

ASSOCIATION  
OF AMERICAN  
RAILROADS

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Senior Vice President - Policy & Economics

September 4, 2015

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 2015 All-Inclusive Index and Rail Cost Adjustment Factor, filed in Ex Parte No. 290 (Sub-No. 5) (2015-4) *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 2015 results on the fourth quarter 2012 base, and shows the percentage changes from the previous quarter.

	<u>2015Q3</u>	<u>2015Q4</u>	<u>% Change</u>
All-Inclusive Index	90.6	88.5	-2.3
Preliminary RCAF	0.906	0.885	-2.3
Forecast Error Adjustment	-0.077	-0.023	
RCAF (Unadjusted)	0.829	0.862	4.0
Productivity Adjustment Factor	2.3422	2.3462	
RCAF (Adjusted)	0.354	0.367	3.7
PAF-5	2.4828	2.4890	
RCAF-5	0.334	0.346	3.6

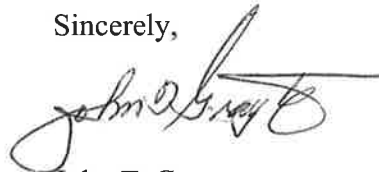
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In its October 3, 1996 decision in Ex Parte No. 290 (Sub-No. 7), *Productivity Adjustment - Implementation*, the STB noted its intent to publish, in addition to the RCAF (Unadjusted) and RCAF (Adjusted), an RCAF-5 (i.e., a calculation of the productivity 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 2015  
All-Inclusive Index**

**Ex Parte No. 290 (Sub-No. 5) (2015-4)**

**Quarterly Rail Cost Adjustment Factor  
Surface Transportation Board**

**Policy and Economics Department  
Association of American Railroads**

**September 4, 2015**

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## 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 2015. Each year's fourth quarter calculation utilizes new weights, which can be found on page 2. New 2014 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 2014 (current) and 2013 (previous) weights are shown below. Weights calculated from 2013 data were used for the fourth quarter of 2014 through the third quarter of 2015. Beginning with the fourth quarter of 2015, weights calculated using 2014 data are used. Fuel and Interest expenses were down in 2014, and those decreases are reflected in their lower weights. Depreciation expenses increased at about double the rate of total expenses, possibly caused by record capital expenditures for new equipment and infrastructure. The weight for Depreciation increased by 0.6 percentage points, as did the weight for Other – which consists of Purchased Services, Taxes (other than income and payroll), Casualties & Insurance, Loss & Damage, and General & Administrative expenses. Other increases were 0.3 for Materials & Supplies, and 0.1 for Labor. Expenses for Materials & Supplies were probably more affected by higher volumes than prices. The weight for Equipment Rents was unchanged.

<b>Weights for RCAF's All-Inclusive Index</b>		
	<b>2014</b>	<b>2013</b>
Labor	31.7 %	31.6 %
Fuel	20.9	22.1
Materials & Supplies	5.2	4.9
Equipment Rents	5.4	5.4
Depreciation	12.6	12.0
Interest	1.5	1.9
Other	22.7	22.1
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

Reweightings 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 2015

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.

	2014 Weights	Forecast		Percent Change
		Previous 2015Q3	Current 2015Q4	
1. Labor	31.7%	404.3	403.6	-0.2 %
2. Fuel	20.9%	246.1	210.8	-14.3
3. M&S	5.2%	258.9	264.8	2.3
4. Equipment Rents	5.4%	212.2	214.7	1.2
5. Depreciation	12.6%	221.8	223.5	0.8
6. Interest	1.5%	70.6	57.5	-18.6
7. Other	22.7%	215.6	218.2	1.2
8. Weighted Average				
a. 1980 = 100		282.5	275.9	
b. 1980 = 100 (linked)		269.7	263.4 <sup>1</sup>	
c. 4Q12 = 100		90.6	88.5 <sup>2</sup>	-2.3

Note: New weights are utilized. The 282.5 weighted average for 2015Q3 is recalculated with 2014 weights to eliminate any changes in the fourth quarter index that would be caused by changing weights. The original Q3 weighted average with 2013 weights is 281.9.

---


$$\begin{aligned}
 {}^1 \text{ Index}_{80} &= (\text{Current Index} / \text{Previous Index}) * \text{the Previous Quarter Linked Index} \\
 &= (275.9 / 282.5) \times 269.7 \\
 &= 263.4
 \end{aligned}$$

<sup>2</sup> To calculate the 4Q12 = 100 index:

$$\begin{aligned}
 \text{Index}_{4Q12} &= (\text{Current Linked Index} / 4Q12 Basing Factor) * 100 \\
 &= 263.4 \text{ divided by } 297.6 \text{ times } 100 \\
 &= 88.5
 \end{aligned}$$

Indexes based on other periods:

- 4Q07 based index = 263.4 / 245.9 x 100 = 107.1
- 4Q02 based index = 263.4 / 192.1 x 100 = 137.1
- 4Q97 based index = 263.4 / 173.2 x 100 = 152.1
- 4Q92 based index = 263.4 / 156.9 x 100 = 167.9
- 4Q87 based index = 263.4 / 132.2 x 100 = 199.2

## Forecast vs. Actual All-Inclusive Index Second Quarter 2015

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 88.8 is 2.3 index points below the forecast value of 91.1. Therefore, the forecast error adjustment for fourth quarter 2015 is -2.3 index points.

	2013 Weights	Second Quarter 2015		Amt Difference
		Forecast	Actual	
1. Labor	31.6%	402.8	402.8	
2. Fuel	22.1%	251.6	221.9	
3. M&S	4.9%	265.3	265.3	
4. Equipment Rents <sup>1</sup>	5.4%	212.1	213.4	
5. Depreciation	12.0%	222.1	220.4	
6. Interest	1.9%	70.6	70.6	
7. Other	22.1%	217.2	218.2	
8. Weighted Average				
a. 1980 = 100		283.3	276.9	
b. 1980 = 100 (linked)		271.0	264.4 <sup>2</sup>	
c. 4Q12 = 100 <sup>3</sup>		91.1	88.8	-2.3

**Forecast error**       $\longrightarrow$  **-2.3 index points**

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1	2013 Weights	Second Quarter 2015	
		Forecast	Actual
Car-Hire	52.8%	190.0	191.1
Lease Rentals	47.2%	217.2	218.2
Weighted Average		202.8	203.9
Weighted Average (linked)		212.1	213.4

<sup>2</sup> Linked actual index = (actual index / previous actual index) x previous linked actual index.  

$$264.4 = 276.9 / 273.7 \times 261.3$$

<sup>3</sup> 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 13, 2015, the Surface Transportation Board (STB) served a decision in Ex Parte 290 (Sub-No. 4) which added the year 2013 to the Productivity Adjustment Factor (PAF) and removed the year 2008. This creates a geometric average annual productivity change, for the five-year period 2009 through 2013, of 0.7 percent per year. The components of this average annual value are shown on the following table in ratio format – therefore, 1.007 is the same as an increase of 0.7 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.

<b>Comparison of Output, Input, &amp; Productivity</b>			
<b>2009 - 2013</b>			
Year	Output Index (1)	Input Index (2)	Productivity <sup>1</sup> Changes (3)
2009	0.847	0.861	0.984
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
<b>Average</b>			<b>1.007</b>
Previous Average (2008-2012)			1.010

<sup>1</sup> 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.

<b>Calculation of PAF and PAF-5</b>			
For 2009-2013, use fourth root of avg. productivity change = 1.0017			
For 2008-2012, use fourth root of avg. productivity change = 1.0025			
Quarter	Year	PAF	PAF-5
Q1	2015	2.3342	2.4704
Q2	2015	2.3382	2.4766
Q3	2015	2.3422	2.4828
Q4	2015	2.3462	2.4890
Q1	2016	2.3502	2.4932

2008-2012

2009-2013

## Rail Cost Adjustment Factor Fourth Quarter 2015

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 2015Q3	Current 2015Q4	Percent Change
All-Inclusive Index <sup>1</sup>	90.6	88.5	-2.3
Preliminary RCAF <sup>2</sup>	0.906	0.885	-2.3
Forecast Error Adjustment <sup>3</sup>	<u>-0.077</u>	<u>-0.023</u>	
RCAF (Unadjusted) <sup>4</sup>	0.829	0.862	4.0
Productivity Adjustment Factor <sup>5</sup>	<u>2.3422</u>	<u>2.3462</u>	
RCAF (Adjusted) <sup>6</sup>	0.354	0.367	3.7
PAF-5 <sup>7</sup>	2.4828	2.4890	
RCAF-5 <sup>8</sup>	0.334	0.346	3.6

<sup>1</sup> See All-Inclusive Index on page 3.

<sup>2</sup> All-Inclusive Index divided by the All-Inclusive Index in the base period (100.0).

<sup>3</sup> 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.

<sup>4</sup> Preliminary RCAF plus the forecast error adjustment.

<sup>5</sup> See Productivity on page 5.

<sup>6</sup> RCAF (Unadjusted) divided by the Productivity Adjustment Factor (PAF).

<sup>7</sup> See Productivity on page 5.

<sup>8</sup> RCAF (Unadjusted) divided by the PAF-5.

# Appendixes

## Labor

### Fourth Quarter 2015

The fourth quarter 2015 Labor Index is forecast to decrease 0.2 percent from the previous quarter. The net result of rebenchmarking to more recent wage statistics and annual report data had little effect. Much of the small decrease in the Labor Index was caused by lower 401(k) matches typical of this quarter.

**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 2014, and data for that year replaces data for 2013. The major data sources underlying the fourth quarter rebenchmarking are from annual reports submitted to the Association of American Railroads (AAR) and the Surface Transportation Board (STB). The AAR receives a 112-Class Wage Statistics report from each Class I railroad, which matches the totals in the less-detailed Wage Form A&B submitted to the STB. Data from annual reports (Form R-1) submitted to the STB are used for benchmarks and 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 increased 2.5 percent. Most of the increase was caused by rebenchmarking.

**Wage Increases:** No wage increases are currently scheduled for the fourth quarter in the national labor agreements. Several independent labor agreements had August wage increases that are not fully reflected in the index until the fourth quarter. One new independent labor agreement was added to the index.

**Lump Sums:** The fourth quarter lump sum rate decreased by 1 cent, or 2.5 percent, because of rebenchmarking. There were no lump sums added or removed from the index.

**Back Pay:** The fourth quarter back pay rate increased by 3.7 cents as the net result of the complete amortization and removal of two small amounts from last year plus the addition of one larger amount for a recently signed labor agreement – and rebenchmarking, which had a very small impact.

**Other:** In wages, "Other" contains the amortization of incentive payments that a railroad makes each year to its dispatchers, yardmasters, and engineers. The current incentive payment amount is for a payment made in early 2015 for performance in 2014. Rebenchmarking caused the small decrease.

## Labor

### Fourth Quarter 2015

#### Supplements Index

The Supplements Index decreased 4.1 percent because of rebenchmarking and lower employer contributions to 401(k) and stock plans.

**Health & Welfare:** The Health & Welfare rate decreased 9.2 percent. This change was caused solely by rebenchmarking to newer annual report data.

**Railroad Retirement:** The Railroad Retirement rate increased 2.6 percent. This change was caused by a combination of rebenchmarking and higher taxable earnings.

**Unemployment Insurance:** The Unemployment Insurance rate decreased by 0.5 percent, or 0.1 cents, because of 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 decreased 17.2 cents because fewer employer contributions and rebenchmarking. The impact of rebenchmarking in this case was less than 1 cent.

#### Labor Index Calculation

As shown in Table A-1 on the next page, the 2.5 percent increase in the Wage Rate Index and the 4.1 percent decrease in the Supplements Index combined to cause a 0.2 percent decrease in the Labor Index. The linked fourth quarter 2015 index of 403.6 is determined by multiplying the third quarter linked index of 404.3 times the change between the fourth quarter labor index (419.6) and the original third quarter labor index recalculated (420.3) using the original third quarter Wage Rate and Supplements indexes weighted with the new 2014 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 2015**  
**Table A-1 Labor Index**

	2015Q3		2015Q4	
	Used in Previous Index Filing	Updated to Reflect 2014 Actual Data	Based on 2014 Data	Pct Chg From Prev. Filing
<u>Base Wage</u> – Straight Time & Pay For Time Not Worked	\$40.121	\$41.053	\$41.101	2.4%
Adjustments:				
Lump Sum	0.405	0.395	0.395	-2.5%
Back Pay	0.094	0.092	0.131	39.4%
Other	0.161	0.157	0.157	-2.5%
<b>Total Wages</b>	40.781	\$41.697	41.784	2.5%
Health & Welfare Benefits	7.612	6.909	6.909	-9.2%
RR Retirement & Medicare	8.242	8.442	8.454	2.6%
Unemployment Insurance	0.204	0.203	0.203	-0.5%
Other	0.296	0.289	0.124	-58.1%
<b>Total Supplements</b>	\$16.354	\$15.843	\$15.690	-4.1%
Total Labor (a check sum only)	\$57.135	\$57.540	\$57.474	
<b>Wage Index<sup>1</sup></b>	349.0	356.8	357.6	2.5%
<b>Supplements Index<sup>2</sup></b>	604.4	585.5	579.8	-4.1%
Total labor Index, 2013 Weights <sup>3</sup>	425.4			
Total labor Index, 2014 Weights <sup>4</sup>	420.3	420.6	419.6	
<b>Labor Index (linked)<sup>5</sup></b>	404.3		<b>403.6</b>	-0.2%

<sup>1</sup> 1980 wage rate \$11.685

<sup>2</sup> 1980 supplements rate \$2.706

<sup>3</sup> 2013 weights: wages, supplements 70.1% 29.9%

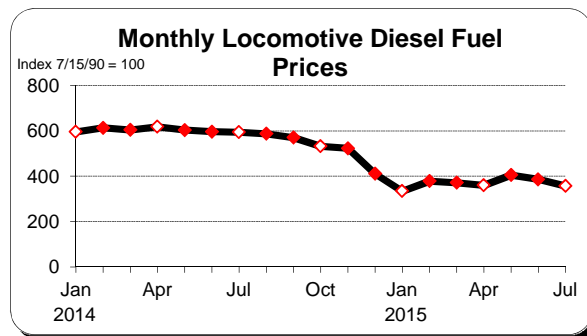
<sup>4</sup> 2014 weights: wages, supplements 72.1% 27.9%

<sup>5</sup> 2015Q4 linked Index = 2015Q3<sub>linked</sub> x (2015Q4<sub>WT2014</sub> / 2014Q3<sub>WT2014</sub>)  
 = 404.3 x 419.6 / 420.3

## Fuel Fourth Quarter 2015

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 is used to represent each quarter.

Locomotive diesel fuel prices fell in June and July, and are at their lowest level since January. The chart below shows the AAR's Monthly Locomotive Diesel Fuel Price Index from January 2014 through July 2015.



While the latest average prices for locomotive diesel fuel are available only through July 2015, data through most of August are available for related fuel types. Weekly spot prices for crude oil,\* heating oil,\*\* and Ultra-Low-Sulfur Diesel Fuel\*\* have all decreased from 7/17/2015 to 8/21/2015, according to the Energy Information Administration. Thus, the railroads expect Q4 (October) locomotive diesel fuel prices to continue to decline – down 14.3 percent from the third quarter forecast, and down 4.2 percent from the average price actually paid in July.

Forecast Fuel Index (1980 = 100)	210.8
Change from previous quarter forecast	-14.3%
Change from previous quarter actual	-4.2%

\* Diesel fuel used by locomotives is made from refined crude oil, and therefore usually has some price correlation.

\*\* 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 2015

The fourth quarter 2015 Materials & Supplies Index increased 2.3 percent from the previous quarter. The increase was caused by higher prices for items in the Miscellaneous Products category. Although this index increased, it is still lower than all four quarters for 2014 and the first two quarters of 2015.

2015Q4 Materials & Supplies Index = 264.8

2015Q3 Materials & Supplies Index = 258.9

Difference	5.9 basis points
	or
	2.3 %



## Equipment Rents Fourth Quarter 2015

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 month available. For the first quarter, December 1 of the previous year is used. For the second, third and fourth quarters; March 1, June 1, and September 1 are used, respectively. Using data retrieved from the latest CHARM file, an average rate per car is developed. Next, those average rates are grouped into car type categories to create an overall summary of car hire rates. The summary rates are then compared from quarter to quarter to determine the Car Hire Index.

### 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

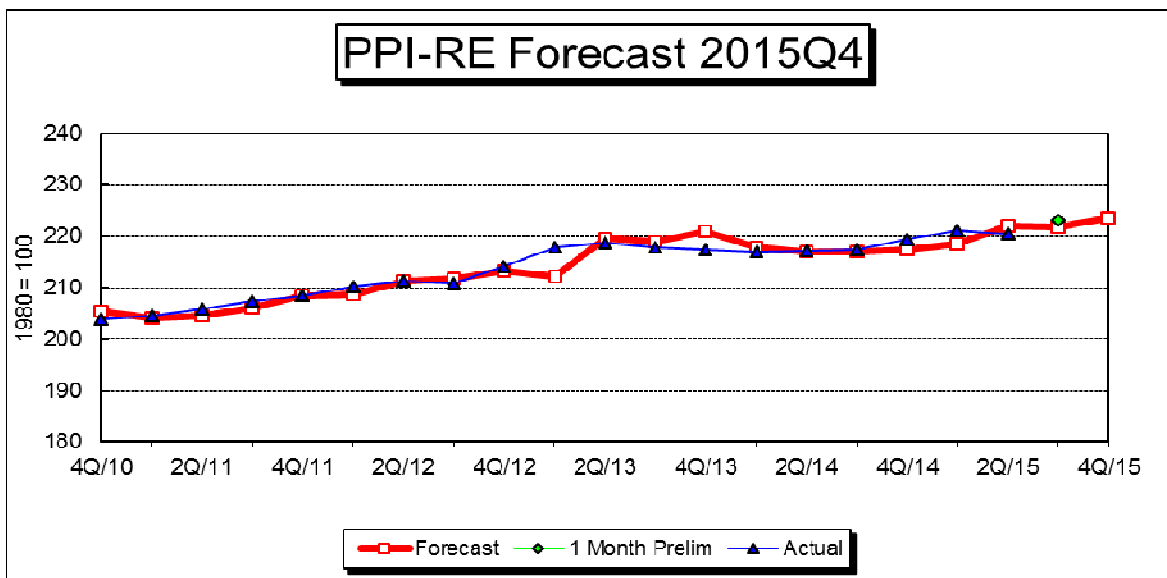
The table below calculates the Equipment Rents Index, and features new weights based on 2014. To eliminate any changes caused by the new weights, the third quarter weighted average (but not the linked value) has been recalculated using the new weights. The original third quarter weighted average using 2013 weights is 202.9. The fourth quarter Car Hire portion of the Index increased 1.1 percent because of higher rates for privately-owned cars. A 1.2 percent increase for the projected PPI-LF (See Appendix G) used as a proxy for Lease Rentals, combined with the 1.1 percent increase for Car Hire, caused the Equipment Rents Index to increase 1.2 percent.

	2014 Weight	2015Q3	2015Q4	Percent Change
Car Hire	56.5%	191.6	193.8	1.1 %
Lease Rentals	43.5%	215.6	218.2	1.2
Weighted Average		202.0	204.4	1.2
Weighted Average (Linked)		212.2	214.7	1.2

## Depreciation Fourth Quarter 2015

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 reflects monthly PPI-RE figures for June and July that increased at annual rates of 10 percent. In addition, the forecast for Q3 may have been too low.

Forecast of Depreciation Index (1982=100)	202.0
Forecast of Depreciation Index (1980=100)	223.5
Change from previous quarter forecast	0.8%
Change from actual first month of previous quarter	0.2%
Change from same quarter of prior year (actual)	1.8%



## Depreciation Fourth Quarter 2015

### PPI RAILROAD EQUIPMENT

Exponential smoothing outperforms Box-Jenkins by 1.096 to 1.341 out-of-sample Mean Absolute Deviation. I tried 78 forecasts up to a maximum horizon 12. For Box-Jenkins, I used a log transform.

Series is trended and seasonal.

Recommended model: Exponential Smoothing

Forecast Model for PPIRE

Holt exponential smoothing: Linear trend, No seasonality

Component	Smoothing Weight	Final Value
Level	0.65197	201.02
Trend	0.01758	0.25328

### Within-Sample Statistics

Sample size 72	Number of parameters 2
Mean 191.6	Standard deviation 5.899
R-square 0.9704	Adjusted R-square 0.97
Durbin-Watson 1.909	Ljung-Box(18)=10.69 P=0.09285
Forecast error 1.022	BIC 1.07
MAPE 0.003601	RMSE 1.008
MAD 0.6938	

### Actual Values for the Most Recent 6 Periods:

Date	Actual
2015-02	200.5
2015-03	199.5
2015-04	199.3
2015-05	198.4
2015-06	200.0
2015-07	201.6

### Forecasted Values

Date	2.5 Lower	Forecast	97.5 Upper
2015-08	199.177	201.273	203.369
2015-09	199.011	201.526	204.042
2015-10	198.905	201.780	204.654
2015-11	198.840	202.033	205.226
2015-12	198.803	202.286	205.769
<b>QTR AVG</b>	198.849	202.033	205.2163

## Interest Fourth Quarter 2015

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 2014 data, and was updated in this Q4 filing submitted on September 4, 2015.

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 Obligations - Non-Current
44	Debt in Default - Non-Current
45	Accounts Payable: Affiliated Companies - Non-Current
46	Unamortized Debt Premium - Non-Current

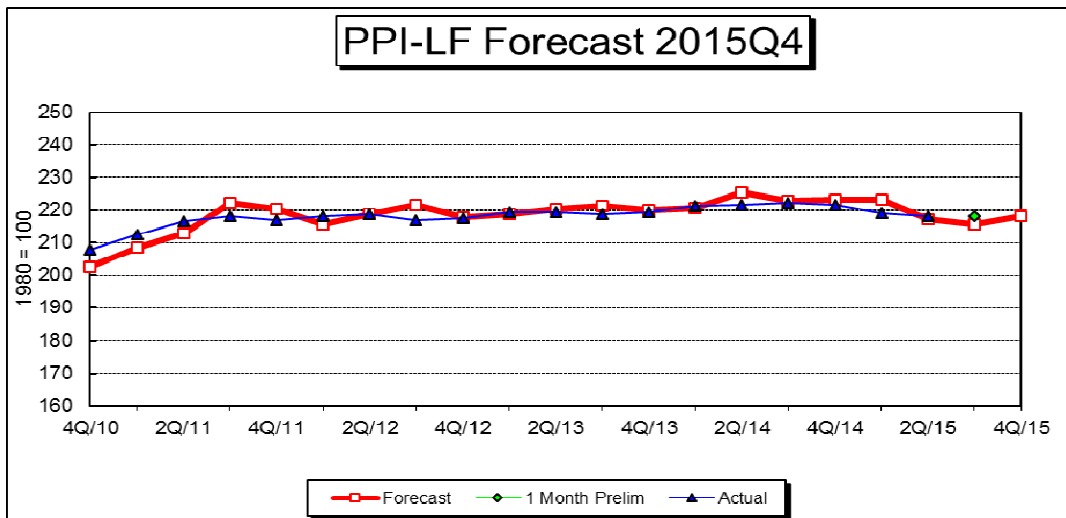
2014	Interest Rate	4.51%
1980	Interest Rate	7.85%
<b>2015Q4</b>	<b>Interest Index</b>	<b>57.5</b>
2015Q3	Interest Index	70.6
	Percent Change	-18.6%

## Other Expenses Fourth Quarter 2015

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. The forecast is an increase only because the previous quarter's forecast may have been too low. Monthly PPI-LF figures are still mostly decreasing.

Forecast of Other Expense Index (1982=100)	194.6
Forecast of Other Expense Index (1980=100)	218.2
Change from previous quarter forecast	1.2%
Change from actual first month of previous quarter	0.0%
Change from same quarter of prior year (actual)	-1.6%



## Other Expenses Fourth Quarter 2015

**PPI INDUSTRIAL COMMODITIES LESS FUELS  
AND RELATED PRODUCTS AND POWER**

Exponential smoothing outperforms Box-Jenkins by 2.098 to 2.352 out-of-sample Mean Absolute Deviation. I tried 78 forecasts up to a maximum horizon 12.

Series is trended and seasonal.

Recommended model: Exponential Smoothing  
Forecast Model for PPILF  
Holt exponential smoothing: Linear trend, No seasonality

Component	Smoothing Weight	Final Value
Level	1.00000	194.70
Trend	0.81058	-0.025875

Sample size 72	Number of parameters 2
Mean 191.9	Standard deviation 6.145
R-square 0.9905	Adjusted R-square 0.9903
Durbin-Watson 1.916	Ljung-Box(18)=36.55 P=0.994
Forecast error 0.6037	BIC 0.6317
MAPE 0.002398	RMSE 0.5952
MAD 0.4595	

**Actual Values for the Most Recent 6 Periods:**

Date	Actual
2015-02	195.4
2015-03	195.0
2015-04	194.5
2015-05	194.4
2015-06	194.8
2015-07	194.7

**Forecasted Values**

Date	2.5 Lower	Forecast	97.5 Upper
2015-08	193.436	194.674	195.912
2015-09	192.087	194.648	197.209
2015-10	191.219	194.622	198.026
2015-11	190.521	194.596	198.672
2015-12	189.920	194.571	199.222
QTR AVG	190.553	194.596	198.640

## Railroad and Union Abbreviations

### Fourth Quarter 2015

#### ***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).