

UNITED STATES OF AMERICA
SURFACE TRANSPORTATION BOARD

+ + + + +

PUBLIC HEARING

-----x
 IN THE MATTER OF: : Docket No.
 : EP 722
 RAILROAD REVENUE ADEQUACY & : &
 PETITION OF THE WESTERN COAL : EP 664
 LEAGUE TO INSTITUTE A RULEMAKING : (Sub-No.2)
 PROCEEDING TO ABOLISH THE USE OF :
 MULTI-STAGE DISCOUNTED CASH FLOW :
 MODEL IN DETERMINING THE RAILROAD:
 INDUSTRY'S COST OF EQUITY CAPITAL:
 :
 -----x

Thursday,
July 23, 2015

Surface Transportation Board
Suite 120
395 E Street, S.W.
Washington, D.C.

The above-entitled matter came on for hearing, pursuant to notice, at 9:30 a.m.

BEFORE:

DANIEL R. ELLIOTT, III	Chairman
ANN D. BEGEMAN	Vice Chairman
DEB MILLER	Commissioner

1 between what you're hearing from railroads versus
2 what you're hearing from shippers. And what the
3 results of the analysis show is that rate
4 increases are not necessarily the answer to
5 getting better service. And what the analysis
6 shows is that in order for you to properly
7 control service, it will be very difficult
8 without being able to institute some type of
9 control over how much of the increase in the
10 railroads profit caused by rate increases are put
11 back into the rail system. And that concludes my
12 testimony.

13 MR. DONOVAN: Thank you. Dr. Caves
14 will now address the role of revenue adequacy in
15 Ramsey pricing, and explain why revenue adequacy
16 constraint provides a more efficient pricing
17 structure than standalone costs for regulating
18 rail rates.

19 DR. CAVES: Thank you and good
20 afternoon to everybody. I'll first start off by
21 talking about standalone costs. The standalone
22 cost is the hypothetical cost to a railroad,

1 providing service to only a subset of its full
2 network. By definition, a standalone cost
3 provider is less efficient than the incumbent
4 provider because it has fewer efficiencies
5 available to it in terms of scale and scope
6 economies. The first problem with trying to
7 apply a standalone cost regulation to the rail
8 industry is that its actually designed to solve a
9 problem that doesn't exist in the rail industry
10 in the first place. In particular, and this
11 slide is for later, actually. In particular, the
12 standalone cost framework was developed for use
13 in a fully regulated monopoly, in which
14 regulators set all the prices that the fully
15 regulated monopoly is allowed to charge. Under
16 these specialized conditions, standalone costs
17 will prevent cross-subsidization among different
18 groups of customers. That is the purpose for
19 which the standalone cost test was designed. Of
20 course, that simply doesn't apply here. The
21 majority of rates, as we all know, are fully
22 deregulated. You don't have to take my word for

1 it. The original author of the SAC test, Jerry
2 Faulhaber, has already submitted a verified
3 statement in which he has debunked the railroad's
4 claims that the standalone cost test is well
5 designed for the rail industry. But just to
6 reiterate, because I've heard these claims
7 repeated by the railroads yesterday, I'll just
8 read a few key passages from Professor
9 Faulhaber's verified statement.

10 He begins on page one by repeating
11 some of the rather grandiose claims that have
12 been made about the standalone cost test by the
13 railroads, such as the standalone cost tests rest
14 on a sound economic foundation, the standalone
15 cost test is the most accurate procedure for
16 determining rail rates, the standalone cost test
17 is widely and consistently recognized by
18 economists as the gold standard, etc., etc.

19 Professor Faulhaber's response to this is, "As
20 the original author of standalone costs, I would
21 be quite flattered by all of this if any of it
22 were true." And he goes on to explain why it's

1 not and why it's not accurate. He also goes on
2 to explain that the standalone cost framework
3 "simply does not fit the STB regulated firms. It
4 is not even close. This provides no economic
5 justification for imposing standalone cost
6 regulation. None." That's the first problem
7 with applying standalone cost regulation. The
8 second problem with applying it to the rail
9 industry is that it's not designed to prevent
10 prices to captive shippers from rising above
11 competitive levels. There is nothing in the SAC
12 standard that will prevent prices to captive
13 shippers from rising well above competitive
14 levels right up to the fully monopolistic pricing
15 level.

16 The SAC standard, in fact, focuses the
17 regular on the inefficiently high cost of the
18 hypothetical network, and inappropriately rewards
19 railroads for their incumbent position by linking
20 their prices to those of a less efficient
21 hypothetical rival. So now I'd like to talk
22 about the alternative, which is, of course, a

1 revenue adequacy standard. The first thing to
2 clarify about revenue adequacy is that under this
3 standard, by definition, the railroads would
4 always be able to cover all of their costs, all
5 their fixed costs, all their variable costs, and
6 all of their costs of attracting capital. By
7 definition that would be true. And this may well
8 require, this will, in fact, tend to require that
9 the railroad exercise some degree of market power
10 with respect to its captive shippers. However,
11 after revenue adequacy is achieved, the railroad
12 should also face some constraint on the exercise
13 of market power with respect to its captive
14 shippers. Why is this? Well, it's just basic
15 economics. Unconstrained monopoly pricing causes
16 economic efficiency or dead weight loss, and you
17 will find this in any Econ 101 textbook, I can
18 guarantee you.

19 This brings us to Ramsey Pricing Principles,
20 which are very closely related to revenue
21 adequacy. According to Ramsey Pricing
22 Principles, the objective of an economically

1 efficient pricing structure should be to minimize
2 the deadweight loss of monopoly pricing subject
3 to the constraint that the railroad must earn
4 sufficient returns to cover all of its costs,
5 including the cost of attracting sufficient
6 capital. In other words, the Ramsey Pricing
7 Framework is an exercise in constrained
8 optimization, and revenue adequacy defines the
9 constraint to the Ramsey problem. And I'll try
10 to go over this in a little more detail and
11 illustrate it in the next slide. Sorry, the
12 previous slide. Yes. So, the idea motivating
13 Ramsey Pricing is very simple. Economic
14 efficiency, according to the very basic
15 principles in economics, is promoted all else
16 equal, by setting price equal to marginal costs.
17 However, when you have an industry with economies
18 of scale and high fixed cost as you do in the
19 railroad industry, marginal costs will tend to
20 lie below average costs, and that means strict
21 marginal cost pricing is not feasible. Any
22 entity that attempted to set all its prices equal

1 to those marginal costs would go out of business.

2 So how do you solve this dilemma?

3 Well, there's the profit maximizing solution,
4 which is simple. You set prices high as possible
5 above marginal costs, and just charge whatever
6 the market will bear. The problem with this is
7 what we've already mentioned earlier. If you
8 have a monopoly exercising market power you're
9 going to get monopoly pricing and you're going to
10 get dead weight lost, and that's economically
11 inefficient. So Ramsey Pricing Principles
12 provide a better, more efficient solution to the
13 problem, and it's a very intuitive solution. The
14 idea is, yes, go ahead and set price above
15 marginal costs, that has to be true, but only by
16 enough to cover all of the costs, all of the
17 fixed costs, all the variable costs, all the
18 necessary investment returns. So, again, it's an
19 exercising constrained optimization in which the
20 idea is to move price as close to marginal cost
21 as possible without violating the revenue
22 adequacy constraint. However, as long as that

1 constraint is satisfied, as long as the railroad
2 is earning sufficient returns, any rate
3 adjustment closing the gap between price and
4 marginal cost is economically efficient. That's
5 what Ramsey Pricing tells us. Any adjustment.
6 Even if the full Ramsey optimum is never
7 achieved.

8 So suppose we have a shipment and the exact
9 Ramsey price is a hundred dollars, and we have a
10 monopolistic railroad that's charging a thousand
11 dollars. If we move that rate from a thousand to
12 five hundred that would still involve a very
13 substantial improvement in economic efficiency,
14 even if we never get it down to one hundred. So
15 in conclusion, Ramsey Pricing Principles imply a
16 substantial scope for efficiency improvement in
17 railroad rate structures with respect to captive
18 shippers, and these improvements can be realized
19 by lowering prices below the levels implied by
20 SAC and closer to the Ramsey levels, even if the
21 exact Ramsey price is never actually reached.

22 MR. MORENO: This brings us to the

1 question of how do you actually implement the
2 revenue adequacy constraint in practice. Dr.
3 Caves, Mr. Crowley, and I have given extensive
4 consideration to how the board might apply the
5 revenue adequacy constraint in a manner that is
6 practical, cost effective, economically
7 supportable, and consistent with the statute.
8 The first step in developing any methodology for
9 implementing the revenue adequacy constraint is
10 to identify the proper time period for assessing
11 the revenue adequacy of a rail carrier, which is
12 a question that the board has posed in its
13 hearing notice. Dr. Caves will address this
14 predicate question, and he will be followed by
15 Mr. Crowley, who will illustrate how to determine
16 the extent to which a railroad is revenue
17 adequate consistent with Dr. Caves' testimony.

18 DR. CAVES: Thank you. The ICC has
19 previously suggested measuring revenue adequacy
20 over the course of a business cycle, and that is,
21 in fact, an economically valid and supportable
22 approach, essentially because it adopts a

1 reasonable investor perspective. Investors care
2 about future returns and they face the problem of
3 trying to gauge future performance based on past
4 performance. Of course, the economy is
5 procyclical, it goes through business cycles, it
6 goes through ups and downs. So the railroads
7 profits at the peak of the business cycle are
8 going to tend to over predict its future returns,
9 and their profits at the trough of the business
10 cycle will tend to under predict future returns,
11 obviously. So you don't want to pick one single
12 year if you're an investor trying to figure out
13 whether to invest in the railroad, so if we just
14 take the average performance over the course of
15 the business cycle, that will give a better, more
16 reasonable estimate of expected future returns.
17 Over the post war period, if you looked at the
18 NBR website, the NBR is the official body that
19 dates business cycles. The average business
20 cycle has lasted for about sixty-nine months, so
21 about six years. So this is a reasonable time
22 frame for measuring revenue adequacy. Notably,

1 the most recent US business cycle includes the
2 great recession of 2007 through 2009. This is
3 universally recognized among economists as the
4 most severe economic down turn in the post war
5 period. In other words, the most severe
6 recession we've had since the Great Depression.
7 It's been more severe in terms of duration and in
8 terms of losses in employment and in output. I
9 bring this up because the railroad's robust
10 financial performance during and since the great
11 recession can and should be seen as powerful
12 evidence of the long-term financial viability and
13 of their ability to compete with other industries
14 for capital in the equity markets.

15 In fact, if we were to just look at
16 the railroad's returns since the end of the
17 recession, we would find that railroad stocks
18 have gone up since mid-2009 by about two hundred
19 thirty-nine percent. The Dow Jones Industrial
20 Average has gone up by less than half that
21 amount, one hundred ten percent. The S&P has
22 gone up by one hundred twenty-five percent.

1 Trucking stocks have only gone up by seventy-six
2 percent. Yet, according to the railroads, they
3 can't even earn enough to cover their cost of
4 capital and they're a bad investment. So by that
5 logic, I think they would advise you not to buy
6 their stock in 2009. I think you should have
7 bought it personally. And the other point we'll
8 get into later is if the railroads are not, in
9 fact, earning enough to cover their cost of
10 capital, how, in fact, have they made the
11 investments that they've rightly been proud of
12 and have been reporting to you? For example,
13 since the end of the great recession, they have
14 invested one hundred sixty-eight billion. In the
15 past ten years they've invested two hundred
16 forty-four billion, and in the past twenty years,
17 since 1995, they've invested three hundred
18 ninety-four billion.

19 Now, over the vast majority of this
20 time period, by the board's own metrics, they
21 were revenue inadequate. And what that tells us
22 is that that revenue adequacy measures that we're

1 using are a very conservative measure that
2 understates the railroad's true ability to
3 attract capital, and I think it's important to
4 keep that in mind.

5 MR. CROWLEY: Using actual UP data as
6 the example, plus the six year business cycle
7 that Dr. Caves was talking about, I demonstrate
8 in this analysis how to measure the shortfalls
9 and surpluses related to revenue adequacy on a
10 year by year basis. Column one identifies each
11 of the years in the analysis. Column two
12 identifies the STB's determination of the
13 railroad industry cost of capital for each of the
14 six years in the business cycle. Problem three
15 shows the UP's tax adjusted revenue shortfalls
16 and surpluses by year over the same six years as
17 determined by the STB in its calculation of UP's
18 revenue shortfall allocation method, or RSAM
19 ratios. Specifically, column three shows that UP
20 has generated tax adjusted surplus every year
21 except for 2009 when the country experienced the
22 largest economic down turn in the post-World War

1 II period. Column four calculates the value of
2 each year's surplus or shortfall in 2014 dollars,
3 using the railroad cost of capital appearing in
4 column two to calculate each value. Line seven,
5 column four shows the sum of the surpluses and
6 shortfalls over the six-year business cycle, and
7 line eight, column four shows the average surplus
8 which was used in later slides.

9 MR. MORENO: So once a rail carrier is
10 determined to be revenue adequate, as this
11 example demonstrates for Union Pacific over the
12 most recent six year period available, based on
13 the board's revenue adequacy determinations. The
14 revenue adequacy constraint can then be applied
15 to determine the reasonableness of the challenged
16 rate. Dr. Caves has identified two potential
17 approaches for implementing the revenue adequacy
18 constraint, which he calls the yardstick approach
19 and the rebate approach. Dr. Caves will first
20 discuss the conceptual underpinnings and
21 practical application of the yardstick approach,
22 and then we'll turn to the rebate approach after

1 that.

2 DR. CAVES: Thank you. So, the all
3 right, we'll stay there for now. So the
4 yardstick approach, the basic idea is to use
5 statistical methods to predict the rates that
6 captive shippers would pay under more competitive
7 conditions, so in essence, you take a sample of
8 comparable competitive rates and you compare it
9 to what shippers are paying and see if there is a
10 significant difference. This appeared to be what
11 some of the railroad's own economists were
12 endorsing during their testimony yesterday.
13 Specifically, I think it was Professor Kalt. In
14 any case, the idea would be to, when you're
15 drawing this sample of competitive shipments to
16 obtain the rates of the competitive shipments,
17 and then to obtain relevant characteristics of
18 these competitive shipments, such as the
19 commodity type, the distance of the shipment, the
20 size of the shipment, cost variables from ERC's,
21 perhaps, that influence the cost of making the
22 shipment and so forth. Once we have this

1 variable we can build a model that quantifies the
2 relationship between the characteristics of the
3 shipment on the one hand and the actual rates
4 paid on the other. Once the model has been
5 developed, shippers in captive markets could, in
6 effect, take the characteristics of their
7 shipments, plug them into their model, and see
8 what the comparable competitive rate is for their
9 shipments, perhaps through an interactive
10 website. If the shipper's actual rates
11 sufficiently exceeds the predictive competitive
12 rate, then the shipper would have a basis for
13 relief. Of course, if the shippers were already
14 paying something close to the predicted
15 competitive rate, close to the predictive
16 competitive rate, then they would have no basis.
17 The TRB has already endorsed this approach and
18 constructed a prototype model that does exactly
19 this, and you can read about in their full
20 report. They use the Carload Waybill sample to
21 do so.
22 I will give a highly simplified example in what

1 follows that sort of follows the broad contours
2 of the TRB while hopefully giving a more
3 intuitive explanation of how the benchmark
4 approach would work. And when I say benchmark,
5 we're going to use benchmark and yardstick
6 interchangeably here. Okay. So here we have a
7 very, very simplified version of what the model
8 would look like for illustrative purposes. On
9 the horizontal axis we have the distance of the
10 shipment measured in miles. On the vertical axis
11 we have the rate of the shipment measured in
12 cents for ton mile, and you can see we have a
13 scattering of blue diamonds that represent a
14 sample of competitive rates. So this would be
15 the blue diamonds are a benchmark sample. And
16 according to this simple model, the actual rate
17 is a linear function of the distance of the
18 shipment. You can see there's a straight line
19 going through the blue dots. In particular, the
20 slope of the line is negative because we would
21 expect that for longer distances shippers would
22 tend to pay lower rates per ton mile, and in

1 fact, that's what the TRB itself has found in its
2 own work. So once you have the sample and once
3 you've estimated the model, in this case, just a
4 straight line, the potentially captive shippers
5 can compare their rates.

6 So I have three hypothetical
7 potentially captive shippers here, shipper A,
8 shipper B, and shipper C all paying potentially
9 anticompetitive rates. So let's perform the
10 comparison first for shipper A. You can see that
11 here. Shipper A would first, well, obviously it
12 would know its actual rate. We could just read
13 over to the vertical axis, 14 cents per ton mile,
14 and that's being shipped over a distance, if you
15 read it down to the horizontal axis over roughly
16 700 miles, and according to the benchmark model,
17 comparable shippers shipping over a distance of
18 seven hundred miles are paying a competitive rate
19 of approximately seven cents per ton mile. So,
20 shipper A appears to be paying about twice as
21 much as what comparable competitive shippers are
22 paying.

1 Same exercise I'll go through for
2 shipper B. Shipper B is shipping over a longer
3 distance, about a thousand miles. Its actual
4 rate is ten cents per ton mile, and comparable
5 competitive shippers are paying about six cents
6 per ton mile for shipping over the same distance.
7 And once again, for shipper C it's the same
8 exercise, nine cents per ton mile being the
9 actual rate, and four cents per ton mile being
10 the competitive benchmark rate. The other thing
11 to note about shipper C is you can see clearly in
12 the model that there are competitive benchmark
13 shipments that are paying rates higher than what
14 C is paying, right? So if you look over to the
15 left-hand side those two blue diamonds there are
16 both above the red dotted line. So those are
17 competitive shippers who are paying more than ten
18 cents per ton mile, where shipper C is paying
19 over nine cents per ton mile. But, of course,
20 they're shipping over a much shorter distance, so
21 you would expect them to be paying a higher rate.
22 So now that we've done this comparison

1 for shippers A, B, and, C we can compute a very
2 simple statistic, which is simply for each
3 shipper the ratio of the rate it actually pays to
4 the rate its predicted to pay under more
5 competitive conditions. So, for shipper A
6 recalled that they were paying fourteen cents per
7 ton mile. The predicted competitive rate was
8 seven cents per ton mile. You divide one by the
9 other and you get a ratio of two. So they're
10 paying twice as much as what the competitive
11 benchmark says. Shipper B, on the other hand, is
12 only paying 1.67 times as much as the competitive
13 benchmark. Shipper C is paying 2.25 times as
14 much, so this ratio is useful because it tells us
15 which shippers are facing the steepest over
16 charges relative to the competitive benchmark.
17 The next step in this method is to select an
18 allowable differential, a maximum value for R
19 that we're going to allow. And this can be
20 calibrated to protect revenue adequacy. When we
21 set the RMAX, when we set the allowable
22 differential, it tells us two things. First, it

1 tells us how many shippers are going to get
2 relief, and second, it tells us how much relief
3 they're going to get, assuming that they qualify.
4 So, for example, it's very intuitive. If we
5 started out with a low level of our max, such as
6 1.6, well, it's clear that all three of these
7 shippers would qualify for at least some degree
8 of rate relief because they're all starting out
9 with the ratio above 1.6.

10 In particular, shipper B would qualify
11 for a modest amount of relief because it would
12 only take a small adjustment in its rate to put
13 it right back down to 1.6. It's starting out at
14 1.67. Shipper C would qualify for a lot more
15 relief because it's starting out at 2.25.

16 Alternatively, we can select an RMAX equal to
17 1.9. In this case, only two out of the three
18 shippers would qualify for any rate relief at all
19 because shipper B's ratio is already below 1.9.

20 Shippers A and C would both qualify for rate
21 relief, although they would qualify for less rate
22 relief than they would have qualified for if the

1 RMAX were 1.6 instead of 1.9. And the same
2 exercise goes through for an RMAX of 2.1. In
3 that case, only shipper C qualifies for rate
4 relief, and it qualifies for less rate relief
5 than it would have qualified for under the other
6 two scenarios. The point of this is, whatever
7 the results of the regression model ultimately
8 adopted by the STB, and we don't know what those
9 are going to be, it would be a much more
10 complicated model. RMAX could always be
11 calibrated to target rate relief to a fixed
12 percentage of potentially captive shippers. As
13 the TRB observed, when it endorsed the benchmark
14 method, the benchmark method "should not threaten
15 revenue adequacy because regulators would be able
16 to set the strictness of the screen, that is, the
17 amount by which a rate can exceed its predicted
18 competitive level before being subject to a
19 challenge."

20 One approach that the STB could think about
21 taking would be setting a relatively high, so a
22 relatively conservative value of RMAX initially,

1 engaging the effect, if any, of this rate relief
2 on revenue adequacy, and then gradually relaxing
3 it over time. In conclusion, what the yardstick
4 approach accomplishes is to A, preserve
5 differential pricing to captive shippers because
6 you'll notice no matter where we set our max
7 there is still differential pricing literally
8 built into the system. Everyone is going to be
9 paying more than what a comparable competitive
10 shipper pays for any are greater than one.

11 So we preserve differential pricing
12 and we also target rate relief to the shippers
13 that face the steepest over charges relative to
14 competitive levels, because, again, no matter
15 where we pick our max the shippers that are
16 facing the steepest over charges are the most
17 likely to qualify for relief, and are going to
18 qualify for a higher level of relief than other
19 shippers. And now I'll turn it back to Mr.
20 Moreno.

21 MR. MORENO: We believe that the
22 yardstick approach is probably the preferred

1 approach that we are going to present this
2 afternoon, but the key to the yardstick approach
3 is to be able to identify railed shipments that
4 face meaningful competition because those are the
5 benchmarks in which we're inputting into this
6 regression analysis. That's probably also the
7 most challenging aspect of implementing this
8 approach. The TRB has identified certain fields
9 in the Costed Waybill Sample that are indicators
10 of meaningful competition, and they also link
11 some of those fields to outside data sources to
12 bring in additional information, but that's
13 probably only a start. More information is
14 likely to be useful and necessary to implement
15 this approach. The board itself could expand
16 data needed in the Costed Waybill Sample to
17 capture some of the additional fields or
18 information that would be needed to implement
19 this approach. It also could be appropriate for
20 the STB to conduct studies through formal
21 proceedings, somewhat of a blend of a market
22 dominance determination and a commodity exemption

1 proceeding, for example. To identify the
2 attributes of affected competition for specific
3 types of commodities that could be applied in an
4 objective manner to declassify the Costed Waybill
5 Sample as either captive or competitive to give
6 you a pretty solid determination of what those
7 are.

8 The yardstick approach, although it
9 would require substantial initial investment of
10 time and resources by the board and it's
11 stakeholders. The process would be relatively
12 easy to implement and update thereafter. An
13 alternative to the yardstick approach that could
14 be implemented more immediately is the rebate
15 approach that you've heard so much maligned
16 yesterday. Dr. Caves will begin by addressing
17 the conceptual underpinnings of the rebate
18 approach, and Mr. Crowley would then illustrate
19 two potential ways to implement the rebate
20 approach that are based upon methodologies
21 already familiar to the board and upheld by the
22 courts. Mr. Crowley will refer to these two

1 rebate alternatives as the proportional reduction
2 method or of the MMM, maximum markup method.

3 DR. CAVES: Thank you. The rebate
4 approach, the objective of the rebate approach is
5 to combine the efficiency properties of
6 differential pricing with some limitation on the
7 railroad's ability to exploit its monopoly
8 position vis a vie captive shippers. The idea of
9 the rebate approach is to take a portion of the
10 railroad surplus revenue, only a portion, and put
11 it in a pool that is potentially subject to
12 rebating to captive shippers in the form of lower
13 rates. So just to clarify, by surplus revenue,
14 we mean revenue above and beyond what the
15 railroad requires to remain revenue adequate. So
16 the rebate approach takes only a portion of that
17 surplus and protects the contribution made to
18 surplus revenue by any presumptively competitive
19 traffic. There are two approaches, two
20 variations that we'll talk about as to how the
21 rebate approach could be implemented. The first
22 we'll call the proportionality approach. This

1 one adheres most closely to Ramsey Principles in
2 the sense that shippers with lower demand
3 elasticities should pay higher rates, according
4 to Ramsey Principles. So the proportionality
5 approach attempts to adhere to that.

6 The maximum market method, on the
7 other hand, targets shippers paying the highest
8 rates, and this is more consistent with what I
9 understand to be the long cannon factors in this
10 statute. At the same time, the maximum markup
11 method is still very much consistent with Ramsey
12 Pricing Principles because, as we saw earlier,
13 any adjustment of price towards marginal costs
14 will increase the efficiency of the pricing
15 system, according to Ramsey pricing. And with
16 that, I'll turn it over to Mr. Crowley.

17 MR. CROWLEY: Continuing with the fact
18 that actual data shows that UP is revenue
19 adequate over the six year business cycle from
20 2009 through 2014 I developed the example on the
21 screen to show how the rate reduction would be
22 applied to captive traffic following the

1 proportional reduction approach. The example
2 begins with actual UP 2014 revenues on line one.
3 The actual average UP revenue surplus over the
4 six year business cycle that I discussed earlier
5 is shown on line two. Line three identifies the
6 percent of aggregate excess surpluses provided by
7 captive shippers. This allocation to captive
8 shippers is calculated as follows: Using the
9 traffic and revenue data from either the
10 railroad's records or the STB's confidential
11 Waybill sample, each movement will be arrayed
12 from highest to lowest based on its RVC ratio.
13 Using one hundred eighty percent RBC as the
14 demarcation point, all movements with RBC ratios
15 less than one hundred eighty percent would be
16 considered competitive, and all movements with
17 RBC ratios equal to or greater than one hundred
18 eighty percent would be considered captive.
19 Using the ERC's based costing approach, the
20 railroad's fixed cost will then be allocated to
21 each movement to develop total cost per movement.
22 The excess revenue per movement will next be

1 developed by subtracting each movement's total
2 cost from its revenues, and then summed across
3 the competitive and potentially captive groups to
4 calculate net excess revenues for each of the two
5 groups. The potentially captive excess return
6 share will then be calculated by dividing the
7 potentially captive shippers aggregate net
8 access, net excess revenues by the sum of the net
9 excess revenues for potentially captive and
10 presumptively competitive group. For purposes of
11 this example, I have assumed that the mix of
12 traffic handled by UP, ninety percent of excess
13 revenues from captive traffic as shown on line
14 three.

15 Line four identifies the excess revenues that are
16 available to captive shippers by multiplying line
17 two times line three. Line five shows the 2014
18 aggregate UP required revenues, assuming the
19 captive excess revenue is line four. I
20 subtracted from the total UP 2014 revenues. The
21 margin adjustment factor is shown on line six.
22 The margin adjustment factors calculated using an

1 iterative process which reduces all rates above
2 one hundred eighty percent in relative proportion
3 until aggregate UP revenues showed on line 14,
4 column 11, equal UP target revenues shown on line
5 five. In this example, the margin adjustment
6 factor equals 95.1 percent. I next assume that
7 UP handled the seven shippers shown or identified
8 in column one. For each shipper I assumed a
9 column two rate, a column three variable cost,
10 and a column four annual volume. The aggregate
11 revenues in column five for each shipper equal
12 the rate in column two times the annual volume in
13 column four. The total on line 14, column five
14 equals the line one UP total 2014 revenues. The
15 RBC ratio for each movement is shown in column
16 six and is calculated by dividing column two rate
17 by the column three variable cost.

18 The elasticity margin or the price cost margin is
19 shown in column seven. The first adjustment is
20 made to the column seven elasticity or price cost
21 margin ratios through application of the margin
22 adjustment factor appearing on line six. The

1 margin adjustment factor reduced the base
2 elasticity margin, column seven, to the adjusted
3 elasticity margin, column eight. By applying the
4 same margin adjustment factor to all above one
5 hundred eighty percent shippers, the elasticity
6 margins remain in relative proportion to each
7 other. Once the column eight adjusted elasticity
8 margin are identified, the adjusted rates, RBC
9 ratios, and total revenues can be calculated as
10 shown in columns nine, 10, and 11. Also note
11 that the total adjusted revenues on line 14,
12 column 11 equal the UP required revenues
13 calculated on line five above. In this example,
14 shipper A is the complaining shipper, and
15 therefore, the only movement whose rate is
16 subject to relief. This is reflected in column 12
17 with only the revenues for shipper A reflects a
18 revenue reduction. The total surplus revenue
19 subject to rebate, line four, would be exhausted
20 only if shippers B, C, and D also filed
21 complaints and could prove market dominance.
22 Otherwise, UP would retain that revenue for

1 itself. In addition, UP retains all the surplus
2 revenue attributed to the below one hundred
3 eighty percent traffic, shippers E, F, and G in
4 this example, which means that UP's revenue would
5 never be kept at the revenue adequacy level,
6 which is line one minus line two.

7 The second example following the
8 rebate approach is the maximum markup
9 methodology, the example is similar to the
10 example we just discussed from an input
11 standpoint. The primary difference appears in
12 columns six where the MMM approach that the STB
13 has developed in its standalone or simplified
14 standalone models is used to allocate the
15 surpluses. Otherwise, all of the facts that I
16 just discussed would apply equally here. For
17 time reasons we'll pass it back to Mr. Moreno.

18 MR. MORENO: In developing both
19 variations of the rebate approach, we wanted to
20 respond to railroad concerns that a revenue
21 adequacy constraint would be tantamount to rate
22 of return regulation, that deprives them of

1 incentives to invest in their infrastructure.
2 Dr. Caves will explain how our proposals are
3 different from rate of return regulation, and
4 also discuss the impact of our proposals on the
5 railroad's ability to invest and expand capacity
6 in response to this specific question which was
7 raised in the board's hearing notice.

8 DR. CAVES: Thank you. Under rate of
9 return regulation, the regulator adjusts all of
10 the prices that the utility or the regulated
11 entity is allowed to charge, to guarantee a fixed
12 return on the utilities assets. This is not what
13 either of the methods we are doing proposes, just
14 to be very clear. The yardstick approach, or the
15 benchmark approach clearly doesn't do this. It
16 makes no reference to returns of any kind. It's
17 simply a method for setting competitive rates in
18 areas where competition does not appear to be
19 present. Economists would call that price cap
20 regulation, which is not the same at all as rate
21 of return regulation, and it's generally
22 preferred by most economists as doing a better

1 job of preserving railroads incentives or the
2 regulated entities incentives to achieve
3 profitability and efficiency.

4 So that covers the benchmark approach. The
5 rebate approach is also not equivalent to rate of
6 return regulation. Most fundamentally because
7 the rebates only include surplus revenue that can
8 be attributed to potentially captive shipments.

9 All of the railroad's surplus revenue, as we've
10 just reviewed, all of the railroad's surplus
11 revenue attributable to competitive traffic is
12 completely off limits under the rebate approach.

13 So we just want to make that absolutely clear.

14 Therefore, the more profit the railroad can earn
15 from its presumptively competitive routes, the
16 less there will be available for rebate under
17 that approach. In addition, of course, under the
18 rebate approach, all rebates would remain purely
19 hypothetical unless and until a shipper
20 successfully brought a case before the STB. And
21 similarly, for the yardstick approach, no shipper
22 would be able to actually receive any rate relief

1 until it proved that it was paying rates
2 substantially above the competitive level and it
3 would also have to show market dominance as well,
4 of course.

5 So just to wrap up, the other
6 fundamental reason why our proposals would not
7 limit returns and would not discourage investment
8 is that, again, by definition, the revenue
9 adequacy standard protects a railroad's ability
10 to remain profitable and attract investment. And
11 it does this in a conservative way because as I
12 alluded to before, the STB's revenue adequacy
13 determinations are themselves conservative. We
14 can see this very clearly, because according to
15 the STB's revenue adequacy determinations, the
16 industry should not have been able to attract the
17 billions of dollars in investment in capital.
18 But it has, in fact, attracted over the recent
19 decades.

20 The economist for the AAO yesterday
21 made this point fairly clearly. When Dr. Brenner
22 pointed out in his testimony that the railroads,

1 as rational firms, would not and should not make
2 investments in which the rate of return is less
3 than the cost of capital, and if I could continue
4 just for one more moment to finish my thought.
5 Thank you. So Dr. Brenner pointed out that the
6 railroads would not make investments in which the
7 rate of return is less than the cost of capital.
8 I most certainly agree with that. That is very
9 much consistent with basic principles and
10 economics. The railroads and their investors
11 should only be willing to make investment for
12 which the rate of return exceeds the cost of
13 capital. But guess what? As the railroads have
14 reminded us, they have, in recent years and
15 decades, made enormous multi-billion dollar
16 investments. So while telling us all about these
17 investments, the railroads and our economists
18 want us to believe that they've also consistently
19 failed to earn sufficient returns to cover their
20 cost of capital over the same time frame. If
21 that's true, then why in the world did the
22 railroads keep making these billions and billions

1 of dollars in investment year after year, decade
2 after decade? Again, I'll just give you the
3 figures, one hundred sixty-eight billion since
4 the great recession, two hundred forty-four
5 billion in the last ten years, and three hundred
6 ninety-four billion in the past twenty years.

7 The vast majority of that time they would have
8 been found revenue inadequate. So why did the
9 railroad's project manager keep recommending
10 projects that didn't return enough to cover their
11 weighted average cost of capital, and why on
12 earth did the executives keep approving these
13 multi-billion dollar boondoggle investments? And
14 how on earth did the railroads manage to keep
15 going back to the capital markets year after year
16 raising billions of dollars to fund these
17 supposedly awful investments? Well, the reality
18 has to be that the railroads and their economists
19 are either underestimating the true returns to
20 investment, over estimating the true cost of
21 capital, or both. And the reality also has to be
22 that the STB's revenue adequacy determinations

1 are very conservative, they tend to understate
2 the railroad's ability to attract capital,
3 historical data prove that. Therefore, the STB
4 should have greater confidence in adopting this
5 highly conservative standard if it decides to
6 regulate based on revenue adequacy.

7 MR. MORENO: In the interest of time,
8 I'll just mention very quickly that we also have
9 proposed an alternative for shippers to contest
10 just the rate increase. This is essentially the
11 same alternative that Western Coal Traffic League
12 proposed yesterday. Once a captive shipper
13 demonstrates market dominance and revenue
14 adequacy at current levels, the STB may
15 reasonably conclude that further increases in the
16 differential pricing are presumptively
17 unreasonable. Chairman Elliott, yesterday you
18 asked the question about are rebuttable
19 presumptions consistent with the APA. If you're
20 still interested in that I invite you to ask me
21 the question. I won't take up more time on that
22 at the moment, and I would just quickly wrap up

1 by noting that prior to this hearing we submitted
2 a more detailed and written explanation in a
3 narrative on today's testimony into the record.
4 This was submitted, I believe, on Monday. That
5 narrative contains a further detailed explanation
6 to help you work through the examples we've done
7 today, and our proposals for implementing, and we
8 encourage the board to consult that narrative to
9 better understand what we have proposed. With
10 that, I'll defer to the board to any questions
11 you may have.

12 MR. ELLIOTT: Thank you very much.

13 MS. BEGEMAN: First, thank you for the
14 effort that you went to to respond to the board's
15 request for ideas and comments and testimony.
16 Certainly, what you supplied earlier this week is
17 helpful in understanding your creative proposal.

18 MR. MORENO: I'm sorry, could I ask
19 you to speak more directly into the microphone.
20 I'm having a little difficulty.

21 MS. BEGEMAN: Okay. I'm not sure if
22 this is for Mr. Crowley or for you, sir, but I

1 think that in your testimony, with respect to the
2 rebate reduction approach, really, whichever
3 version I think the question applies to, but I
4 think that you said that the board would have the
5 ability to determine what portion of revenues
6 would be included in the rebate reduction
7 approach. So you could, rather the board could,
8 sort of control how much of the excess revenues
9 would be at risk or at issue, but then, I think
10 Mr. Crowley when you walked us through your
11 proposals it seemed like it was a pretty clear
12 number based on mathematics, and so I'm not
13 really sure which I should believe.

14 DR. CAVES: Yes, I think I can clear
15 that up. The situation in which the board would
16 be able to sort of calibrate the RMAX, I believe
17 that's what you're referring to. That was
18 actually referring to the yardstick approach. So
19 under the yardstick approach, the RMAX that the
20 board is able to set, that defines the extent to
21 which a shipper's rate, captive shipper's rate is
22 allowed to exceed the competitive benchmark.

1 That only applies to the yardstick model.

2 MS. BEGEMAN: Okay.

3 DR. CAVES: So the other percentage,
4 you're quite right, is based on a calculation
5 that Mr. Crowley can describe in more detail.

6 MS. BEGEMAN: It's more firm?

7 DR. CAVES: It's, well, Yes, the data
8 tells you what it is, Yes.

9 MR. MORENO: Tom, do you want to add
10 anything in terms of how the rebate approach,
11 which is more quantitative?

12 MR. CROWLEY: In the example we had
13 ninety percent as the factor, and obviously that
14 was an estimate. We don't have the data to make
15 the actual calculation, but the idea is you could
16 make the actual calculation based on the
17 assumptions that we outline in our testimony. We
18 start with one hundred eighty percent is the
19 demarcation point and anything to the left of one
20 hundred eighty percent or anything with RVC
21 ratios less than that would be presumptively
22 competitive traffic, and anything to the right of

1 that or greater than one hundred eighty percent
2 would be presumptively captive. And you can
3 calculate for each one of those movements the
4 amount of revenue over total cost per movement
5 that exists, and by summing those up and each of
6 those two parts, you get two parts of money and
7 captive divided by the sum of the two parts
8 equals the ninety percent I was explaining to
9 you, so that could be done each year for each
10 carrier and apply to the surplus revenues
11 resulting from revenue adequacy calculations.

12 MS. BEGEMAN: So it's a limit or a cap
13 ultimately?

14 MR. CROWLEY: It's kind of a floor.
15 In other words, through this methodology, we will
16 not assign any revenues that were contributed by
17 competitive traffic to captive traffic through
18 this application.

19 MR. MORENO: And if I can go back to
20 one of the examples that we were using I think
21 it's important to note Mr. Crowley identified to
22 types of money, the below one hundred eighty,

1 which we're calling the presumptively captive
2 traffic because of the jurisdictional threshold,
3 and the, or excuse me, presumptively competitive
4 traffic, and the above one hundred eighty, which
5 we are describing as the potentially captive
6 traffic, same phrase the board has repeatedly
7 used to describe it. We are not touching the pot
8 of money in the presumptively competitive group
9 at all. And when we're looking at the, so none
10 of that gets redistributed. And when we were
11 looking at the above one hundred eighty group we
12 are allocating, we're taking the contribution to
13 unattributable costs from just that group and
14 then spreading it back by one of the two methods,
15 proportional or the MMM method across all of the
16 one hundred eighty traffic, so to take this
17 example that we have up here, let's assume that
18 get shippers A, B, C, and D, if you look at
19 column 11 you see, and you compare that to column
20 five, the approach distributes the excess revenue
21 back to all of shippers A, B, C, and D. Now, but
22 first of all, we only have one complaint in this

1 example, A, so in the example, A is the only one
2 who gets any relief. Number two, let's assume
3 that B, C, and D --

4 MS. BEGEMAN: Don't you think the
5 other letters will pay attention?

6 MR. MORENO: I'm sorry?

7 MS. BEGEMAN: Don't you think the
8 other letters will pay attention?

9 MR. MORENO: Yes, yes, so that's where
10 I'm going now. Now, assume B, C, and D also file
11 complaints. Well, first of all, each one of them
12 has to prove market dominance. Let's say B filed
13 its complaint and it cannot prove market
14 dominance. The railroad contains that excess
15 revenue that's otherwise allocated to shipper B.
16 And let's say, but if C files a complaint and it
17 prevails and by showing market dominance it would
18 be entitled to its allocated share here. The
19 point being that shippers who don't bring
20 complaints and shippers who don't prove market
21 dominance above the one hundred eighty group, the
22 railroad keeps that revenue because we have made

1 sure that the entire pot of money is at least
2 hypothetically distributed across every above one
3 hundred eighty shipper. And only those who
4 prevail on a complaint get their allocated
5 portion of that. So there's no way we can drain
6 the swamp unless every single above one hundred
7 eighty shipper files a complaint and proves
8 market dominance. And in that case, the swamp
9 should be drained, under an example, but that's
10 unlikely to happen.

11 MS. BEGEMAN: Could you help me
12 understand dead weight loss?

13 DR. CAVES: Dead weight loss, oh,
14 sure. I could really use another slide now.

15 MS. BEGEMAN: That's okay, I mean, I
16 have them all here.

17 DR. CAVES: Okay. No, I mean, it's
18 just easier if you draw it on a white board. But
19 the basic idea when economists talk about
20 efficiency, the idea is you're trying to figure
21 out that you have a market for any good, right?
22 You've got an upward sloping supply curve, you've

1 got a downward sloping demand curve. If nothing
2 interferes with supply and demand, then wherever
3 those two intersect is going to be where you find
4 an equilibrium, and that's going to tell you the
5 price and the quantity. The price at which the
6 good will be sold and the quantity is sold. And
7 as long as supply is meeting demand, then there's
8 no dead weight lost in the system. And the
9 reason is every single unit of the product is
10 produced as long as the value to society of
11 producing that unit is greater than the cost to
12 society of supplying the unit. So that's the
13 basic way to measure efficiency in economics. If
14 the benefit is bigger than the cost it's
15 efficient for that thing to be produced, for that
16 item to be brought to market. So the problem
17 that comes up with monopoly pricing is that the
18 monopolist does not want to charge a competitive
19 price. The monopolist wants to charge the
20 monopoly price, which is significantly higher.
21 Why? Because that'll maximize the monopolist
22 profits. And the reason economists don't like

1 monopoly pricing is not so much that the
2 monopolist gets a "unfair amount of profit." The
3 problem is that the only way the monopolists can
4 earn that profit is by restricting the quantity
5 supplied below the competitive level, right?

6 That's how you get prices higher, you've got to
7 restrict supply. And as soon as you start
8 restricting supply you're going to be producing
9 fewer unit than you would under a competitive
10 situation. And that means there are going to be
11 a whole bunch of people that don't get to buy the
12 unit, even though they value it more than it
13 costs society to provide it. It's sometimes
14 referred to as, I wish I had a whiteboard. You
15 refer to --

16 MS. BEGEMAN: I'm glad you don't.

17 DR. CAVES: But I can assure you, if
18 you look, if you talk to any of the economists in
19 this room or if you look in any economics
20 textbook, that's a very fundamental premise of
21 microeconomics.

22 MS. BEGEMAN: Mr. Roman, I don't mean

1 to put you on the spot, but the last sentence of
2 your testimony -- I don't know if you were
3 reading from a written testimony, but could you
4 repeat what you said, or maybe you were just
5 going off the top of your head, but --

6 MR. ROMAN: No, the last sentence I
7 said in order for the board to control service
8 it's going to need to have some type of control
9 over how much of the increase in profit the
10 railroads are making from rate increases go back
11 into the system. My testimony demonstrated that
12 there was a very large portion of operating
13 profits that the railroads made, which were going
14 to the stockholders, leaving the rail system, and
15 there isn't any, as far as I know, isn't any
16 regulation to try to regulate that. I think the
17 railroads are --

18 MS. BEGEMAN: I think that's probably
19 a good thing.

20 MR. ROMAN: I'm sorry?

21 MS. BEGEMAN: That there's not
22 regulation to regulate that. But back to some of

1 your pie charts. I know you were trying to make
2 a point, but to say a car load is a car load
3 doesn't seem like a fair statement. I think you
4 used BNSF as the example, what car loads they
5 were moving, although the number may be very
6 comparable to 2005 to 2014. The makeup of those
7 car loads are very different in the type of
8 investment or the type of service. I mean, with
9 the crude oil in North Dakota, all that they've
10 had to do to accommodate those requests for
11 service. Certainly, there's a lot more to it, I
12 think, than just what you were showing on your
13 pie charts.

14 MR. ROMAN: Well, actually, the line
15 graph, we've had the annual car loads each year
16 with the railroad. I mean, your point is if a
17 car load is not a car load in 2014, even though
18 the car loads were the same, very similar to
19 2005.

20 MS. BEGEMAN: In number.

21 MR. ROMAN: Different distribution on
22 the railroad system, it could be more intermodal

1 or less intermodal. It could be a lot of
2 different things. The point being raised is that
3 the railroad's capital investments appear to be
4 maintained in existing systems. Specifically
5 when you get into the crude oil and you get into
6 the frac sand movements, which are probably more
7 important to rail than the crude as we go out
8 into the future. Investments could have been
9 made for that years before all these movements
10 actually started. They knew a lot of this was
11 going to happen, but the railroads held back
12 investing capital in a lot of areas. And that
13 was the reason that you had service issues out
14 there. It didn't have the infrastructure to
15 support it. So it's a question of are the
16 railroads investing to maintain the existing
17 system, or are they investing to increase the
18 capacity of the system for what could be
19 happening next year or the year after, or five
20 years from now. And the service parameters that
21 we looked at there demonstrated that service
22 isn't improving and those capital expenditures

1 appear to be going in the direction of just
2 maintaining the existing system.

3 MS. BEGEMAN: Well, maybe you could
4 help me understand it if I ask it a different way
5 because I'm not quite following. But I think
6 that the advertisement on WTOP is that the
7 railroad industry is putting in twenty-nine
8 billion dollars this year of investment, and
9 you're saying that the board should ultimately
10 control and dictate even more for investment
11 purposes rather than it going to the
12 shareholders?

13 MR. DONOVAN: No, that's not the
14 position of the concerned shippers. Sorry, Jay.

15 MS. BEGEMAN: Okay, because that was
16 actually the message I was getting.

17 MR. DONOVAN: I understand that last
18 sentence in this testimony I hadn't heard before.

19 MS. BEGEMAN: Okay.

20 MR. DONOVAN: I think Dr. Caves just
21 gave you the economic reality of what happens
22 with dead weight loss. And the point that he

1 made there is that when monopolists go up to the
2 monopoly price they do not want to increase
3 supply. In the railroad industry that means they
4 do not want to increase their capacity to move
5 more traffic. So, Jay Roman's data reflects, I
6 think clearly, that the railroads have not
7 expanded their capacity over the last ten years
8 even though they've made a lot of money. They
9 have put twenty-nine billion, whatever the number
10 is, into maintaining new tunnels --

11 MS. BEGEMAN: That's just for this
12 year.

13 MR. DONOVAN: Well, whatever, but new
14 tunnels, you heard two hundred fifty million
15 dollar tunnel. Well, the tunnel is going to fall
16 down. Of course they had to replace the tunnel,
17 or whatever other infrastructure investment you
18 need to make to keep the system running. That
19 could be a lot of money. The railroad is highly
20 capital intensive. We know that. That doesn't
21 mean that the railroad industry is going to
22 expand its capacity. Now, we're not here to tell

1 you that you should regulate how the railroads
2 invest their money. That's not what we're doing
3 here.

4 MS. BEGEMAN: Okay, good.

5 MR. DONOVAN: What we are doing here
6 is saying we saw a parade of economic witnesses
7 and others come in yesterday and say oh, my god,
8 don't reduce our rates because if you do we will
9 not have money to expand our system, and what Mr.
10 Roman's numbers show you is that they're not
11 expanding their system, and what Dr. Caves tells
12 you is they won't expand their system. There is
13 no economic incentive for these four effectively
14 monopoly railroads to expand their systems. So
15 don't think that by putting in a revenue adequacy
16 test or restraint or constraint that somehow or
17 another you're going to prevent the railroads
18 from expanding their systems because they're not
19 going to expand their systems.

20 MS. BEGEMAN: But by expansion do you
21 mean that they have to have more miles in
22 operation? Technology, I think, is one of the

1 reasons that they haven't had to expand.

2 MR. DONOVAN: That may be true, but
3 you're having service problems. How are you
4 having service problems when they've got all this
5 money? The fact is, they're not interested in
6 expanding. Even the TRB report says they don't
7 understand why the railroads aren't putting more
8 money into their system so they can serve all the
9 profitable traffic. They're not doing that
10 because they don't want to do that. Dr. Caves
11 explained why they won't do that. They're
12 monopoly pricing. They love that dead weight
13 loss, but the shipper, i.e., the society, i.e.
14 our economy, doesn't love that loss. That's the
15 point we're trying to make. We're not telling
16 you to regulate investment, no. But we are
17 telling you is don't think that you should not
18 put in a revenue adequacy constraint because
19 somehow it's going to prohibit the railroads from
20 investing money that they're not going to invest
21 anyway.

22 MS. BEGEMAN: I'll turn it over to you

1 at this point.

2 MS. MILLER: So, Dr. Caves, I want to
3 go back and make sure I was understanding this
4 correctly. I thought, if I get on my right page,
5 that the point you made when you said the total
6 amount that railroads had invested since the
7 recession, 168 million over two years, two
8 hundred forty over twenty years, three-hundred
9 ninety-four --

10 DR. CAVES: Oh, Yes.

11 MS. MILLER: Is what you were saying,
12 is the sheer fact that those numbers are out
13 there tells you that they must be revenue
14 adequate because they wouldn't do that if they
15 weren't revenue adequate? Is that what I
16 understood you to say?

17 DR. CAVES: Yes, it tells me that a
18 measure of revenue adequacy that says that the
19 railroad is revenue inadequate, and therefore
20 unable to attract capital must be conservative if
21 the railroad were, in fact, attracting sufficient
22 capital to make these investments over that time

1 frame.

2 MS. MILLER: And if it's not possible
3 it's not a big, can you go back to one of those
4 charts, one of Dr. Crowley's charts? On the
5 rebate approach. Okay, so this one. Is line
6 number five, are you saying that's the amount
7 that they would have charged to their competitive
8 traffic, and as a consequence that's an amount
9 that should clearly be retained and not a part of
10 the calculation?

11 MR. CROWLEY: On line five?

12 MS. MILLER: It's called UP required
13 revenues.

14 MR. CROWLEY: That's the amount after
15 you strip out the contribution to the surplus by
16 the competitive traffic. So that's amounts that
17 --

18 MS. MILLER: You're saying that what
19 you're calling the surplus came from competitive
20 traffic, not from captive traffic?

21 MR. CROWLEY: No, the surplus in total
22 is shown on line two.

1 MS. MILLER: Line two.

2 MR. CROWLEY: And what we want to do
3 is take out of line two that portion that was
4 contributed by competitive traffic, so we strip
5 that out.

6 MS. MILLER: But is that line five?

7 MR. CROWLEY: And that is line five.

8 MS. MILLER: Okay, so you'd say that
9 that amount in this case, 22.7 --

10 MR. MORENO: Yes, mathematically,
11 those lines actually follow one another. You
12 start with UP's total revenues of 23.8 million in
13 line one. We've calculated the surplus as 1.273
14 million dollars. Now, and what we've now taken
15 is line three takes ninety percent of line two to
16 generate line four. And line one minus line four
17 equals line five. So what that ninety percent
18 represents, and this is a hypothetical, the
19 ninety percent is the portion of line two that
20 was contributed by above one hundred eighty
21 shippers.

22 MS. MILLER: Okay.

1 MR. MORENO: So that creates the above
2 one hundred eighty pod of money.

3 MS. MILLER: Okay.

4 MR. MORENO: And everything that's
5 left over is the below one hundred eighty.

6 MS. MILLER: Okay.

7 MR. MORENO: Now, whether ninety is
8 the true number or not, we don't know, that's a
9 number we picked out of the air.

10 MS. MILLER: Yes, okay. So, one of
11 the things that I'm curious about, going back to
12 the TRB study and the way you've looked at doing
13 this, they also said that URCS is desperately
14 flawed and you shouldn't try to fix it, but the
15 one hundred eighty comes out of URCS, correct?
16 So are you uncomfortable with the notion that our
17 current way of figuring out who's above and below
18 one hundred eighty is coming from a system that,
19 at least, you know, some set of researchers?

20 MR. MORENO: I would add at the
21 beginning, the pretext or the guidelines that we
22 used for calculating this, one of those

1 guidelines enumerated up front is consistent with
2 current statute.

3 MS. MILLER: Yes, true.

4 MR. MORENO: What the board can do
5 today. You know, what the TRB is concerned about
6 is a policy debate that can be had down the road,
7 but we need to deal with what we have in front of
8 us right now and the tools that we have, and
9 that's how we come up with this approach.

10 MS. MILLER: And then, particularly,
11 I guess, it would be on the benchmarking
12 approach. In order to do that, I mean, the way I
13 understood what TRB did was they used the
14 information that could be derived from the
15 waybill sample.

16 DR. CAVES: Combined with some other
17 data, Yes.

18 MS. MILLER: And if we were truly
19 going to use this as our method for regulation,
20 is the information available through the waybill
21 sufficient to create this kind of statistical
22 model to predict what a competitive rate would

1 have been?

2 DR. CAVES: No, it'll get you most of
3 the way there, but the TRB had to go outside the
4 waybill, and they were able to go outside the
5 waybill. They obtained information to try to
6 approximate the availability of competitive
7 alternatives from external data set. So they
8 would take the location of a station, they would
9 map it to a latitude and longitude from some
10 other database and then figure out, okay, they
11 basically constructed a crude metric. How many
12 class one railroads are within ten miles? How
13 many ports are within twenty miles? Mr. Moreno
14 earlier was making the point that that's where
15 you would probably want to consider something a
16 little more precise. After all, the TRB was
17 doing it illustratively.

18 MS. MILLER: Yes.

19 DR. CAVES: But that should be
20 feasible. There would be some up front cost to
21 it for sure. But supplementing the CWS with some
22 reliable indicator of effective competition

1 should not be insurmountable. And we have more
2 details on that in our written testimony.

3 MS. MILLER: So if one were interested
4 in pursuing this sort of an approach, part of
5 what it would require is, you know, sort of then
6 figuring out where your comparable traffic is so
7 you're comparing the rates back to comparable
8 traffic?

9 DR. CAVES: Are there complications to
10 that, you know, just sort of knowing what you
11 really could call comparable and not comparable?
12 Is that something that could be debated for
13 years?

14 MR. MORENO: It's similar to a market
15 dominance determination that you do in a rate
16 case. It's similar to commodity exemption.

17 DR. CAVES: Oh, but it's more
18 transparent than that, right? Sorry to
19 interrupt. But at least, if you estimate a
20 reliable model then you have a very transparent
21 way of determining what traffic is comparable,
22 right? Because the model tells you how the

1 different shipment characteristics relate to the
2 rates.

3 MS. MILLER: Yes, so you would know
4 what the characteristics are?

5 DR. CAVES: Yes.

6 MS. MILLER: So you're saying it's
7 transparent because you can make a judgment call
8 if you felt like, in fact, those characteristics
9 were the same?

10 DR. CAVES: Well, and the model will
11 tell you. You know, if there's some
12 characteristic that doesn't matter, the model
13 will tell you, hey, this coefficient is
14 insignificant. Drop it out of the model, we
15 don't need it. That's an objective standard that
16 you can get. Sorry to interrupt.

17 MR. MORENO: And the illustrations
18 that Dr. Caves used, he created very simplistic
19 one that assumed there's just one variable of
20 distance. Obviously, when we get into this
21 you're going to have to come up with several
22 variables.

1 MS. MILLER: Yes, so it was, I thought
2 it was great that Vice Chairman Begeman asked
3 about dead weight loss because I had that on my
4 list too, but unlike her I wish you did have a
5 whiteboard because, again, I'm pretty sure I
6 would have understood it better if you were
7 drawing on a whiteboard and by the time Mr.
8 Donovan was finished with us I concluded that
9 actually was a fairly important thing to
10 understand.

11 MR. MORENO: He's creating his own
12 whiteboard right now.

13 MS. MILLER: I know, I see that.

14 MS. BEGEMAN: I didn't wish to imply
15 that I didn't think it was important to
16 understand.

17 MR. CAVES: Is there a projector or
18 something I can use? I can just kind of hold it
19 up.

20 MR. MORENO: We don't have an opaque
21 projector, but.

22 MS. MILLER: You can just come up

1 here.

2 MS. BEGEMAN: You can approach the
3 bench.

4 DR. CAVES: All right, I can approach
5 the bench? Okay. All right, so here's the way
6 it works.

7 MS. MILLER: Do you want a microphone?

8 DR. CAVES: So I'm showing a supply
9 and demand graft here. You've got upward sloping
10 supply which shows the marginal cost of producing
11 some product, it doesn't matter what it is,
12 you've got demand, which shows how much people,
13 consumers, society value the product, right? The
14 more of the product that's produced, generally,
15 the more it costs to produce it.

16 MS. MILLER: The more that's produced
17 the more it costs to produce it?

18 DR. CAVES: Right, so marginal cost
19 tends to increase. At some point, for example,
20 the railroad just hits capacity and can't accept
21 anymore shipments on this railroad, so the cost
22 goes up. The cost curve could look different,

1 but that wouldn't materially affect it. Because
2 you're right, the marginal cost tends to go
3 downward, but this will make it more concrete.
4 The demand curve slopes downward because the more
5 you sell the lower the price you can sell it at
6 is the basic idea.

7 MS. MILLER: Yes.

8 DR. CAVES: If we produced only this
9 much, so suppose we're way back here at this
10 quantity level, the demand would be very high.
11 People would be willing to pay a very high price
12 because it's in such short supply. On the other
13 hand, the cost of producing that much is
14 relatively low. So that tells us it's not
15 efficient to be at this production level. You
16 need to keep on moving to the right here until
17 you get to this level, because when you're at
18 this level you know that you've gotten to the
19 point where it's the value that someone places on
20 buying that product is just equal to the cost of
21 producing that product. And the problem with
22 monopoly pricing or any, you know, distortionary

1 taxation can do the same thing is that it will
2 move you away from this optimal quantity, and
3 there will be all this output that never gets
4 produced, even though the benefits of producing
5 it are greater than the cost of supplying it. So
6 that's it.

7 MS. MILLER: Thank you.

8 DR. CAVES: Yes.

9 MS. MILLER: Okay, I'm done. Thank
10 you.

11 MR. ELLIOTT: I think we'll probably
12 have to enter that into evidence just because it
13 was described and, I mean, take your time. I
14 don't think it'll be controversial because you
15 were explaining, I think, a basic economic
16 principle.

17 DR. CAVES: That should be very
18 uncontroversial, yes.

19 MR. ELLIOT: But I think just because
20 it was a little unorthodox that we should at
21 least have the exhibit in evidence for reference
22 of the other parties. I just had a few

1 questions. First, with respect to the rebate.
2 Yesterday we were discussing similar rebate
3 proposals with the carriers and the carriers' one
4 concern was it would have an asymmetric problem.
5 Do you agree with that statement that you're only
6 going to be recovering on the high end above
7 revenue adequacy, but what are you going to do
8 below it?

9 DR. CAVES: Is there going to be a
10 problem? Which method were you asked about?

11 MR. ELLIOTT: The rebate.

12 DR. CAVES: The rebate method? So, of
13 course, the issue here is that you will never, it
14 doesn't really apply because regardless of
15 whether you're on the upside or the downside you
16 never go so far on the down side that you have a
17 dis-incentive to invest. I think that's really
18 the answer. The asymmetric regulation argument
19 assumes that once you go on the downside, oh my
20 gosh, your returns are so low that you're not
21 earning it above your cost of capital, so why
22 would we make a productive investment? But if

1 your returns never get that low it's a non-issue.

2 MR. MORENO: And under the rebate
3 approach, the railroads can still earn above
4 their cost to capital and retain that excess
5 earning. All we're rebating here is the excess
6 contribution from the captive shippers, the above
7 one hundred eighty shippers. The railroad keeps
8 the excess contribution from the below one
9 hundred eighty shippers, and it also keeps the
10 excess contribution from the above one hundred
11 eighty shippers who aren't truly captive because
12 they can't produce, or because they can't show
13 market dominance. So to the extent the railroad
14 is engaged in halves pricing of its competitive
15 traffic, which is what UP, for example, in this
16 proceeding, has attributed most of its financial
17 success to. It keeps that revenue. We're not
18 touching that. We're dealing with differential
19 pricing of the truly captive market dominant
20 shippers and refunding only their excess
21 contribution.

22 MR. ELLIOTT: And back to the

1 benchmark model that you explained that was, I
2 guess, also in reference to the TRB model,
3 talking to the economists about -- I asked
4 questions about that yesterday. With respect to
5 their analysis they did not have a huge problem
6 with it, the model itself, but their conclusion
7 was that it would lead you back to something
8 that's complex or similar to SAC. Do you agree
9 with that, their analysis?

10 DR. CAVES: I don't agree. I don't
11 agree and the TRB doesn't agree. The TRB had a
12 long time to think about these issues and a long
13 time to put that report together, and they had a
14 various distinguished group of economists working
15 in a, I think it was Dr. Colquitt in a non-
16 disputatious environment, which is what he said
17 he preferred, and they concluded that the
18 yardstick approach was the way to go.

19 MR. ELLIOTT: Thanks. And also with
20 respect to the yardstick approach, I know we're
21 talking about it in the context of revenue
22 adequacy, but were you looking to use that as a

Testimony of the Concerned Shipper Associations

The American Chemistry Council

The Fertilizer Institute

The Chlorine Institute

The National Industrial Transportation League

Submitted to the Surface Transportation Board

July 23, 2015

238911

238912

ENTERED

Office of Proceedings

July 24, 2015

Part of

Public Record

Caves EXHIBIT 1

Ramsey pricing principles

- Economic efficiency \leftrightarrow Marginal cost pricing ($P = MC$)
- Economies of Scale (high fixed costs) $\rightarrow MC < AC$
 - Marginal cost pricing not feasible
- Profit maximizing solution \rightarrow Set P as high as possible above MC
 - Economically inefficient
- Ramsey Pricing Principles:
 - Set $P > MC$, but only by enough to cover all relevant costs (fixed, variable, investment returns)
 - Constrained optimization: Move P as close to MC as possible without violating the revenue adequacy constraint
 - Any rate adjustment closing gap between P and MC is economically efficient, even if the full Ramsey optimum is not achieved

Union Pacific Net Revenue Adequacy -- 2009 to 2014 Business Cycle (\$ in 000)

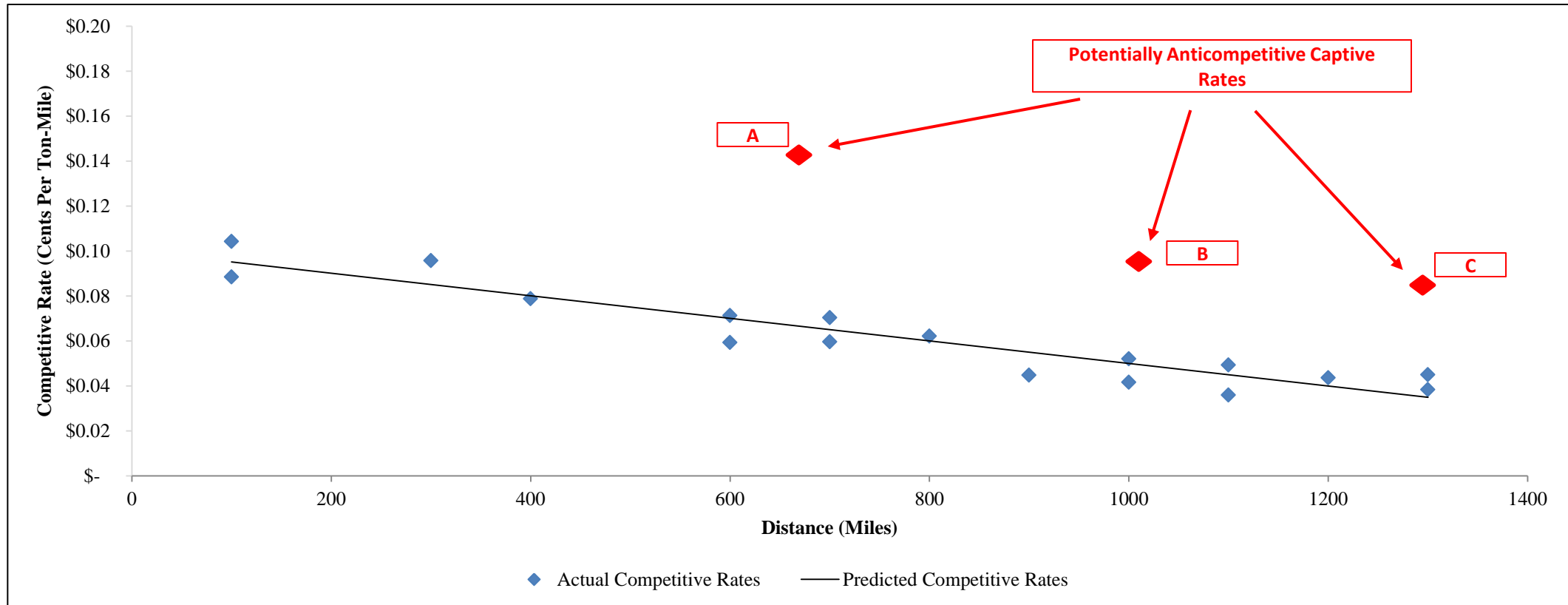
<u>Year</u>		<u>Cost of Capital</u>	<u>Tax Adjusted (shortfall)/surplus</u>	<u>Present Value of Tax Adjusted (shortfall)/surplus</u>
(1)		(2)	(3)	(4)
1.	2009	10.43%	-\$767,046	-\$1,259,671
2.	2010	11.03%	219,718	333,908
3.	2011	11.57%	682,782	948,254
4.	2012	11.12%	1,638,241	2,022,844
5.	2013	11.32%	2,027,153	2,256,626
6.	2014	10.65%	3,336,358	3,336,358
7.	Total	xxx	\$7,137,206	\$7,638,319
8.	Average	xxx	xxx	\$1,273,053

Caves EXHIBIT 2

Yardstick/Benchmark Method

– Predict competitive rate, given shipment characteristics:

$$Actual_Rate_i = \beta_0 + \beta_1 Distance_i + \varepsilon_i$$

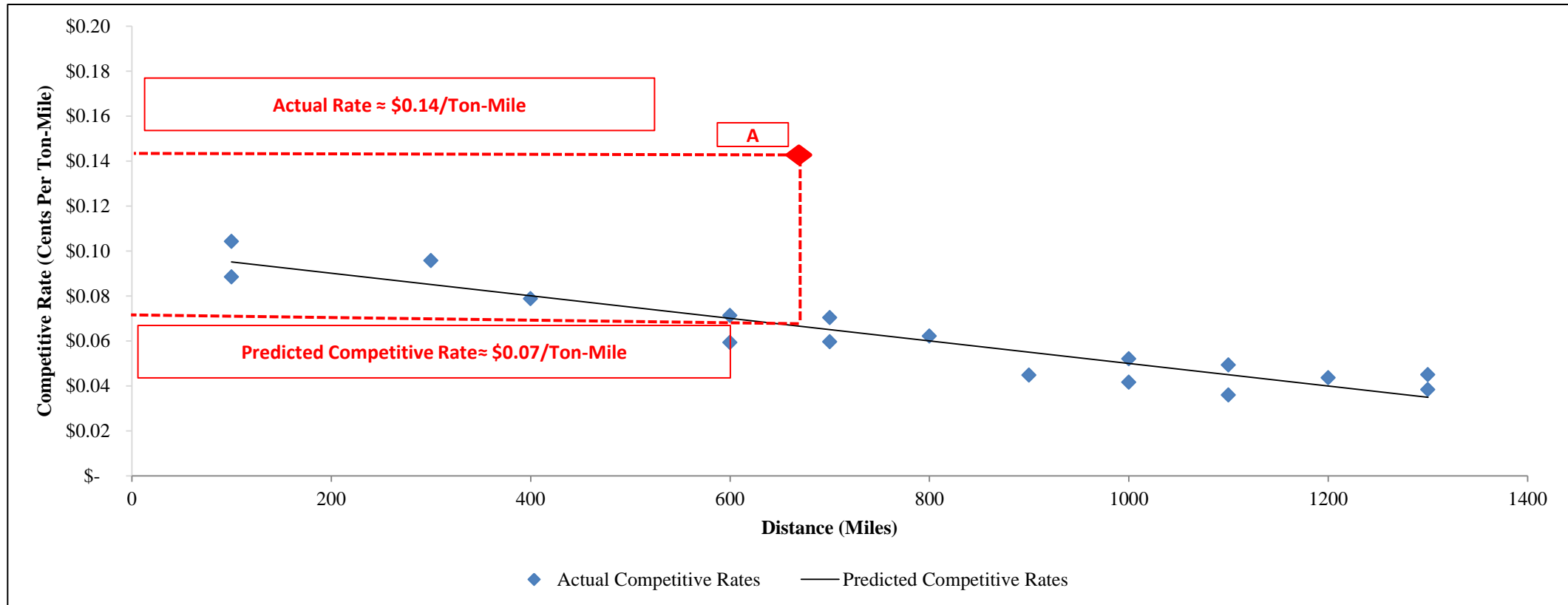


Caves EXHIBIT 2

Yardstick/Benchmark Method

- Compare actual captive rates to predicted competitive rates:

$$\text{Predicted_Rate}_A = \beta_0 + \beta_1 \text{Distance}_A$$

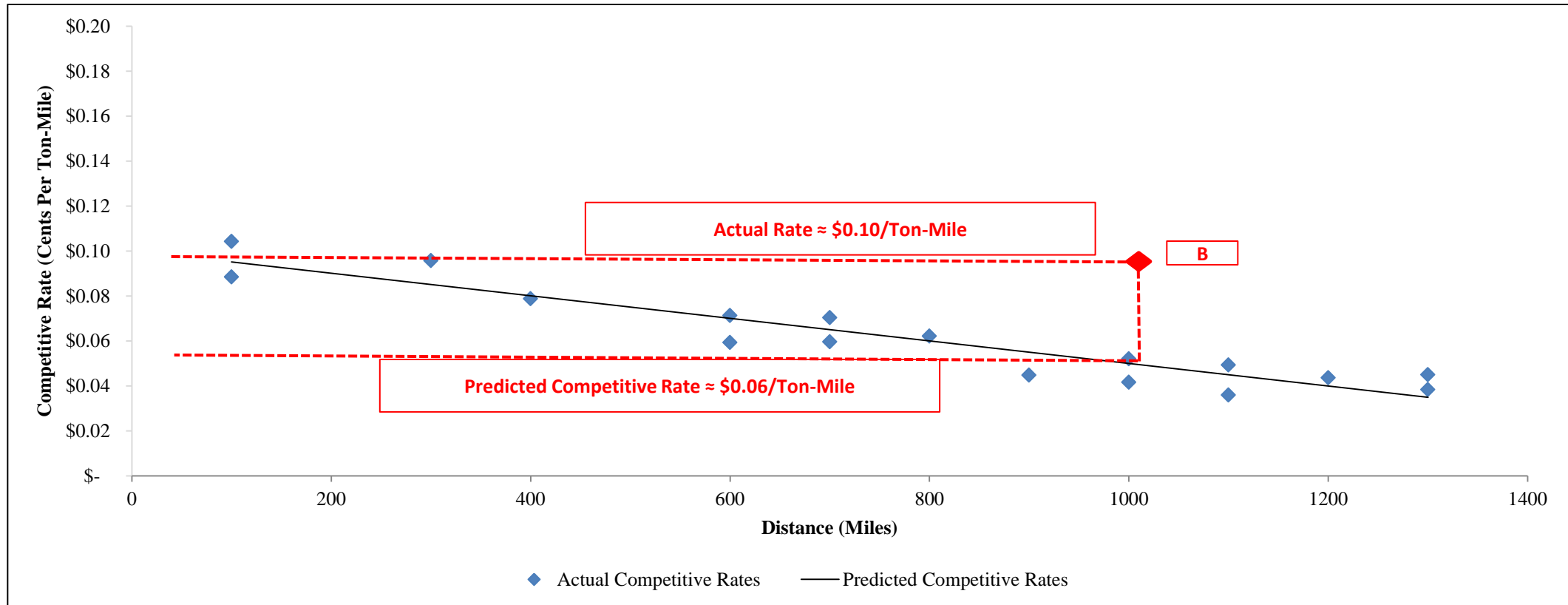


Caves EXHIBIT 2

Yardstick/Benchmark Method

- Compare actual captive rates to predicted competitive rates :

$$\text{Predicted_Rate}_B = \beta_0 + \beta_1 \text{Distance}_B$$

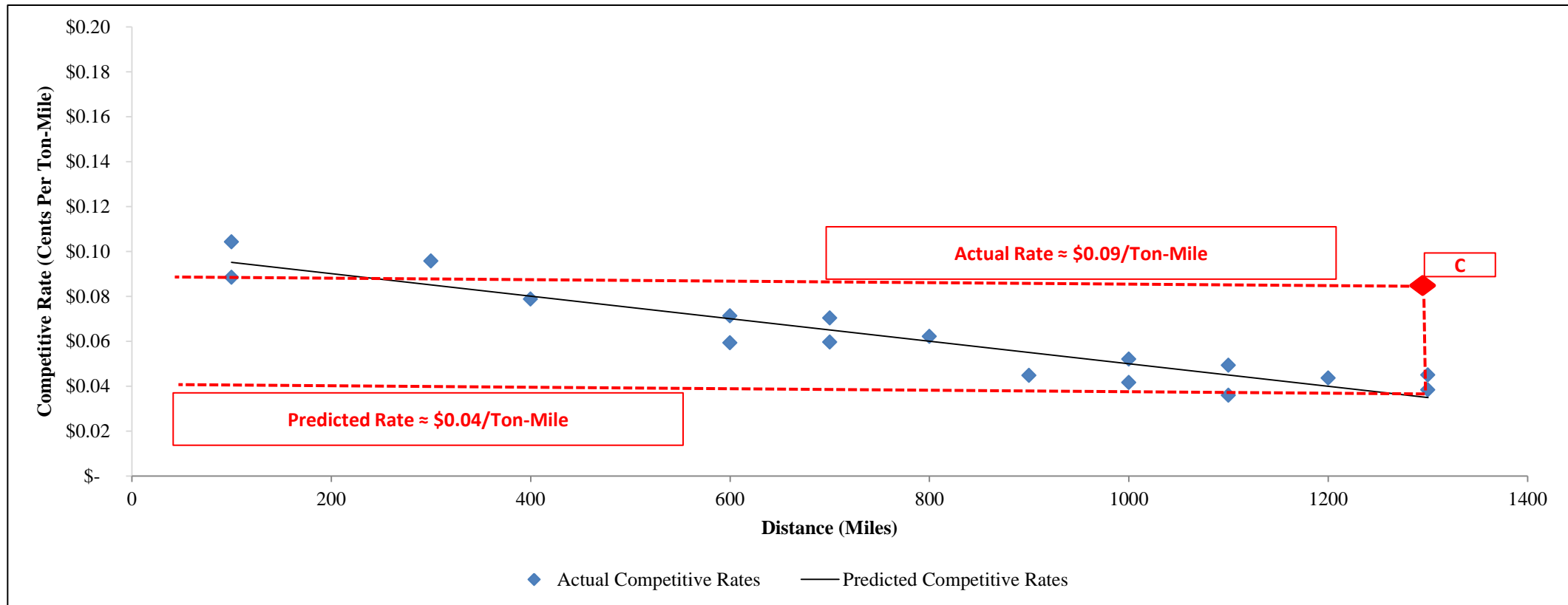


Caves EXHIBIT 2

Yardstick/Benchmark Method

- Compare actual captive rates to predicted competitive rates :

$$\text{Predicted_Rate}_C = \beta_0 + \beta_1 \text{Distance}_C$$



Caves EXHIBIT 2

Yardstick/Benchmark Method

- $R = (\text{Actual_Rate})/(\text{Predicted_Rate})$
 - $R_A \approx \$0.14/\$0.07 \approx 2$
 - $R_B \approx \$0.10/\$0.06 \approx 1.67$
 - $R_C \approx \$0.09/\$0.04 \approx 2.25$
- R_{MAX} = “Allowable Differential”
 - $R_{MAX} = 1.6 \rightarrow$ All rates reduced
 - $R_{MAX} = 1.9 \rightarrow$ Only 2/3 reduced
 - $R_{MAX} = 2.1 \rightarrow$ Only 1/3 reduced
- R_{MAX} calibrated to protect revenue adequacy