most of, from what we understand at least, an opinion that was expressed to us is that railroads were used to cutting costs and looking for ways of shrinking networks to make them more efficient.

So it really took a shift in mind set than to say "Well, maybe we're at a level now where we have to start thinking the opposite direction." So, so in one respect, it can be just as much of a mind set as it can be the economics of the situation.

So, so I think some of that probably

one way or another factored into maybe you can look at this as some kind of a transition phase. In other words, one way of looking at capital investment, it's a lumpy investment and especially in an industry that's as capital intensive as the railroads.

I mean once, I mean, it literally is sunk investments once you put it in. And so under those situations, often times you're almost accidentally at the optimal level. I mean, by accident either have enough, but typically, it'll either be too much or too little depending on where you are in your investment cycle.

So it's, it's actually a lot of skilled forethought and planning I think that goes into these things. And from what our understanding is that that's one thing a number of railroads have been working on over the, intervening years is getting better at their abilities to identify areas where capacity is needed and, and to employ the proper techniques to, to make sure that investment gets deployed efficiently and not in haphazard ways like maybe once was done, and that we're basically seeing the legacy of that now.

CHAIRMAN NOTTINGHAM: Thank you. I wanted to revisit the table on page 18. I don't know whether, how hard it would be for you to pull it back up, but I've got it in front of me, so I don't need you to myself, but it might be helpful to everyone else in the room.

This is the one that titled, "Percent Tons and Ton-Miles by Revenue Over Variable Cost Category," where we actually, you educate us a little bit on what I might call sort of the winners and losers perhaps in the system we have now. You point out that, I guess I just want to make sure I understand the data.

You've got, first of all, what's the distinction between, you've got a top, top two lines, a top period, and then you've got the same, I guess same data for -- what's the difference between the top half of the page and the bottom half of the page?

DR. MEITZEN: The first top half is just total tonnage, percent of total tonnage. So those are the figures for 2001 and 2005-2006 time periods based on looking at tons. The lower part of the table are for the same two time periods, but -- but the measure there is the percent of ton-miles, so that's why, that's the distinction between the two.

And they give you, I guess you'd say qualitatively similar answers in terms of a lot of the information, but obviously, there are some distinctions whether you use tons or ton-miles as your measure that you're looking at. And that's why we wanted to present both of these because they do give you, you know, a slightly different view.

Again, the takeaway that we saw here in one of the illustrations is that, you know, roughly speaking if you look at both ends of the distribution where R/VC is less than 100 or it's greater than 300, you're seeing a lot of traffic measured by this R/VC ratio whether you're measuring it in tons or ton-miles, that looks like its revenue is less than its variable cost by this measure. And, again, it's an illustration of some of the unreliability of the R/VC measure as we see it.

CHAIRMAN NOTTINGHAM: So to understand this they are just looking at, for example, the lower table, the percent of ton-miles by R/VC that shows that there is 2000, 2001, 2005, 19 to 20 percent of the traffic is actually moving at less than 100 percent of R/VC?

DR. MEITZEN: That's what it shows.

CHAIRMAN NOTTINGHAM: I'll put that in plain English. Does that mean the railroad is basically practically giving away the transportation, in other words, losing money on that, willing to lose money on that movement?

DR. EAKIN: I think what we're saying is that it brings into suspect the quality of the data of the URCS data.

CHAIRMAN NOTTINGHAM: Could there be any other explanations for it? Would this include contract data, you may have a contract that was entered into nine years ago, the ten-year contract somebody --

DR. EAKIN: It's worthy of trying to figure out why we get this anomalous result.

CHAIRMAN NOTTINGHAM: Another possible reason might be, I don't know, of course, is would be competition between motor carrier, trucking, and railroads. Railroads being willing to aggressively go after that traffic so long as their total business package gives them a profit.

DR. EAKIN: You start to get on a little bit thinner sort of theoretical ice there in terms of, you know, losing, you know, losing that much on every unit, but making it up on volume type of problem.

COMMISSIONER BUTTREY: Mr. Chairman, could I, could I horn in here on your question time since we're --

CHAIRMAN NOTTINGHAM: Yes.

COMMISSIONER BUTTREY: Just to follow

up on what you said. I mean given the fact that the, especially the western railroads, a huge percentage of their revenue is coal, you know, turning coal, and given the fact that the revenue per ton-mile on that coal traffic is I guess the lowest there is, certainly for a commodity anyway.

Does that distort these -- what -- what -- does that have a distorting effect on these numbers or it a worrisome distortion or not?

DR. MEITZEN: I think if you took a look at the work we did in looking at margins over marginal cost of coal, I mean, our work would show that despite the low revenue per ton-mile of coal, there was still a positive margin from the data we looked at. Our --

COMMISSIONER BUTTREY: Yes, I'm not arguing with that --

DR. MEITZEN: No, no, but what I'm just trying to then relate it to this and say, you know, to me again that indicates it's not so much behavioral that this is reflecting what's going on out there, but there's something with this data that really merits a real close investigation.

VICE CHAIRMAN MULVEY: If I could, if I could add to his question about on page 19, you have a column, "Revenue per ton-mile for the various commodities." Is that the, is that a correlation coefficient of some sort or is that, is that the actual RPTM?

DR. MEITZEN: Which -- it's the table --

VICE CHAIRMAN MULVEY: Table 19.

DR. MEITZEN: I believe that's the correlation coefficient.

VICE CHAIRMAN MULVEY: That's the correlation --

DR. MEITZEN: Yes.

VICE CHAIRMAN MULVEY: Thank you.

CHAIRMAN NOTTINGHAM: Returning to the table on page 18 of the percent of ton-miles by R/VC category. I want to make sure I understand. So you're suggesting there's not really any plausible, you know, economic, rationally economic reason that there would be 19 or 20 percent of ton-mile traffic moving at below 100 percent, so there must be a data error or some problem there.

DR. EAKIN: I'm not absolutely saying it's a data error, but I'm saying it is, it points, it's a red flag that comes up that says it's worth looking at. Your example of if there were longer term contracts and things have changed and so now the contract seems to -- so-called be the out of the money, that's an alternative explanation and we'd want to sort those things out.

But even having said that, it would have to be an overwhelming proportion of traffic for us to observe this with data that we're, we had 100 percent confidence in.

CHAIRMAN NOTTINGHAM: So if there's not a lot of confidence in, in the data on that end of the spectrum, how much confidence you have on the data on the high end on the traffic that's supposedly over 300 percent of R/VC?

DR. MEITZEN: I'd say probably about the same amount of confidence is under 100 percent.

DR. EAKIN: And then, you know, when we put the map up for wheat I mean that, we think that kind of is a good example of these things just don't correlate and that you even look at where the R/VC some of the, some of the over 300 percent sits right on the Columbia River, which is, you know, has, is less than a mile from the, from the water access.

But it's, you know, it just doesn't match with the market structural characteristics. So I mean we obviously, you know, in our report tend to say, "We put more faith in the market structure sort of stuff," so we're setting this table up as this isn't doing such a good job we think.

CHAIRMAN NOTTINGHAM: I wanted to explore that a little bit. So if, of course, by statute we're directed to pay a lot of attention to R/VC. I've never been able to find the answer to exactly who came up with the 180 percent magic number. I'm told it didn't come from the ICC, the STB's predecessor, and it likely came based on a knowledgeable staff person's best judgement late at night as they were wrapping up the Stagger's Act, but it is what it is, it's in law.

So expound on what, what alternative approaches might be more useful if the focus -- on R/VC is of questionable value. Expand on, on your, your suggested alternatives as to what we should be looking at to be, to be determining whether there are market, market power at play and, or inappropriate market power.

DR. MEITZEN: Well, I'll start off and I think just what reiterating what Kelly said before and I'm not sitting here and I don't think we're pretending to have all the answers or say, you know, "Let us do it." But, you know, I think we've got something here that shows you that if you consider the economics of the situation, and as Kelly was giving you the examples of, I guess what we would call "relative captivity," in other words, the quartiles of markups by these various commodities, something could be done to, by commodity, again, do this type of economic analysis, but it would be up to some policy decision to say, "Well, where's the line where high is too high?" You know, that's something that basically economic efficiency or as an economist without putting value judgements into the analysis couldn't really tell you.

We could, we could lay things out for you that way, but I think ultimately it would be a deliberation to say, "Okay, anything in a fourth quartile we're going to consider to be captive shippers," something to that nature would be one possibility.

You know, the other thing I would say is that I understand there are still a few qualitative factors that the, are considered in market dominance deliberations. And I know they're quite complex and can often drag out in the deliberations, but maybe some way of trying to tighten up or expedite the analysis of the qualitative factors in market dominance determinations might, might be some way of doing it.

In other words, you'd still, unfortunately, you'd still be stuck with the R/VC 180. And, again, we, we vividly recognize that that's by statute. But, again, we're here to tell you there are probably cases of captive shippers who require some kind of relief or at least some review where R/VC is less than 180 as well, so it cuts both ways.

DR. EAKIN: And I guess I'd also like just to add to that there's sort of two different approaches as far as how do we go about implementing something else. One is to see if there is something wrong or something inherent in the, in the URCS database data that could be fixed.

And then the second is supplementing it with alternative, or with other data sources, which are these market structure characteristics and analyses using things such as the waybill sample which, you know, by this report we have demonstrated, you know, the concept works that this can be done and it might be something that, you know, the staff here could just sort of set up programs to do.

I mean so you can just run these things and identify the hot spots so to speak. But I guess the final thing is that in at least one of the proposed legislation it was suggested the R/VC ratio of 180 be the only criteria and the final and determinative criteria or something like that. And we would just say as things stand right now, we, we don't think that's a very good idea.

CHAIRMAN NOTTINGHAM: Your overview touched on this, your report was a little more detailed on it. You looked, you did look a little bit at the question of whether there was enormous or extravagant railroad industry profiteering relative to other major industries.

We hear that sometimes in the public arena allegations of sort of unreasonable the high profits in the rail industry.

What did your study and research indicate on that question?

DR. MEITZEN: Well, what we did is we benchmarked railroad financial performance, tried to put on like a financial analyst's hat and look at the railroads as maybe a financial analyst would. And we looked at various measures that are commonly used whether it be earnings per share, price earnings, ratios, EBIT, EBITA, you know, all of the financial alphabet soup.

And we, we found that over time through the period of our analysis which ended in 2006, that the railroad performance in a lot of ways was very similar to electric utilities in terms of earnings per share, price earnings, ratios, things like that, and also consistent with some of the measures for the S&P 500 composite.

So from that perspective up to that

point in time, there didn't seem to be, for example, on a price earnings ratio there wasn't a huge premium commanded for, for railroad stocks, which would indicate that, you know, there wasn't a willingness or, of the investment community to be paying a premium to hold the railroad stocks, which would indicate that they didn't see this as one where it was the next Microsoft or however you want to characterize it.

Of course, I would just add a caveat that I think since our period of our study ended, you know, even last week, I noticed some analysts' reports came out giving glowing recommendations to the railroad, so I, I'm not exactly sure how those types of factors would, would alter any of the types of conclusions of our data through 2006.

But, but just going back to what we did do in our study looking at these various benchmarks, they seem to be, railroad industry financial performance seemed to be lined up with some general trends of other benchmark industries in the S&P 500.

CHAIRMAN NOTTINGHAM: Your study also seemed to identify a reality that we often have to grapple with here, which is that kind of the consequences of certain policy alternatives, I get back to kind of the phrase winners and losers. It's challenging enough to identify who some of the stakeholders in our regulatory world are who are disadvantaged by the current system.

We often don't hear from because they're presumably fairly content and, and are busy being content pursing their businesses. We don't often hear from the folks who are satisfied customers of the railroads I'll say, but your study seems to indicate that there are, of course, some of those at least out there and that as far as, and that there are consequences to driving down rates for certain identified disadvantaged rail customers presumably would require railroads to respond how? If you could just elaborate on that?

DR. EAKIN: Well, I think one of the

analogies that we use is sort of pushing on a balloon that if the, the box that a balloon is in or whatever is just at the revenue sufficient level than if you give relief to one set of customers it's got to, you know, force, for the viability that it will likely result in rate increases for some others.

And so there's, you know, if, if there are above normal profits for the industry then perhaps relief can be given without that impact going onto to other customers, but that's a challenge of how that actually is, comes about.

What I think we can see or what can this study starts to shed some light on is that any given particular reform we can probably, you know, like reciprocal switching, we can probably identify the likely winners from that because of their situation that it meets the characteristics of where they would benefit from, from having that reform go into place.

We can also look at the sort of commodity specific markups and also those county-specific maps to see of the set that doesn't sort of meet the characteristics of, to benefit from the reform, how the, sort of, the gain on this side is going to be pushed off as pain on that side and how that pain is going to be distributed to those others according to those market structure characteristics.

So I might have lost the thread of the question, but that's --

CHAIRMAN NOTTINGHAM: Did your research tell you anything about the type of shippers who mostly likely are benefitting under the current regimen? Wouldn't they be shippers who have options, shippers who have modal options alternatives?

DR. MEITZEN: Yes, in fact, as one particular came to mind that we interviewed and I forget the exact commodity, but they were a shipper who basically was able to locate and have transportation options part of their locational decisions. In other words, they weren't stuck in one place and they could basically site to where they could get, you know, the best deal -- they weren't necessarily, it wasn't a commodity where they, because of the, it was a bulk commodity where rail made the most sense.

I mean they could do truck, they could do water, they could do rail and they were perfectly happy with their railroad service and most likely because they, they did have all these options and they had more leverage than other shippers did.

So, yes, we did, we did see some of that. That, you know, depending on your circumstances and, you know, whether you felt you were relatively captive in one way or another, and again, not using captive in a sense of maybe a more common sense where shippers felt they were captive.

And if they did feel they were captive, I think they saw or they perceived that they weren't getting such a good deal from the railroads.

CHAIRMAN NOTTINGHAM: Vice Chairman

Mulvey, you've been patient. Would you like to take a turn?

VICE CHAIRMAN MULVEY: I just have one other question. Every report, no matter how good it is, will be scrutinized and people will come up with a sentence or so to argue about. And there's one sentence in volume two, chapter ten, pages 11 and 12, where it seems to be somewhat contradictory and I would like it if you would take a second to clarify the contradiction.

It says, "The exercise of market power appears to have increased in the freight rail industry over the last 20 years." But then just at the end you say, "Finally the substantial increase in revenue per ton-mile appears to be largely the result of increases in variable, fixed, and marginal costs and not due to the increase exercise in market power."

So there's seems to be a conflict there and I'd like you to try to clarify it.

DR. EAKIN: I don't have the sentence right in front of me, but I think it should say, "in recent years." Would that --

VICE CHAIRMAN MULVEY: That would, that would help a lot.

DR. EAKIN: Because that's what the pictures were -- and that's what -- that's really what we were trying to focus on of what's been happening sort of since 2000.

VICE CHAIRMAN MULVEY: But I wanted to get that on the record that this is --

DR. EAKIN: Thank you for, thank you catching that. I'm sure that's the only mistake in the report.

VICE CHAIRMAN MULVEY: Well, on page 19 --

(Laughter.)

CHAIRMAN NOTTINGHAM: And in case you were concerned that no one had actually read the whole thing, you now know that at least one person has. Mr. Buttrey.

COMMISSIONER BUTTREY: No further questions.

CHAIRMAN NOTTINGHAM: I have a couple

more. I hope my colleagues can bear with me, but I just wanted to make sure we understand all this data in front of us.

Your overview mentions and your report mentions Surface Transportation Board process improvements that would helpful or that it might be beneficial, could you -- one of the reasons frankly I was interested in an independent consultant assessment is that when we receive reports on things like STB process improvements from an independent consultant, it might be, might mean something different to our stakeholder audience than if we would have our hired staff who we have to do performance evaluations for every year etc., and decide whether to promote or not give us their best effort at critiquing the Board and its processes.

So that's really, I'm anxious to hear a little more discussion of those thoughts and ideas you have.

DR. MEITZEN: Sure, I'll start off. Well, I think part of the response to that can be found in chapter five where we report on our stakeholder feedback and we do report some of the things we did here regarding STB.

And as you might imagine I'm sure as you well know, there's a mixed bag out there. Some, some people thought, you know, things were okay and, you know, minor changes in processes were in order and others, you know, probably have your ears burning a little bit more.

But I think of, again, given our charge, which was not to kind of have this micro-managing analysis of how the STB does its job day-to-day, but, but look at what policy proposals were out there on the table right now. There were a few that were talking about, for example, the simplified rate guidelines and things like that.

And I think part of what we're saying is and, you know, understanding that there have been recently the three cases filed and decided on appeal right now, but continuing efforts to, to make sure that, you know, those processes are accessible and working correctly and, you know, constant oversight on those things.

Another thing that had been recommended I think in the GAO study that may show up in, in one of the current or recent proposals before Congress was more use of final offer arbitration for various disputes. And we did hear from a number of our stakeholders that they saw some benefits.

One of the things we heard is going to Canadian style regulation. They saw a lot of benefits there. And, of course, we saw other people who didn't think it was so great, but, you know, the two things that came out of there were, you know, the idea of the reciprocal switching which is one thing that is aside from the, you know, the STB processes, but the use of final offer arbitration as a way of, and a lot of times, even avoiding getting disputes to the Board.

In other words, a way of getting the parties to come to some agreement having that hang over their heads that there would be somebody deciding this if we don't do it ourselves. So, you know, things like that probably merit further investigation.

However, I think we also know that there are some down sides to final offer arbitration media as proposed and also the way it's done in Canada. And, and one of the big things we see is something that should be discussed is what is the background and experience of the arbitrators and do they know enough about these issues to make some informed judgments?

You know, I think it's a difficult situation, but that certainly is one consideration. So, so I guess to answer your question, the two things that come to mind in terms of improvement in STB processes would be just a constant evaluation of how well the simplified guidelines are working and whether or not, you know, the shipper community feels like they, they have access to the types of STB responses that they feel they need and also the consideration of final offer arbitration more widely.

CHAIRMAN NOTTINGHAM: Okay. I want to make sure I understand, on page 26, you have the table of looking at the economic impact of open, you call "open access proposals." And these terms get bandied about a lot and one would think they, they all reside in the Oxford Dictionary, but I tried looking up, them up and they basically don't.

So if I could maybe get your first sort of definition, best, you know, a quick definition of reciprocal switching, bottleneck, rates, terminal agreements, and trackage rights so we all kind of know what we're talking about here.

DR. MEITZEN: Sure. Well, both reciprocal switching and bottleneck rates are two types of proposals that involve interchange of traffic between two railroads. There's a handoff involved. Typically, reciprocal switching occurs close to an endpoint of the movement.

Whereas, under the current proposal in the pending, or the proposed legislation regarding bottleneck rates, I believe it says that there has to be a rate offered basically between any two points and the railroad's network. So, but the commonality that those two proposals share is that it involves an exchange of traffic between one railroad and another railroad.

On the other hand, terminal agreements and trackage rights, the commonality there is it's basically some kind of run through provision where either you have access to another railroad's terminal area so you could complete an end-to-end movement or through some segment of their network through trackage rights and you could complete an end-to-end movement.

So, so basically that, that's kind of the very broad definition of what these particular policies are.

CHAIRMAN NOTTINGHAM: You did point

out towards the end of your presentation that, although your report didn't delve into this in great detail, I don't think that all of these, those proposals, reciprocal switch and bottleneck rates, terminal agreements, and trackage rights, would trigger an access charge, some type of an arrangement.

Now, many of those arrangements, I think everything except maybe bottleneck rates, do exist out in the marketplace voluntarily, correct?

DR. MEITZEN: Yes.

CHAIRMAN NOTTINGHAM: So they're out there, they're just not out there to, to the degree to meet everybody's fancy. The problem though, of course, the challenge is when you introduce involuntary arrangements, sort of a candidate to dump it down about 30 degrees if you, you know, take your typical American neighborhood and there's, let's say there's a parking shortage, some people have driveways, some people don't.

And I have a, I'm fortunate enough to have an ample size driveway and my neighbors convince the powers that be to change the local rules to say that anybody in the neighborhood can park in my driveway, but I get to, I get to determine how much that costs.

The next thing we're going to have, right, of course, is a little conflict about is it a fair cost and it'll be back to the powers that be who will then be asked to set what the fair cost is. And, of course, I presume that would the STB in our little corner of the world.

Did you look into how the mechanics of that would work about, I could anticipate a railroad not being happy about an involuntary imposition of something like terminal agreement? They have a busy terminal, they have trouble enough managing it with all their own trains.

We know that service levels are not desirable even currently and that most of the congestion and -- I shouldn't say most, but a great deal of congestion delays and other delays happening in and around terminals. You introduce an involuntary arrangement where other competitors get to come in and park cars and move trains through that terminal.

The owning railroad would presumably be pretty likely to come up with a pretty high price tag for that. We would then be asked presumably in due course to go and see whether that is reasonable. You'd have earnest hardworking STB people flying around the country kicking the, not the tires I guess, but the rail wheels and trying to figure out how inconvenient it might be in fact, and interviewing people, and coming up with some rational assessment.

But do you see where I'm going? It's a little bit -- there's sort of a question mark there as to how that all plays out whether or not that actually gets us a process with frankly less litigation, less cost to the parties when you look at how the cost of all that litigation. Did you give any thought to that in your analysis?

DR. MEITZEN: A lot of thought. And

basically, first of all, one thing I think we say in the report is that the legislation that proposes these is silent on those types of details. And that's where, you know, not to be, you know, be trite about this, but the devil is in the details.

And, again, I'll -- and that's why we say, for example, the incremental policies, for example, the reciprocal switching or terminal, have -- it becomes less of a economic cost -- well, obviously congestion and things like that and coordination between railroads, but, you know, the issues are bigger.

The bigger the access rights become whether you're talking about bottlenecks or rates or trackage rights and, and that's where the biggest fights would occur. But then how do you determine it?

And, again, my experience in teleco says if you're the incumbent, you want to make sure you sunk the investment and you've done it, you know, with the eye toward a reasonable expectation you can recover so you can keep investing, you know.

So you're going to have the incumbents' arguments on that side and then the potential competitor is going to say, "But the incremental cost of using that track is only this." So, you know, why should we pay more than that?

All we're doing is basically ensuring that the incumbent gets its fair return, which is not our job do to. So you do get into those fights and they will become huge.

In fact, one way they tried to resolve this and took a few, again, I alluded to, you know, Supreme Court cases, and Telecom was when they opened the network is something called, "TELRIC." I don't know if you ever heard of that, Total Element Long Running Incremental Costs, which I'm sure many people in this room would love to hear was the cost of a hypothetically efficient firm offering its services and what would the costs be.

So you do get into those issues and they are very thorny issues that could require a lot of, in my view and my experience, a lot of litigation and, you know, resolution that I don't know if it's in anybody best interest.

CHAIRMAN NOTTINGHAM: In your table on page 28, it looks like the bottleneck rate idea scores pretty poorly on your different ratings under shipper gains least likely to produce shipper gains. Could you expand on that?

Because when one is first introduced to the bottleneck issue as a layman, one is naturally inclined to think of it in terms of shopping for an airfare rate. You know, I want to fly from Washington, D.C. to Mobile, Alabama, I can look at a few airlines, figure out whether I want to go direct, nonstop, how flexible am I, and I can, you know, and the airline doesn't shoot back an email to me saying, "No, no, no, we think you're really going to Houston, but you're just being sneaky about telling us you're going to actually hang out in Mobile. We know you're really going to Houston, so we're going to quote you."

So when you first look at it, you think, "Boy, that's not a very customer-friendly concept to, to not allow a rate quote for the customer's requested journey," but then you say, "It would be least likely to actually result in shipper gains." Can you expand on that a little bit?

DR. MEITZEN: Okay. Well, I'll start. And I think it gets back the whole issue of how are these arrangements agreed to? Is it going to be a voluntary agreement between railroads? In which case, I think the perception is, or at least the analysis would say that based on their own economic interests, you know, whether it is because of loss of economies of density or average length of hauler or things like that, unless the railroads have already voluntarily agreed to these situations, if you made it mandatory it's questionable how much voluntary resolution of these issues for all of these various combinations would be.

So then you have to come up with some kind of formula to determine, well, what -- how are we going to determine these costs? I mean, so then we get into the, again, how are you going to determine the formula?

So I think you get into those types of issues once, once you consider that type of policy because I think you'll get some voluntary response, but maybe, where maybe these things look like they maybe need it the most or where people are thinking they'll do the most good may be the cases where you're not going to get the voluntary responses to that policy.

DR. EAKIN: I think we're just saying particularly with respect to the bottleneck rates is that sort of the economics of it aren't such that we expect that since the voluntary arrangements aren't there now mandating it, the rates that will come out will not be that favorable, so things, we just don't think things will actually change that much, that it won't be that effective.

So I think our warning on that one is sort of don't get your hopes up if you do it. Is that --

CHAIRMAN NOTTINGHAM: Yes.

DR. EAKIN: I mean not that it would cause great harm, but that it won't change things that much probably because of the economics.

CHAIRMAN NOTTINGHAM: Well, it gets back to a variation on access charges again, right, if we assume that this would be primarily in an involuntary arrangement forced upon railroad carriers change in the way they've done business. They would, of course, want to make sure their costs are recouped and if, if the shipper says, "I'd like my grain moved from Montana to Minneapolis, quote me a rate," but the real journey is to, back to Mobile, the next question is going to be, "And by the way, thanks for the rate. That's a great rate Montana to Minneapolis, St. Paul,"

But, you know, the railroad is going

to say, "Well, let's talk about transfer charges or, you know, oh, you wanted to put on my competitor's train, and that's synchronized up and we have to stop the unit train, take your car off, synchronize, bring our competitor in, well, gee that's going to be X cost," and we're right back to the STB it seems to me with complaints about the reasonableness of those costs.

And so the initial rate might go down, but the total payments flowing from shippers to railroads may well not. Is that the type of thing you came across?

DR. EAKIN: Yes, those are part of the economics that just don't make it work. That if you cut it, you know, sort of close to in half, you're losing some of the, the economies of the length of haul that you get. And then also any transaction costs that go in there from having to change it from one to another that adds to it versus end-to-end sort of hauling.

So even if those rates come in at exactly what the cost is, it still may be more costly to have it split up than to have it not split up and therefore, it'll probably still end up the same way it is now is sort of the logic that we were following.

CHAIRMAN NOTTINGHAM: Now, turning a little bit to, to the agricultural sector. Your report states that there were noticeably higher rates being borne by certain agricultural shippers. Could you expand on that and what some of the reasons for that might be and what this Board should be on the lookout for in that area?

I mean it's, at first glance, it's probably not shocking that it may cost more to transfer bulk commodities from more remote beautiful and productive, but remote locations in our country to the markets and ports and terminals that they need to go than it would be to move something shorter distances, but it's more than that is what I'm hearing from your report. It's more than just the shear distance factor that --

DR. EAKIN: Again, I refer back to

that sort of the wheat maps that we put up there with the market structure variables that what we're seeing there that it is more than just the cost difference because what the differences there are is sort of benchmarking wheat against itself and those counties that have less competitive or fewer competitive alternatives pay a higher relative markup than the counties that don't for the same commodity.

So, now, again, whether that's fair or not fair is for somebody other than us to decide, but it is just, that's what the evidence of it is. So to the extent that some of those commodities inherently lack competitive alternatives that suggest that they should probably be toward the top of the list as far as watching for, I mean, for receiving some protection if protection is warranted on rates.

So it's -- a lot of it is geography-based that it's just where, where the production takes place is not conducive to, particularly the intermodal transportation, particularly closeness to water.

CHAIRMAN NOTTINGHAM: That's sort of mindful of the issue of micro-targeting gets a lot of attention in the political consulting world these days. Are you suggesting we sort of micro-target and have maybe a series or a file of zip codes? And if you send in a complaint to the STB and you got one of those zip codes, we -- and I'm being serious -- we actually say, "Okay, this goes in stack A for priority."

This one, this could be, this is, you know, this very well, you know, may be an example of unreasonable pricing power being influenced -- implemented here. Or how do we -- did you drill down to give us some help on how to address the reality that markets and communities that don't have diverse transportation options are likely paying higher rates? I think we kind of knew that before we hired you.

DR. EAKIN: You know, I hadn't really thought about the micro-targeting or the, in those terms or, you know, using zip code, but I don't know, it may actually work or county targeting if you will. I believe what we have developed here is a methodology that allows you to use the data that you collect through the waybill sample data to do some fairly intensive analysis, but that will in fact by commodity by county identify those counties that are currently, that have characteristics that are associated with higher markups.

And, therefore, yes, you could sort of maybe take a complaint that came in from a county that, on a commodity that it meets that requirement, like, yes, this may be a serious issues that's coming in and maybe you could be slightly more dismissive relatively speaking of ones that don't come from counties like that. So it's a thought. We hadn't suggested that in our report though.

CHAIRMAN NOTTINGHAM: Commissioner Buttrey, do you have a question?

COMMISSIONER BUTTREY: I just want to follow up on a question that Frank had earlier.

Could you put up on the screen page 19 of the handout? It's the one with the correlation of R/VC with market factors' chart. Yes, that's it.

The chart is confusing for me not being an economist. It's entitled, "Correlation of R/VC with Market Factors." Without going into great detail, I'm not picking on coal here by any chance, by any stretch of the imagination, but I just wanted to point out that, that the numbers that are under the first column there starting with chemicals going down the list to wheat, the revenue per ton-mile those numbers are not the average revenue per ton-mile numbers in general that we have anyway here at the Board.

And I have used, I made reference, I have made references to what these numbers are and these are not the numbers we have. And I'm not saying your chart is wrong. I'm just saying it's a different -- this number is different from just average revenue per ton-mile.

If you had, for instance, a chart in here that said it was just plain vanilla revenue per ton-mile numbers on these commodities just, for example, coal would be the lowest, and on this chart, it's the highest.

So it's a little, it's a little bit confusing unless you are an economist, unless you understand exactly what this chart is supposed to do. But if you just looked at these numbers, you would say -- it would take your breath, I mean it would take my breath away if I looked, when I looked at this chart and see the numbers there because they're so different from what the average revenue per ton-mile numbers really are based on the waybill sample.

DR. EAKIN: Right, this is the second time this very column has come up in this discussion here --

COMMISSIONER BUTTREY: Well, it was bothering Frank and it was bothering me.

DR. EAKIN: I think that reflects that we have a bad presentation of the table. This is a correlation coefficient that's presented here and we should make that clear.

VICE CHAIRMAN MULVEY: But it's just not clear from --

DR. EAKIN: Right, so that's, that's our fault.

COMMISSIONER BUTTREY: And the reason I bring it up is not to point out that you've got a confusing chart, that's not my point. My point is that someone looking at this would say, look at this and say, "Oh my goodness, coal is the highest."

When in fact the average revenue per ton-mile basis it is the lowest. I'm not saying, I know what it is, everybody up here knows what it is. I'm not sure, we're not, probably not able to say what it is, but we know what it is and it's not 61.

VICE CHAIRMAN MULVEY: What makes it confusing too, is those numbers in that column are so different from the rest. The other ones are all very small and those are relatively larger, so maybe you don't think it's also a correlation coefficient so, but it is, it clearly is.

DR. EAKIN: No, I can see the confusion.

COMMISSIONER BUTTREY: That's all I had, Mr. Chairman. Thank you.

CHAIRMAN NOTTINGHAM: Maybe at the risk of taxing everyone's patience, maybe if you could maybe take another stab at going through the table on page 19 just to make sure we understand it. The left-hand column, the revenue per ton-mile, the decimal point numbers there indicate what? Who's getting, if you looked at this, who seems to be paying less per ton-mile? Who seems to be paying the most? That's confusing to look at, what should we be looking at?

DR. MEITZEN: It maybe the way of thinking about this if you take a look at the top line of that chart where it says, "Correlations Coefficient with R/VC Ratio," every one of those columns says, "Let's take the R/VC ratio for that commodity and let's correlate it with these various columns represented by revenue ton, per ton-mile distance to water origin, etc."

So all of these are the correlation coefficients for those commodities for like coal's revenue per ton-mile is correlated with the R/VC ratios for coal at 0.61, which is actually the highest correlation coefficient among the commodities in their revenue per ton-mile --

VICE CHAIRMAN MULVEY: Which means that if it was one it'll be perfectly correlated and if it was zero, it would be perfectly uncorrelated.

DR. EAKIN: So in fact each thing in the headings in the top is an alternative measure of how competitive or captive or noncompetitive our market is and we're saying how well does the sort of standard that we're using now, the R/VC ratio, how do these things relate to each other?

And so if they were, you know, in fact, perfect substitute measures of captivity that would be a perfect correlation you would have one. The fact that they're all very close to zero and we should have put Pearson coefficients in there to tell you the significance, but we didn't.

The fact that they're very close to zero says, you know, our measure, our theoretical measure over here of what's happening in competitive competition-wise isn't at all moving with the measure that you're forced by statute to use what's happen competition-wise. That's the message of this table.

CHAIRMAN NOTTINGHAM: Your report, you did a pretty thorough job of discussing and assessing one of the major realities of working in the rail industry as we understand it, which is its cost. Cost can go down or stay flat or go up.

And in recent years, your study seems to indicate that rising input costs, things like steel and fuel presumably were, played a large role in the rate increases that the rail industry implemented. Did I get that correct first of all that overview? Did I fairly characterize that?

My next question is we now see some of those inputs dropping fuel, steel, etc., what would be your projection on rates if those trends were to continue for a couple years and then what should we be expecting as regulators looking at rates? Should we be looking for rates to decline?

DR. EAKIN: What we would expect to see if we extended the cost function estimation and analysis is that as fuel prices come down, as other prices come down, if they do come down, that the variable cost and the marginal cost should come down.

Now, the real question is, will the revenue per ton-mile follow it downward or will it stay where it's at? To the extent that the revenue per ton-mile stays, then that's an increase in market power and that Lerner Index will move up, so that's what to watch. I can tell you what will happen to cost. I don't know what will happen to the rates.

CHAIRMAN NOTTINGHAM: Thank you. Colleagues, any additional questions?

VICE CHAIRMAN MULVEY: No, that's all. Thank you.

CHAIRMAN NOTTINGHAM: Seeing and hearing none, we'll bring this hearing to close. Momentarily, I do have a quick housekeeping closing statement to make just to make sure we get a couple of piece information out.

First of all, I want to thank our partners at the Christensen group here, Drs. Eakin and Meitzen, for their excellent report and their testimony today. I note that the Board has asked Christensen to provide ongoing research assistance on the issue of capacity, an issue that has been a focus of the Board's attention for quite some time.

I look forward to seeing the results of that work. We're projecting by the end of February 2009. I also note that in the course of conducting the study, Christensen met with a number of stakeholder groups to obtain their input and perspective.

Now, that the study has concluded, the Board would like its stakeholders to have the opportunity to comment on the study's findings and methodologies. We will be issuing a decision today providing for a 45-day public comment period on this study.

And I hope all interested parties will take this opportunity to express their views and we look forward to seeing that. And with that, I'd like to thank Christensen Associates again and my colleagues and also our staff at the STB for helping administer this contract and also appear for this public meeting. And with that we are adjourned. Thank you.

(Whereupon, the above-entitled matter was concluded at 12:41 p.m.)