ASSOCIATION
OF AMERICAN
RAILROADS

John T. Gray
Senior Vice President - Policy & Economics

September 2, 2016

The Honorable Cynthia T. Brown
Chief, Section of Administration
Office of Proceedings
Surface Transportation Board
395 E Street, SW
Washington, DC 20423-0001

Dear Ms. Brown:

This submission is the AAR forecast of the fourth quarter 2016 All-Inclusive Index and Rail Cost Adjustment Factor, filed in Ex Parte No. 290 (Sub-No. 5) (2016-4) *Quarterly Rail Cost Adjustment Factor*. The versions of RCAF-related indices covered in this filing are: the All-Inclusive Index (initiated in the second quarter of 1985), the Unadjusted RCAF (produced since October 1982), the Adjusted RCAF (first published in the second quarter of 1989), and the RCAF-5 (created by the STB in its Ex Parte No. 290 (Sub-No. 7) decision served October 3, 1996). The table below summarizes the fourth quarter 2016 results on the fourth quarter 2012 base, and shows the percentage changes from the previous quarter.

	2016Q3	2016Q4	% Change
All-Inclusive Index	88.4	87.6	-0.9
Preliminary RCAF	0.884	0.876	-0.9
Forecast Error Adjustment	-0.042	0.005	
RCAF (Unadjusted)	0.842	0.881	4.6
Productivity Adjustment Factor	2.3667	2.3750	
RCAF (Adjusted)	0.356	0.371	4.2
PAF-5	2.5016	2.5059	
RCAF-5	0.337	0.352	4.5

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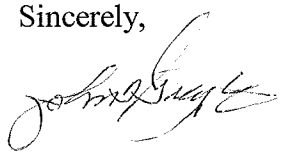
In its October 3, 1996 decision in Ex Parte No. 290 (Sub-No. 7), *Productivity Adjustment - Implementation,* the STB noted its intent to publish, in addition to the RCAF (Unadjusted) and RCAF (Adjusted), an RCAF-5 (i.e., a calculation of the productivity adjusted RCAF values as if the agency had always used a 5-year rolling average to calculate the productivity adjustment). In response to a request by STB staff, the AAR is including a calculation of the RCAF-5 in its quarterly RCAF filing. The AAR and its members, however, do not believe the publication of a third RCAF index is required or permitted by the applicable statute (49 U.S.C. § 10708) and do not endorse its publication.

Our quarterly non-proprietary work papers underlying this submission are e-filed herewith, in accordance with the ICC's order in Ex Parte No. 290 (Sub-No. 2), *Railroad Cost Recovery Procedures,* served February 8, 1990. We have notified Pedro Ramirez, in the STB office handling this proceeding, of our plan to e-file the submission and non-proprietary work papers. A second copy of the submission and non-proprietary work papers, plus selected highly confidential work papers, will be hand-delivered to Mr. Ramirez's Data Collection and Auditing Team. All work papers are available for STB inspection. Questions should be directed to me or Clyde Crimmel (202 639-2309) of this office.

Sincerely,



John T. Gray

Attachments

Fourth Quarter 2016
All-Inclusive Index

Ex Parte No. 290 (Sub-No. 5) (2016-4)

Quarterly Rail Cost Adjustment Factor
Surface Transportation Board

Policy and Economics Department
Association of American Railroads

September 2, 2016

Table of Contents

Introduction

On January 2, 1985, the Interstate Commerce Commission (ICC) adopted the All-Inclusive Index as the basis for the Rail Cost Adjustment Factor (RCAF). The quarterly projection of railroad costs, as documented herein, employs the All-Inclusive Index as required by the regulations. Also presented in this submission is the RCAF, both Adjusted and Unadjusted, as required by the ICC in its decision in Ex Parte No. 290 (Sub-No. 4), Rail Cost Recovery Procedures - Productivity Adjustment, served March 24, 1989. In addition, the AAR has included the RCAF-5, which was instituted by a Surface Transportation Board decision served October 3, 1996 in Ex Parte No. 290 (Sub-No. 7), *Productivity Adjustment - Implementation* . The AAR and its members do not believe the additional productivity-adjusted index is required or permitted by the applicable statute, and do not endorse its publication.

This quarter's projection of railroad costs is for the fourth quarter 2016. The All-Inclusive Index utilizes new weights (see page 2), which are based on 2015 Annual Report Form R-1 data. New annual report and wage statistics data have also been utilized to rebenchmark labor (see Appendix A), and to calculate a new Interest Index (see Appendix F).

Index Weights

In the Ex Parte No. 290 (Sub-No. 2) final rules, issued in April 1981, the Interstate Commerce Commission mandated that the weights of each major cost component be updated annually. These "external" weights are calculated using data from Schedules 410 and 210 of the R-1 annual report filed with the Surface Transportation Board by the Class I railroads. The weights are typically updated with the fourth quarter projection.

The 2015 (current) and 2014 (previous) weights are shown below. Weights calculated from 2014 data were used for the fourth quarter of 2015 through the third quarter of 2016. Beginning with the fourth quarter of 2016, weights calculated using 2015 data are used. Traffic and fuel prices were down in 2015, causing fuel expenses to decline substantially in both amount and as a percentage. Because of the huge drop in fuel expenses, the weight for the Fuel Index decreased considerably, while the weights for all of the other categories increased. Labor, Other, and Depreciation had the largest weight increases, as expenses in those categories were lower by small percentages compared to the other categories. The Other category consists of Purchased Services, Taxes (other than income and payroll), Casualties & Insurance, Loss & Damage, and General & Administrative expenses. The weight for Labor, 35.0 percent, is the highest it has been since it was 35.3 percent in 2005.

Weights for RCAF's All-Inclusive Index

	2015	2014
Labor	35.0 %	31.7 %
Fuel	13.4	20.9
Materials & Supplies	5.4	5.2
Equipment Rents	5.8	5.4
Depreciation	13.9	12.6
Interest	1.9	1.5
Other	24.6	22.7
Total	100.0	100.0

Reweighting of the index is accomplished by calculating both the current quarter (normally the fourth) and prior (normally the third) quarter indexes with the new weights. The relative change between the two quarters is then multiplied times the prior quarter (usually the third) *linked* index. Use of this method ensures that the weight change, by itself, does not cause a change in the level of the All-Inclusive Index.

Internal weights in the labor and equipment rents components are updated at the same time as the external weights. When these weights are changed, they are also linked using the procedure described above in order to eliminate the effect of the change in weighting.

All-Inclusive Index
Fourth Quarter 2016

The components and values of the current and previous All-Inclusive Indexes are shown below. Details of the construction of each component of the index are contained in the Appendices.

	2015 Weights	Forecast Previous 2016Q3	Forecast Current 2016Q4	Percent Change
1. Labor	35.0%	415.2	405.1	-2.4 %
2. Fuel	13.4%	195.6	200.1	2.3
3. M&S	5.4%	240.6	245.8	2.2
4. Equipment Rents	5.8%	216.8	223.4	3.0
5. Depreciation	13.9%	226.5	225.1	-0.6
6. Interest	1.9%	57.5	60.6	5.4
7. Other	24.6%	217.4	216.9	-0.2
8. Weighted Average				
a. 1980 = 100		283.2	280.6	
b. 1980 = 100 (linked)		263.0	260.6 [1]	
c. 4Q12 = 100		88.4	87.6 [2]	-0.9

Note: New weights are utilized. The 283.2 weighted average for 2016Q3 is recalculated with 2015 weights to eliminate any changes in the fourth quarter index that would be caused by changing weights. The original Q3 weighted average with 2014 weights is 275.5. Much of the big change can be attributed to the big decrease in the weight for the Fuel Index.

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[1] Index80 = (Current Index / Previous Index) * the Previous Quarter Linked Index

= (280.6 / 283.2) x 263.0

= 260.6

[2] To calculate the 4Q12 = 100 index:

Index4Q12 = (Current Linked Index / 4Q12 Basing Factor) * 100

= 260.6 divided by 297.6 times 100

= 87.6

Indexes based on other periods:
4Q07 based index = 260.6 / 245.9 x 100 = 106.0
4Q02 based index = 260.6 / 192.1 x 100 = 135.7
4Q97 based index = 260.6 / 173.2 x 100 = 150.5
4Q92 based index = 260.6 / 156.9 x 100 = 166.1
4Q87 based index = 260.6 / 132.2 x 100 = 197.1

Forecast vs. Actual All-Inclusive Index
Second Quarter 2016

Because of data availability, the forecast error adjustment has a two-quarter lag from each filing. As shown below, the second quarter actual index of 85.7 is 0.5 index points above the forecast value of 85.2. Therefore, the forecast error adjustment for fourth quarter 2016 is 0.5 index points.

	2014 Weights	Second Quarter 2016 Forecast	Second Quarter 2016 Actual	Amt Difference
1. Labor	31.7%	416.4	416.4	
2. Fuel	20.9%	148.7	157.8	
3. M&S	5.2%	246.9	246.9	
4. Equipment Rents[1]	5.4%	215.1	216.5	
5. Depreciation	12.6%	227.2	225.0	
6. Interest	1.5%	57.5	57.5	
7. Other	22.7%	215.1	216.6	
8. Weighted Average				
a. 1980 = 100		265.8	267.9	
b. 1980 = 100 (linked)		253.7	255.0 [2]	
c. 4Q12 = 100[3]		85.2	85.7	0.5

Forecast error ⟶ 0.5 index points

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[1]

	2014 Weights	Second Quarter 2016 Forecast	Second Quarter 2016 Actual
Car-Hire	56.5%	196.9	197.9
Lease Rentals	43.5%	215.1	216.6
Weighted Average		204.8	206.0
Weighted Average (linked)		215.1	216.5

[2] Linked actual index = (actual index / previous actual index) x previous linked actual index.

255.0 = 267.9 / 262.8 x 250.1

[3] The 4Q12 based indexes are 1980 based indexes divided by the 4Q12 basing factor (297.6/100). Other basing factors are: 4Q07 = 245.9; 4Q02 = 192.1; 4Q97 = 173.2; 4Q92 = 156.9; and 4Q87 = 132.2.

Productivity

On February 12, 2016, the Surface Transportation Board (STB) served a decision in Ex Parte 290 (Sub-No. 4) which added the year 2014 to the Productivity Adjustment Factor (PAF) and removed the year 2009. This creates a geometric average annual productivity change, for the five-year period 2010 through 2014, of 1.4 percent per year. The components of this average annual value are shown on the following table in ratio format – therefore, 1.014 is the same as an increase of 1.4 percent. Productivity changes are calculated by multiplying each of the five productivity changes together and taking the result to the one-fifth power. The productivity adjustment factors (PAF) for each quarter are calculated by increasing the previous quarter's PAF by quarterly versions of the annual rate, which are the fourth root of the geometric average annual growth rate. The difference between the PAF and the PAF-5 is the timing of the five-year productivity trend.

Comparison of Output, Input, & Productivity

2010 - 2014

Year	Output Index (1)	Input Index (2)	Productivity[1] Changes (3)
2010	1.109	1.070	1.037
2011	1.041	1.039	1.001
2012	1.007	0.999	1.008
2013	1.022	1.018	1.004
2014	1.055	1.036	1.018
Average			**1.014**
Previous Average (2009-2013)			1.007

[1] The values shown in Column 3 are based on full float calculations and may not exactly match numbers calculated using the rounded numbers displayed in Columns 1 and 2.

Calculation of PAF and PAF-5

For 2010-2014, use fourth root of avg. productivity change = 1.0035
For 2009-2013, use fourth root of avg. productivity change = 1.0017

Quarter	Year	PAF	PAF-5
Q1	2016	2.3502	2.4932
Q2	2016	2.3584	2.4974
Q3	2016	2.3667	2.5016
Q4	2016	2.3750	2.5059
Q1	2017	2.3833	2.5147

2009-2013

2010-2014

Rail Cost Adjustment Factor
Fourth Quarter 2016

Four RCAF values are presented in this filing. Two are not modified for productivity (Preliminary RCAF and RCAF Unadjusted), and two incorporate a productivity calculation (RCAF Adjusted and RCAF-5). The All-Inclusive Index and all four RCAF values, plus the percent change for each, are shown below. Note that, beginning with 2013Q1, the All-Inclusive Index is on a 2012Q4=100 basis.

	Previous 2016Q3	Current 2016Q4	Percent Change
All-Inclusive Index[1]	88.4	87.6	-0.9
Preliminary RCAF[2]	0.884	0.876	-0.9
Forecast Error Adjustment[3]	-0.042	0.005	
RCAF (Unadjusted)[4]	0.842	0.881	4.6
Productivity Adjustment Factor[5]	2.3667	2.3750	
RCAF (Adjusted)[6]	0.356	0.371	4.2
PAF-5[7]	2.5016	2.5059	
RCAF-5[8]	0.337	0.352	4.5

[1] See All-Inclusive Index on page 3.
[2] All-Inclusive Index divided by the All-Inclusive Index in the base period (100.0).
[3] The current figure is from Forecast vs. Actual All-Inclusive Index in this filing (page 4). The previous quarter figure is shown in a similar section of the previous quarter's filing.
[4] Preliminary RCAF plus the forecast error adjustment.
[5] See Productivity on page 5.
[6] RCAF (Unadjusted) divided by the Productivity Adjustment Factor (PAF).
[7] See Productivity on page 5.
[8] RCAF (Unadjusted) divided by the PAF-5.

Appendixes

Labor
Fourth Quarter 2016

The fourth quarter 2016 Labor Index decreased 2.4 percent from the previous quarter. Rebenchmarking was the biggest contributor to the change.

Rebenchmarking and Reweighting: Rebenchmarking, as well as updating the internal weights (i.e., the proportion of labor costs represented by wages and supplements, respectively), is reflected each year in the fourth quarter filing. The Labor rate is basically a group of benchmarks from annual data that are updated each quarter using additional information such as labor agreements, payroll tax rates, health & welfare rates, and other data. By rebenchmarking to newer annual data, the number of quarterly updates (the "distance") from the benchmark year to the current quarter becomes smaller – increasing the probability that the updated values match reality. Therefore, the impact of rebenchmarking is captured in the Labor Index, and by itself can cause a change in the index.

The new benchmark year is 2015, and data for that year replaces data for 2014. One of the major data sources underlying the fourth quarter rebenchmarking is the Annual Report Form R-1 submitted to the Surface Transportation Board (STB) by each Class I railroad. The other major data source is the 112-Class Wage Statistics report received by the Association of American Railroads (AAR) from each Class I railroad. This report matches the totals in the less-detailed Wage Form A&B submitted to the STB. The extra detail allows the AAR to divide the wage statistics by labor union, which enables wage rate updates to be more accurate. Data from the two major sources are used for labor benchmarks, and the annual report data are also used to calculate index weights.

The source for the wage and supplements internal weights, like the external weights, is also the Annual Report Form R-1 Summary. Unlike rebenchmarking, reweighting by itself is prevented from causing a change in the index. A linking process, where the previous quarter unlinked index is recalculated using the new weights, eliminates changes that would be caused solely by changing weights.

Wage Rate Index

The Wage Rate Index portion of the Labor Index declined 2.0 percent. Almost all of the change was caused by rebenchmarking to 2015 wage statistics.

Wage Increases: No wage increases are scheduled for the fourth quarter. Rebenchmarking brought the base wage rate down 1.9 percent.

Lump Sums: The fourth quarter lump sum rate increased 1.2 cents from the prior quarter. Since no amounts became fully amortized and removed, the addition of one new bonus caused the entire change. The new bonus amount is one railroad's quarterly incentive bonus given to locomotive engineers that achieve certain goals. This quarterly bonus began in 2016, and was first captured in the 2016Q3 RCAF with the bonus paid in the second quarter for performance in the first quarter. The amount added in this Q4 filing is for the bonus paid in the third quarter for performance in the second quarter.

Labor
Fourth Quarter 2016

Back Pay: The fourth quarter back pay rate decreased by 4.1 cents. This change was mostly the result of one amount from last year being fully amortized and removed. Rebenchmarking caused 0.1 cents of the 4.1 cents decrease.

Other: In wages, "Other" contains the amortization of incentive payments that a railroad makes each year to its dispatchers, yardmasters, and engineers. Rebenchmarking caused this amount to decrease by 0.1 cents.

Supplements Index

The Supplements Index dropped 3.1 percent. Rebenchmarking caused about 80 percent of the decrease.

Health & Welfare: The Health & Welfare rate decreased 35.5 cents or 4.5 percent. All of the change was caused by rebenchmarking.

Railroad Retirement: The Railroad Retirement rate decreased 1.0 percent (or 8.2 cents). The decrease was caused by a combination of lower taxable earnings and rebenchmarking. Some of the lower taxable earnings was also caused by rebenchmarking.

Unemployment Insurance: The Unemployment Insurance rate increased by six tenths of one cent. All of the change was caused by rebenchmarking.

Other: The "Other" category is a reflection of all other fringe benefits, and currently contains known employer contributions to employee 401(k) accounts and employer contributions to employee stock plans that are recorded as fringe benefits. For the fourth quarter, the rate is 9.2 cents lower. The rate decreased mostly because of fewer employer contributions to ESOPs and stock awards. Rebenchmarking caused 0.1 cents of the 9.2 cents decrease.

Labor Index Calculation

As shown in Table A-1 on the next page, the 2.0 percent decrease in the Wage Rate Index and the 3.1 percent decline in the Supplements Index combined to cause the Labor Index to be 2.4 percent lower. The linked fourth quarter 2016 Labor Index is 405.1 – its lowest level in 2016. The linked fourth quarter 2016 index of 405.1 is determined by multiplying the third quarter linked index of 415.2 times the change between the fourth quarter Labor Index (422.8) and the original third quarter Labor Index recalculated (433.3) using the original third quarter Wage Rate and Supplements indexes weighted with the new 2015 weights. This method eliminates changes caused by the new weights, but captures changes caused by rebenchmarking. Therefore, the purpose of the center "Updated to Reflect..." column in Table A-1 is only to enable the reader to discern the impact of rebenchmarking.

Labor

Fourth Quarter 2016

Table A-1 Labor Index

	2016Q3		2016Q4	
	Used in Previous Index Filing	**Updated to Reflect 2015 Actual Data**	**Based on 2015 Data**	**Pct Chg From Prev. Filing**
Base Wage – Straight Time & Pay For Time Not Worked	$41.486	$40.680	$40.680	-1.9%
Adjustments:				
Lump Sum	0.159	0.159	0.171	7.5%
Back Pay	0.109	0.108	0.068	-37.6%
Other	0.149	0.148	0.148	-0.7%
Total Wages	41.903	$41.095	41.067	-2.0%
Health & Welfare Benefits	7.906	7.551	7.551	-4.5%
RR Retirement & Medicare	8.448	8.370	8.366	-1.0%
Unemployment Insurance	0.240	0.246	0.246	2.5%
Other	0.206	0.205	0.114	-44.7%
Total Supplements	$16.800	$16.372	$16.277	-3.1%
Total Labor (a check sum only)	$58.703	$57.467	$57.344	
Wage Rate Index[1]	358.6	351.7	351.5	-2.0%
Supplements Index[2]	620.8	605.0	601.5	-3.1%
Total labor Index, 2014 Weights[3]	431.8			
Total labor Index, 2015 Weights[4]	433.3	423.9	422.8	
Labor Index (linked)[5]	415.2		**405.1**	-2.4%

[1] 1980 wage rate $11.685

[2] 1980 supplements rate $2.706

[3] 2014 weights: wages, supplements 72.1% 27.9%

[4] 2015 weights: wages, supplements 71.5% 28.5%

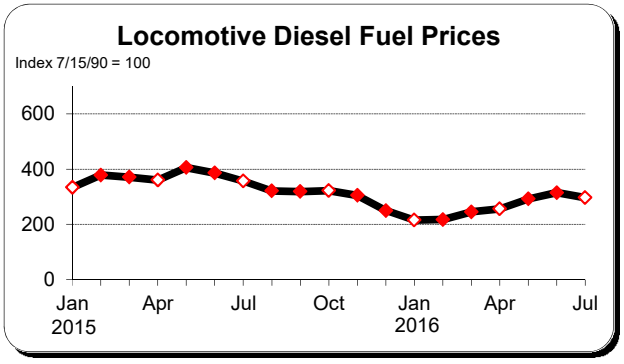
[5] 2016Q4 linked Index = $2016Q3_{\text{linked}} \times (2016Q4_{WT2015} / 2015Q3_{WT2015})$

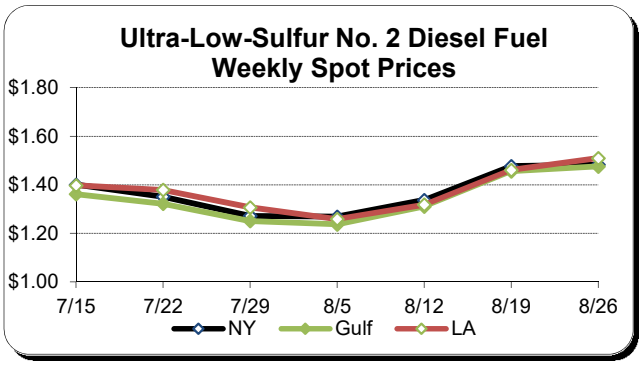
= 415.2 x 422.8 / 433.3

Fuel
Fourth Quarter 2016

The forecast for fuel is based on: (1) a survey of railroad fuel purchasing officers concerning current price and volume levels, (2) expectations of railroad purchasing officers based on their own forecast models and discussions with their major suppliers, and (3) a consensus of petroleum industry experts and general business publications. Fuel purchases are assumed to remain in inventory for 30 days before the fuel is consumed (and therefore expensed). Therefore, prices *paid* in the first month of each quarter are for fuel *expensed* in the second (or middle) month of the quarter, and the middle month expensed is used to represent each quarter.

The average locomotive diesel fuel price for January 2016 was the lowest in over 10 years. Since that time, prices rose through June, then decreased in July. While average prices for locomotive diesel fuel are available only through July 2016, data through three weeks of August are available for related fuel types. According to the Energy Information Administration, weekly spot prices for Ultra-Low-Sulfur Diesel Fuel* also decreased in July, but began increasing in August. The chart below (on left) shows the AAR's Monthly Locomotive Diesel Fuel Price Index from January 2015 through July 2016. The second chart (on right) shows recent spot prices for Ultra-Low-Sulfur No. 2 Diesel Fuel as reported by the Energy Information Administration.





Using the latest data, Ultra-Low-Sulfur No. 2 Diesel Fuel spot prices are already 9.5 to 11.6 percent higher than they were for mid July. Railroads expect Q4 (October 2016) locomotive diesel fuel prices to be 2.3 percent higher than the the forecast for Q3 (July). Because the Q3 forecast was too high, the Q4 forecast is 9.3 percent higher than the average price railroads actually paid in July.

Forecast Fuel Index (1980 = 100)	200.1
Change from previous quarter forecast	2.3%
Change from previous quarter actual	9.3%

* Heating oil, Ultra-Low-Sulfur No. 2 Diesel Fuel, and locomotive diesel fuel are part of a group of closely related products, commonly labeled as distillates, that differ mostly by their sulfur content. Because of these similarities, these fuels are produced together and have similar pricing trends.

Materials & Supplies
Fourth Quarter 2016

The fourth quarter 2016 Materials & Supplies Index is up 2.2 percent. All three major categories increased. Miscellaneous Products (ballast, creosote, lube oil, batteries, etc.) had the biggest increase, which was 4.0 percent. The average price for Metal Products (which has the highest weight) was up 1.1 percent, and the average price for Forest Products was up 0.5 percent. Although the 2016Q4 index is 2.2 percent higher than the previous quarter, it is lower than all of the Materials & Supplies indices from 2010Q4 through 2016Q2.

2016Q4	Materials & Supplies Index =	245.8
2016Q3	Materials & Supplies Index =	240.6
	Difference	5.2 basis points
		or
		2.2 %

Equipment Rents
Fourth Quarter 2016

The Equipment Rents Index consists of two components – car hire and lease rentals. The methodology used to create these two components and the final Equipment Rents Index are explained below.

Car Hire

The car hire component is indexed using data from the Car Hire Accounting Rate Master (CHARM) file. Car hire rates for the forecast quarter are estimated based on data for active freight cars using the most recent data available. For the first quarter, December 1 of the previous year is typically used. For the second, third and fourth quarters; March 1, June 1, and September 1 are usually used, respectively. Using data retrieved from the latest CHARM file, an average rate per car is developed. Next, those average rates are grouped into four car type categories to create an overall summary of car hire rates. The summary rates are then compared from quarter to quarter, and weighted, to determine the Car Hire Index. In each fourth quarter filing, new weights for the four categories are used based on annual report data. The standard linking procedure is used to eliminate any changes to the Car Hire Index that would be caused solely by changing weights.

Lease Rentals

The lease rentals portion of the Equipment Rents Index uses the Producer Price Index for Industrial Commodities less Fuel and Related Products and Power (PPI-LF). The Commission adopted this surrogate in its decision served March 13, 1987. The AAR uses six years of historical data to derive its forecast for the PPI-LF. The forecast is used not only for lease rentals, but also for the "Other" component of the All-Inclusive Index. Appendix G discusses the forecast in more detail.

Equipment Rents Index Calculation

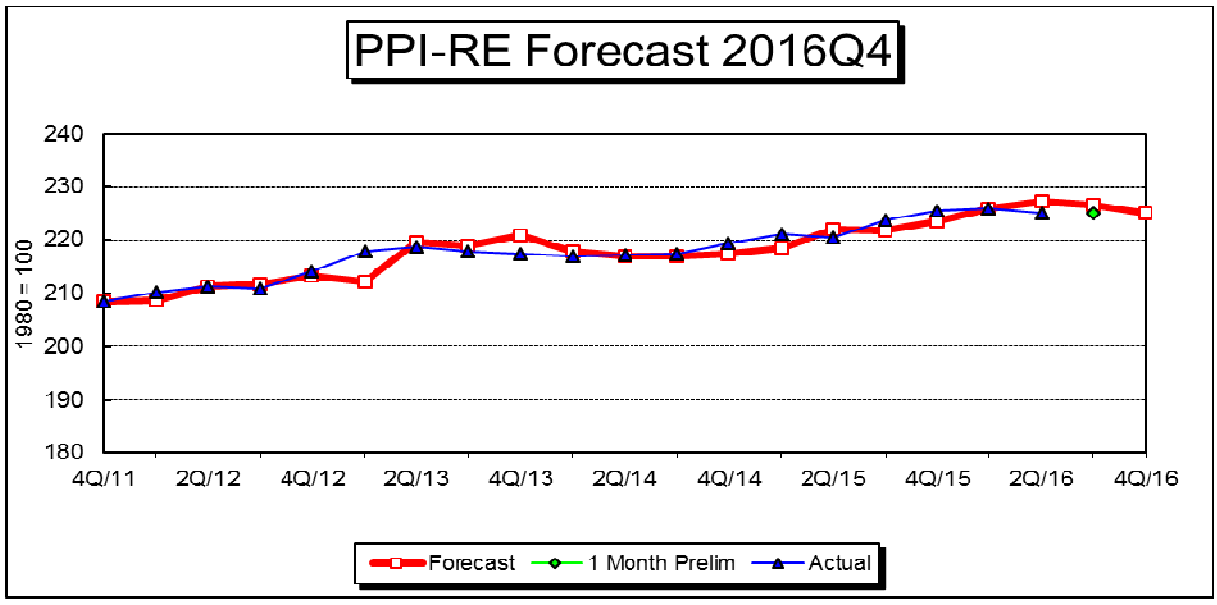
The table below calculates the Equipment Rents Index, and utilizes new weights based on 2015. To eliminate any changes caused by the new weights, the third quarter weighted average (but not the linked value) has been recalculated using the new weights. The original third quarter weighted average using 2014 weights is 206.4. The fourth quarter Car Hire portion of the Index increased 5.6 percent because of increases in rates for tank cars. A 0.2 percent decrease in the projected PPI-LF (See Appendix G) used as a proxy for Lease Rentals, combined with the 0.7 percent increase for Car Hire, caused the Equipment Rents Index to increase 3.0 percent.

	2015 Weight	2016Q3	2016Q4	Percent Change
Car Hire	58.2%	198.0	209.1	5.6 %
Lease Rentals	41.8%	217.4	216.9	-0.2
Weighted Average		206.1	212.4	3.1
Weighted Average (Linked)		216.8	223.4	3.0

Depreciation
Fourth Quarter 2016

The Producer Price Index for Railroad Equipment (PPI-RE) is used to index depreciation expense. The PPI-RE is forecast using an ARIMA (Auto-Regressive Integrated Moving Average) process where a statistical package picks the model that best fits the historical data set (see next page), and that model is then used for the forecast. The historical data set contains 6 years of monthly data (a sample size of 72), where the most recent available data point is the first month of the quarter prior to the forecast quarter. For a first quarter forecast, the most recent month of data available would be for October of the prior year. For a second quarter forecast, January would normally be the most recent period available. April and July would be the most recent months available for third and fourth quarter forecasts, respectively. The output from the forecast model is shown on page 2 of this appendix on a 1982=100 basis. The figure forecast by the model, a 0.6 percent decrease from the previous quarter's forecast, reflects a monthly PPI-RE figure that is unchanged for three consecutive months, and a forecast for Q3 that may have been too high.

Forecast of Depreciation Index (1982=100)	203.5
Forecast of Depreciation Index (1980=100)	225.1
Change from previous quarter forecast	-0.6%
Change from actual first month of previous quarter	0.0%
Change from same quarter of prior year (actual)	-0.2%



Depreciation
Fourth Quarter 2016

PPI RAILROAD EQUIPMENT

Box-Jenkins outperforms Exponential Smoothing when comparing cumulative
Mean Absolute Deviation. 78 forecasts tried for each method, up to a maximum horizon 12.

Recommended model: Box-Jenkins
Forecast Model for PPIRE
ARIMA(0, 1, 0)

Within-Sample Statistics

Sample size	72	No. parameters	0	
Mean	194.96	Std. deviation	6.22	
R-square	0.97	Adj. R-square	0.97	
Durbin-Watson	2.44	Ljung-Box(18)	22.00	P=0.77
Forecast error	0.99	BIC	0.99	
MAPE	0.34	SMAPE	0.35	
RMSE	0.99	MAD	0.68	
MAD/Mean Ratio	0			

Actual Values for the Most Recent 6 Periods:

Date	Actual
2016-Feb	204.2
2016-Mar	203.3
2016-Apr	203.3
2016-May	203.5
2016-Jun	203.5
2016-Jul	203.5

Forecasted Values

Date	2.5 Lower	Forecast	97.5 Upper
2016-Aug	201.539	203.500	205.461
2016-Sep	200.727	203.500	206.273
2016-Oct	200.104	203.500	206.896
2016-Nov	199.578	203.500	207.422
2016-Dec	199.116	203.500	207.884
QTR AVG	199.599	203.500	207.401

Interest
Fourth Quarter 2016

The Interstate Commerce Commission, in its decision served February 28, 1989, revised the All-Inclusive Index methodology to include a specific interest component, which is to track changes in the average interest rate from year to year. The interest rate is essentially the embedded cost of debt, i.e., total interest expense divided by average total long term debt.

The interest rate is calculated for the most recent year and used until the next year's figures are finalized. The source data are from a summary of the annual reports (Form R-1) submitted by each of the Class I railroads. Although the data set is received at the end of March, it is not used until the September filing. This enables data to be entered into a database and reviewed – and any revisions made, if necessary, before the data are used in the Index. The current Interest Index is based on 2015 data, and was updated in this Q4 filing submitted on September 2, 2016. The Interest Index based on 2015 is higher than the version based on 2014 data, but lower than the figure based on 2013.

The R-1 source for interest expense is Schedule 210, column b. The lines currently used are listed below. The source for average total debt is Schedule 200. The sums of data from columns b and c (ending and beginning balances) are combined and divided by 2 to compute an average balance. The line numbers are listed below.

Interest Expense (Schedule 210)

Line	
42	Total Fixed Charges
44	Contingent Interest
less	
22	Release of Premium on Funded Debt

Average Total Debt (Schedule 200)

Line	
30	Current Loans and Notes Payable
39	Equipment Obligations and Other Long Term Debt Due Within One Year
41	Funded Debt Unmatured - Non-Current
42	Equipment Obligations - Non-Current
43	Capitalized Lease Obligatons - Non-Current
44	Debt in Default - Non-Current
45	Accounts Payable: Affiliated Companies - Non-Current
46	Unamortized Debt Premium - Non-Current

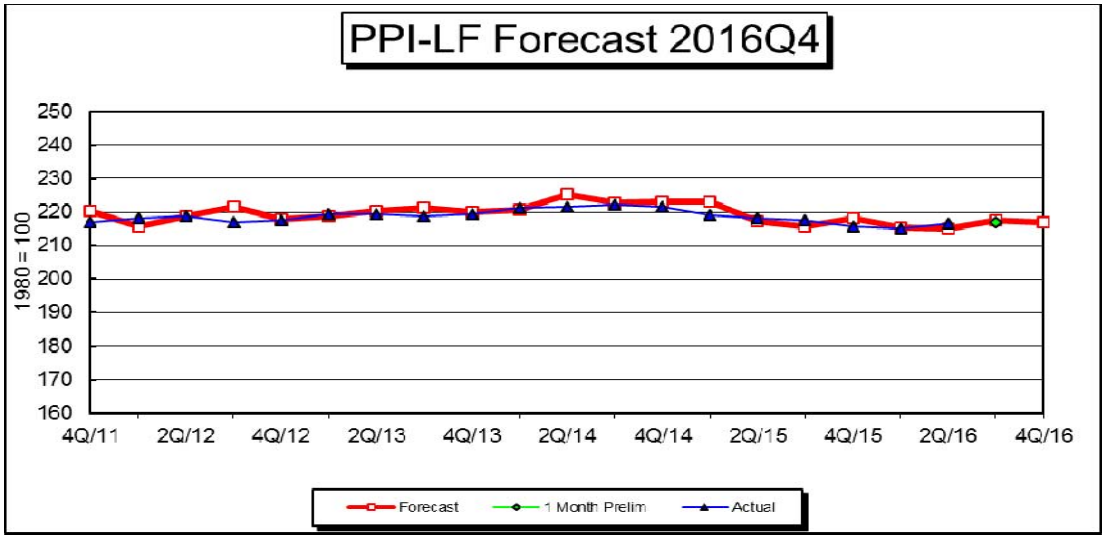
2015	Interest Rate	4.76%
1980	Interest Rate	7.85%
2016Q4	**Interest Index**	**60.6**
2016Q3	Interest Index	57.5
	Percent Change	5.4%

Other Expenses
Fourth Quarter 2016

The Producer Price Index for Industrial Commodities less Fuels and Related Products and Power (PPI-LF) is used to index purchased services, casualties and insurance, loss and damage, taxes (other than income and payroll), general and administrative expenses, and lease rentals. These expenses, when grouped together, are usually called "Other" expenses.

Like the PPI-RE, the PPI-LF is forecast using an ARIMA process on 6 years of monthly data (a sample size of 72) with the most recent available monthly data being the first month of the quarter prior to the forecast quarter. For a first quarter forecast, the most recent month of data available would be for October of the prior year. For a second quarter forecast, January would normally be the most recent month available. April and July would be the most recent months available for third and fourth quarter forecasts respectively. The output from the forecast model is shown on page 2 of this appendix for 1982=100. Monthly PPI-LF figures have not changed much in the last three months. The forecast for 2016Q4 is 0.2 percent below the previous quarter forecast.

Forecast of Other Expense Index (1982=100)	193.5
Forecast of Other Expense Index (1980=100)	216.9
Change from previous quarter forecast	-0.2%
Change from actual first month of previous quarter	0.0%
Change from same quarter of prior year (actual)	0.5%



Other Expenses
Fourth Quarter 2016

PPI INDUSTRIAL COMMODITIES LESS FUELS AND RELATED PRODUCTS AND POWER

Box-Jenkins outperforms Exponential Smoothing when comparing cumulative Mean Absolute Deviation. 78 forecasts tried for each method, up to a maximum horizon 12.

Recommended model: Box-Jenkins
Forecast Model for PPILF
ARIMA(1, 0, 0)

Model Details

Term	Coefficient	Std. Error	t-Statistic	Significance
a[1]	0.9945	0.006139	162	1.000
_CONST	1.072			

Within-Sample Statistics

Sample size	72	No. parameters	1	
Mean	193.98	Std. deviation	3.25	
R-square	0.96	Adj. R-square	0.96	
Durbin-Watson	0.70	Ljung-Box(18)	59.20	P=1.00
Forecast error	0.68	BIC	0.7	
MAPE	0.26	SMAPE	0.26	
RMSE	0.68	MAD	0.5	
MAD/Mean Ratio	0			

Actual Values for the Most Recent 6 Periods:

Date	Actual
2016-Feb	191.8
2016-Mar	192.1
2016-Apr	192.6
2016-May	193.4
2016-Jun	193.5
2016-Jul	193.5

Forecasted Values

Date	2.5 Lower	Forecast	97.5 Upper
2016-Aug	192.170	193.503	194.835
2016-Sep	191.626	193.505	195.384
2016-Oct	191.213	193.508	195.803
2016-Nov	190.868	193.511	196.153
2016-Dec	190.566	193.513	196.460
QTR AVG	190.882	193.511	196.139

Railroad and Union Abbreviations
Fourth Quarter 2016

Railroads

BLE	Bessemer & Lake Erie Railroad (Part of CN's Grand Trunk Corp.)
BNSF	BNSF Railway Company
CC	Chicago, Central & Pacific (Part of CN's Grand Trunk Corp. Sometimes noted as CC&P.)
CN	Canadian National Railway (Commonly known as CN, owns Grand Trunk Corporation.)
CNGT	AAR's abbreviation for Grand Trunk Corporation (Almost all of CN's U.S. operations.)
CP	Canadian Pacific (Also noted as CPR. Owns the U.S. Class I railroad Soo Line.)
CPSL	AAR's abbreviation for Soo Line Corporation (CP's U.S. operations including SOO, D&H, and DME.)
CSX	CSX Transportation
D&H	Delaware & Hudson (Part of Canadian Pacific's U.S. operations, included beginning 2011Q4.)
DME	Dakota, Minnesota & Eastern (Part of Canadian Pacific's U.S. operations, included beginning 2011Q4.)
GTW	Grand Trunk Western Railroad (Part of CN's Grand Trunk Corp.)
IC	Illinois Central Railroad (Part of CN's Grand Trunk Corp.)
KCS	Kansas City Southern Railway
NS	Norfolk Southern Combined Railroad Subsidiaries (a.k.a. Norfolk Southern Railway or NS Rail)
SOO	Soo Line Railroad (The largest part of Canadian Pacific's U.S. operations.)
UP	Union Pacific Railroad
WC	Wisconsin Central and subsidiaries (Part of CN's Grand Trunk Corp.)

Note: A portion of the DM&E was sold during 2014.
Note: A proposal was made in November 2014 to sell a portion of the D&H pending regulatory approval.

Major Unions Involved with Railroads

ATDA	American Train Dispatchers Association
BLET	Brotherhood of Locomotive Engineers and Trainmen Div. of the International Brotherhood of Teamsters
BMWED	Brotherhood of Maintenance of Way Employees Division of the International Brotherhood of Teamsters
BRS	Brotherhood of Railroad Signalmen
IAM	International Association of Machinists and Aerospace Workers
IBBM	International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers & Helpers
IBEW	International Brotherhood of Electrical Workers
NCFO	National Conference of Firemen and Oilers
SMART-TD	Sheet Metal Air Rail Transportation - Transportation Division*
SMW	Sheet Metal Workers' International Association
TCU	Transportation Communication International Union
TCU-Carmen	Brotherhood of Railway Carmen Division of the Transportation Communications International Union
UTU-Yard	United Transportation Union Yardmaster Department (also noted as UTU-YMD)

Predecessor Unions (Some AAR databases use these old abbreviations.)

BLE	Brotherhood of Locomotive Engineers (predecessor to BLET)
BMWE	Brotherhood of Maintenance of Way Employees (predecessor to BMWED)
BRC	Brotherhood of Railway Carmen (predecessor to TCU-Carmen)
IBFO	International Brotherhood of Firemen and Oilers (predecessor to NCFO)
UTU	United Transportation Union (merged into SMART)

* Typically represents employees formerly represented by the UTU (conductors and brakemen).