ASSOCIATION
OF AMERICAN
RAILROADS

**John T. Gray**
Senior Vice President - Policy & Economics

June 5, 2017

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 third quarter 2017 All-Inclusive Index and Rail Cost Adjustment Factor, filed in Ex Parte No. 290 (Sub-No. 5) (2017-3) *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 third quarter 2017 results on the fourth quarter 2012 base, and shows the percentage changes from the previous quarter.

| | 2017Q2 | 2017Q3 | % Change |
|---|---|---|---|
| All-Inclusive Index | 90.8 | 90.3 | -0.6 |
| Preliminary RCAF | 0.908 | 0.903 | -0.6 |
| Forecast Error Adjustment | -0.004 | 0.000 | |
| RCAF (Unadjusted) | 0.904 | 0.903 | -0.1 |
| Productivity Adjustment Factor | 2.3952 | 2.4072 | |
| RCAF (Adjusted) | 0.377 | 0.375 | -0.5 |
| PAF-5 | 2.5235 | 2.5323 | |
| RCAF-5 | 0.358 | 0.357 | -0.3 |

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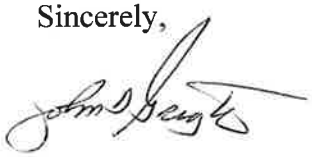
In its October 3, 1996 decision in Ex Parte No. 290 (Sub-No. 7), *Productivity Adjustment - Implementation,* the STB noted its intent to publish, in addition to the RCAF (Unadjusted) and RCAF (Adjusted), an RCAF-5 (i.e., a calculation of the productivity adjusted RCAF values as if the agency had always 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

# Third Quarter 2017
# All-Inclusive Index

# Ex Parte No. 290 (Sub-No. 5) (2017-3)

# Quarterly Rail Cost Adjustment Factor
# Surface Transportation Board

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

**June 5, 2017**

# 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 third quarter 2017. Calculations for the Productivity Adjustment Factor (page 5) utilize the Surface Transportation Board's (STB) latest Productivity Adjustment decision, which was served on February 24, 2017. In that decision, the STB said that it is "tentatively adopting 1.020 (2.0% per year) as the measure of average (geometric mean) change in railroad productivity for the 2011-2015 (five-year) period." The STB expressed concern that a "change in the way distances are measured" in the 2015 Waybill Sample would inappropriately skew the Output Index used in the productivity change calculation. Because of this concern, the STB developed a linking factor with the stated goal of eliminating changes to its Output Index caused by the methodology change. The Board also held a technical conference with interested parties and Board staff on February 28. Comments on the Productivity Adjustment decision were due by March 16, 2017, and replies were due by April 5, 2017. In a decision served March 16, the deadline for comments was suspended pending further order of the Board. On April 11, the Board announced that issues involving the mileage portion of the Carload Waybill Sample were not resolved, causing delays for related products that rely on that data source.

At the time of this June 5 RCAF filing, there remain questions about the Board's new mileage methodology, its linking process, and the resulting Output Index and Productivity Change. Although the tentative productivity adjustment adopted in the Productivity decision became effective on March 1, the Board has not yet taken any further action to determine if its decision is final or requires modification. For the purposes of this filing, the RCAF (Adjusted) is affected by the Productivity decision, and the AAR has made its calculations as if the decision is final. The second productivity-adjusted RCAF, the RCAF-5, will not be affected by this decision until the beginning of 2018. Should the Productivity Change be adjusted by further Board action, the calculations in this filing would necessarily need to be adjusted also.

# 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
## Third Quarter 2017

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 2017Q2 | Forecast Current 2017Q3 | Percent Change |
|---|---|---|---|---|
| 1. Labor | 35.0% | 421.4 | 422.8 | 0.3 % |
| 2. Fuel | 13.4% | 218.2 | 202.3 | -7.3 |
| 3. M&S | 5.4% | 264.8 | 252.6 | -4.6 |
| 4. Equipment Rents | 5.8% | 222.6 | 223.8 | 0.5 |
| 5. Depreciation | 13.9% | 223.2 | 225.1 | 0.9 |
| 6. Interest | 1.9% | 60.6 | 60.6 | 0.0 |
| 7. Other | 24.6% | 222.3 | 224.3 | 0.9 |
| 8. Weighted Average | | | | |
| a. 1980 = 100 | | 290.8 | 289.3 | |
| b. 1980 = 100 (linked) | | 270.1 | 268.7 [1] | |
| c. 4Q12 = 100 | | 90.8 | 90.3 [2] | -0.6 |

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

= (289.3 / 290.8) x 270.1

= 268.7

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

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

= 268.7 divided by 297.6 times 100

= 90.3

Indexes based on other periods:
4Q07 based index = 268.7 / 245.9 x 100 = 109.3
4Q02 based index = 268.7 / 192.1 x 100 = 139.9
4Q97 based index = 268.7 / 173.2 x 100 = 155.1
4Q92 based index = 268.7 / 156.9 x 100 = 171.3
4Q87 based index = 268.7 / 132.2 x 100 = 203.3

# Forecast vs. Actual All-Inclusive Index

**First Quarter 2017**

Because of data availability, the forecast error adjustment has a two-quarter lag from each filing. As shown below, the first quarter actual index of 89.9 is the same as the forecast value of 89.9. Therefore, the forecast error adjustment for third quarter 2017 is 0.0 index points.

| | 2015 Weights | First Quarter 2017 Forecast | First Quarter 2017 Actual | Amt Difference |
|---|---|---|---|---|
| 1. Labor | 35.0% | 421.2 | 421.2 | |
| 2. Fuel | 13.4% | 197.2 | 206.5 | |
| 3. M&S | 5.4% | 274.3 | 274.3 | |
| 4. Equipment Rents[1] | 5.8% | 224.3 | 226.3 | |
| 5. Depreciation | 13.9% | 225.3 | 224.6 | |
| 6. Interest | 1.9% | 60.6 | 60.6 | |
| 7. Other | 24.6% | 218.4 | 221.4 | |
| 8. Weighted Average | | | | |
| a. 1980 = 100 | | 287.9 | 289.9 | |
| b. 1980 = 100 (linked) | | 267.4 | 267.5 [2] | |
| c. 4Q12 = 100[3] | | 89.9 | 89.9 | 0.0 |

**Forecast error ⟶ 0.0 index points**

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[1]

| | 2015 Weights | First Quarter 2017 Forecast | First Quarter 2017 Actual |
|---|---|---|---|
| Car-Hire | 58.2% | 209.6 | 210.1 |
| Lease Rentals | 41.8% | 218.4 | 221.4 |
| Weighted Average | | 213.3 | 214.8 |
| Weighted Average (linked) | | 224.3 | 226.3 |

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

267.5 = 289.9 / 281.2 x 259.5

[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 24, 2017, the Surface Transportation Board (STB) served a decision in Ex Parte 290 (Sub-No. 4) which *tentatively* adopted 2.0 percent as the geometric average productivity change for the five most recent years available. Their calculation added the year 2015 and removed the year 2010. In addition, it should be noted that the Board was concerned enough with its decision to calculate a tentative value, sponsor a technical conference, solicit public comment, and to state that it would "take further action, as appropriate, to determine whether the tentative productivity adjustment is final or requires modification". At the time (June 5) of this filing, there are still questions about the 2015 Output Index, and it is possible that the Productivity Adjustment Factors used with the RCAF could change.

The components of this average annual value are shown on the following table in ratio format – therefore, 1.020 is the same as an increase of 2.0 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**
**2011 - 2015**

| Year | Output Index (1) | Input Index (2) | Productivity Changes (3) | |
|---|---|---|---|---|
| 2011 | 1.041 | 1.039 | 1.001 | |
| 2012 | 1.007 | 0.999 | 1.008 | |
| 2013 | 1.022 | 1.018 | 1.003 | * |
| 2014 | 1.055 | 1.036 | 1.018 | |
| 2015 | 1.041 | 0.972 | 1.070 | |
| Average | | | **1.020** | |
| Previous Average (2010-2014) | | | 1.014 | |

* The STB revised this number in its February 24, 2017, corrected decision.

**Calculation of PAF and PAF-5**

For 2011-2015, use fourth root of avg. productivity change = 1.0050
For 2010-2014, use fourth root of avg. productivity change = 1.0035

| Quarter | Year | PAF | PAF-5 |
|---|---|---|---|
| Q1 | 2017 | 2.3833 | 2.5147 |
| Q2 | 2017 | 2.3952 | 2.5235 |
| Q3 | 2017 | 2.4072 | 2.5323 |
| Q4 | 2017 | 2.4192 | 2.5412 |
| Q1 | 2018 | 2.4313 | 2.5539 |

2010-2014

2011-2015

# Rail Cost Adjustment Factor
## Third Quarter 2017

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 2017Q2 | Current 2017Q3 | Percent Change |
|---|---|---|---|
| All-Inclusive Index[1] | 90.8 | 90.3 | -0.6 |
| Preliminary RCAF[2] | 0.908 | 0.903 | -0.6 |
| Forecast Error Adjustment[3] | -0.004 | 0.000 | |
| RCAF (Unadjusted)[4] | 0.904 | 0.903 | -0.1 |
| Productivity Adjustment Factor[5] | 2.3952 | 2.4072 | |
| RCAF (Adjusted)[6] | 0.377 | 0.375 | -0.5 |
| PAF-5[7] | 2.5235 | 2.5323 | |
| RCAF-5[8] | 0.358 | 0.357 | -0.3 |

[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
## Third Quarter 2017

The third quarter 2017 Labor Index increased 0.3 percent from the previous quarter. Higher fringe benefit payments (Other in Supplements) caused most of the increase.

### Wage Rate Index

Independent wage increases and cost-of-living adjustments were the major causes of a 0.1 percent increase in the Wage Rate Index.

***Wage Increases:*** No wage increases are currently scheduled for the third quarter in the national labor agreements. Two independent contracts have 3 percent general wage increases effective July 1. On the same effective date, one railroad has a group of independent cost-of-living adjustments of 10 cents.

***Lump Sums:*** The third quarter Lump Sum rate is 0.1 cents higher from the prior quarter. One amount became fully amortized and removed, but it was replaced by a new bonus paid in the second quarter 2017 (and added to the index in Q3) for performance in the first quarter. A jump in the U.S. Treasury Bill rate (13 week, at auction) used to amortize the lump sums was not large enough to change the rounded Lump Sum rate.

***Back Pay:*** The Back Pay rate increased from negative 1.9 cents to 1.0 cents because of the complete amortization and removal of a negative amount associated with a "snap back" to the national agreement by an independent agreement.

***Other:*** In wages, "Other" contains the amortization of incentive payments that a railroad makes each year to its dispatchers, yardmasters, and engineers. This year's total, which was paid earlier in 2017 for performace in 2016, is lower than the sum of the payments made in 2016. Therefore, after replacing the completely amortized total paid in early 2016 with the total for 2017, the rate decreases by 2.4 cents.

### Supplements Index

The Supplements Index increased 0.7 percent. Most of this increase was caused by third quarter fringe benefits other than health & welfare and payroll taxes.

***Health & Welfare:*** The Health & Welfare rate was unchanged.

***Railroad Retirement:*** The Railroad Retirement rate increased by 0.1 percent (less than one penny) because of the small increase in wages.

***Unemployment Insurance:*** The Unemployment Insurance rate rate was unchanged because of its low cap and the very small increase in taxable earnings.

# Labor
## Third Quarter 2017

***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. The third quarter rate climbed 12.5 cents. The higher rate reflects annual bonus matches for 401(k) contributions, annual stock contributions to employees, and perfect attendance stock awards.

### Labor Index Calculation

As shown in Table A-1 on the next page, a 0.1 percent increase in the Wage Rate Index and a 0.7 percent increase in the Supplements Index combined to cause the Labor Index to rise 0.3 percent. The Labor Index is 1.8 percent higher than it was one year ago.

# Labor

## Third Quarter 2017

### Table A-1 Labor Index

| | 2017Q2 | 2017Q3 | Change Percent | Change Amount |
|---|---|---|---|---|
| Base Wage – Straight Time & Pay For Time Not Worked | $40.690 | $40.721 | 0.1% | $0.031 |
| Adjustments: | | | | |
| Lump Sum | 0.283 | 0.284 | 0.4% | $0.001 |
| Back Pay | -0.019 | 0.010 | -152.6% | $0.029 |
| Other | 0.148 | 0.124 | -16.2% | -$0.024 |
| **Total Wages** | 41.102 | 41.139 | 0.1% | $0.037 |
| Health & Welfare Benefits | 8.851 | 8.851 | 0.0% | $0.000 |
| RR Retirement & Medicare | 8.548 | 8.554 | 0.1% | $0.006 |
| Unemployment Insurance | 0.321 | 0.321 | 0.0% | $0.000 |
| Other | 0.150 | 0.275 | 83.3% | $0.125 |
| **Total Supplements** | $17.870 | $18.001 | 0.7% | $0.131 |
| Total Labor (as info only) | $58.972 | $59.140 | | |
| **Wage Index**[1] | 351.8 | 352.1 | 0.1% | |
| **Supplements Index**[2] | 660.4 | 665.2 | 0.7% | |
| Total labor Index, 2015 Weights[3] | 439.8 | 441.3 | | |
| **Labor Index (linked)**[4] | **421.4** | **422.8** | 0.3% | |

[1] 1980 wage rate $11.685

[2] 1980 supplements rate $2.706

[3] 2015 weights: wages, supplements 71.5% 28.5%

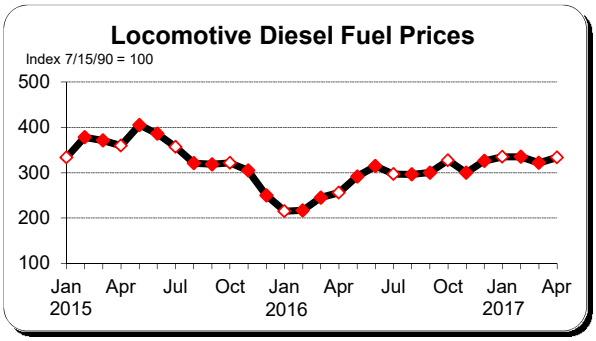
[4] 2017Q3 linked Index = 2017Q2 linked x (2017Q3 / 2017Q2)

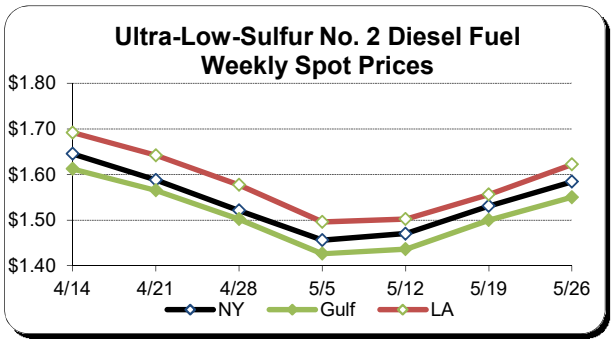
= 421.4 x 441.3 / 439.8

# Fuel
## Third Quarter 2017

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 have trended upward. While average prices for locomotive diesel fuel are available only through April 2017, data through four weeks of May are available for related fuel types. According to the Energy Information Administration, weekly spot prices for Ultra-Low-Sulfur Diesel Fuel* increased for the week ended May 26, but were still lower than they were in mid-April. The chart below (on left) shows the AAR's Monthly Locomotive Diesel Fuel Price Index from January 2015 through April 2017. The second chart (on right) shows recent spot prices for Ultra-Low-Sulfur No. 2 Diesel Fuel as reported by the Energy Information Administration.




Currently, distillate stocks are on the high side of their five-year range, and crude oil** stocks are above their 5-year range. This excess supply is expected to keep prices down despite production cuts for members of the Organization of the Petroleum Exporting Countries (OPEC). Rising production in the United States and a few African counties is offsetting some of the OPEC cuts. Railroads expect Q3 (July) locomotive diesel fuel prices to be 7.3 percent lower than their forecast for Q2 (April). Because the April forecast was too high, the Q3 forecast is only 1.7 percent lower than the average price railroads actually paid in April.

| | |
|---|---|
| Forecast Fuel Index (1980 = 100) | 202.3 |
| Change from previous quarter forecast | -7.3% |
| Change from previous quarter actual | -1.7% |

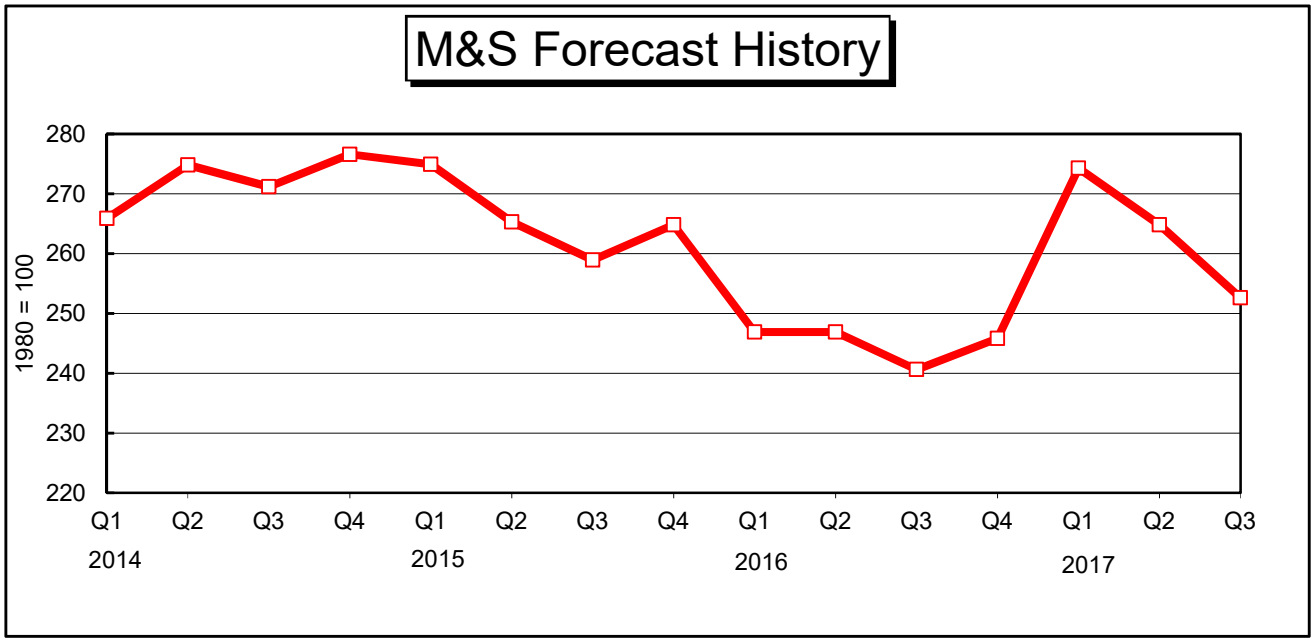
* Heating oil, Ultra-Low-Sulfur No. 2 Diesel Fuel, and locomotive diesel fuel are part of a group of closely related products, commonly labeled as distillates, that differ mostly by their sulfur content. Because of these similarities, these fuels are produced together and have similar pricing trends.

** Since locomotive diesel fuel is made from refined crude oil, there is some price correlation.

# Materials & Supplies
## Third Quarter 2017

The third quarter 2017 Materials & Supplies Index is down 4.6 percent. The Index for Miscellaneous Products dropped by nearly 13 percent, while the other two major components increased by smaller amounts. The Materials & Supplies Index continues to be lower than its values for all of 2014.

| | | |
|---|---|---|
| 2017Q3 | Materials & Supplies Index = | 252.6 |
| 2017Q2 | Materials & Supplies Index = | 264.8 |
| | Difference | -12.2 basis points |
| | | or |
| | | -4.6 % |



# Equipment Rents
## Third Quarter 2017

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

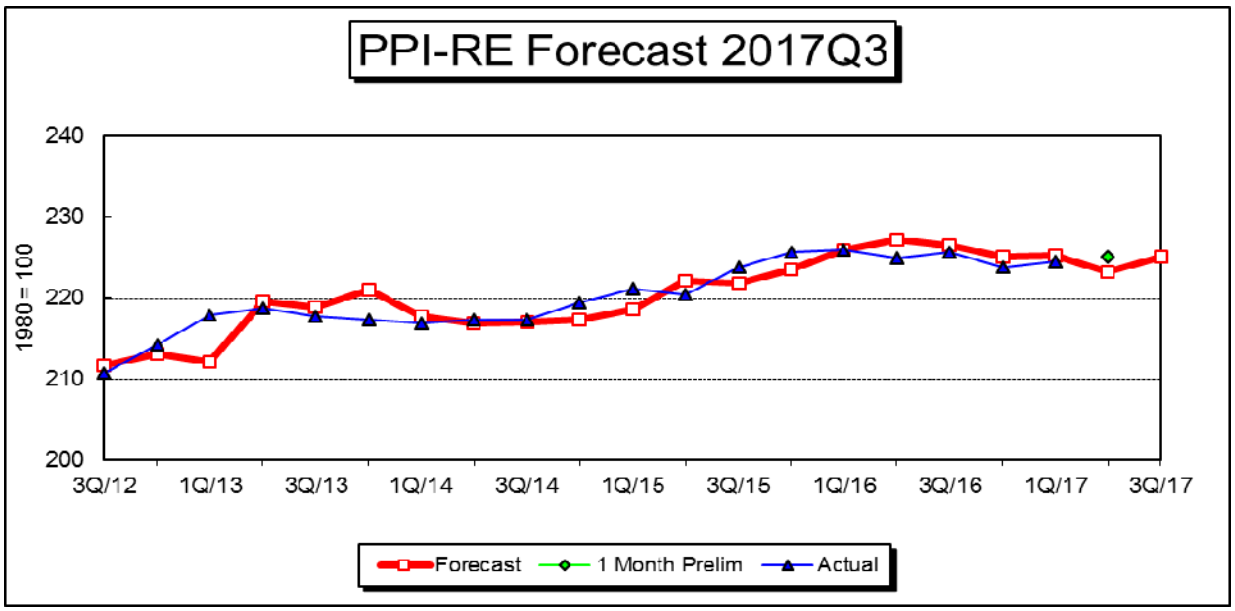
The table below calculates the Equipment Rents Index. The third quarter Car Hire portion of the Index rose 0.2 percent because of higher average rates for privately owned cars. A 0.9 percent increase in the projected PPI-LF (See Appendix G) used as a proxy for Lease Rentals, combined with the 0.2 percent increase for Car Hire, caused the Equipment Rents Index to rise 0.5 percent.

| | 2015 Weight | 2017Q2 | 2017Q3 | Percent Change |
|---|---|---|---|---|
| Car Hire | 58.2% | 204.1 | 204.5 | 0.2 % |
| Lease Rentals | 41.8% | 222.3 | 224.3 | 0.9 |
| Weighted Average | | 211.7 | 212.8 | 0.5 |
| Weighted Average (Linked) | | 222.6 | 223.8 | 0.5 |

# Depreciation
## Third Quarter 2017

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 is a 0.9 percent increase from the previous quarter's forecast, and now matches the forecast for 2016Q4. The current forecast is lower than the forecast and actual for one year ago.

| | |
|---|---|
| Forecast of Depreciation Index (1982=100) | 203.5 |
| Forecast of Depreciation Index (1980=100) | 225.1 |
| | |
| Change from previous quarter forecast | 0.9% |
| Change from actual first month of previous quarter | 0.0% |
| Change from same quarter of prior year (actual) | -0.2% |



# Depreciation
## Third Quarter 2017

**PPI RAILROAD EQUIPMENT**

Using rule-based logic, the program narrowed down the choice to exponential smoothing or Box-Jenkins.
The program performed an out-of-sample test to select between these two approaches.
The rolling out-of-sample test used a maximum horizon of 12 and generated 78 forecasts for each method.
The cumulative MAD for Exponential smoothing was 1.85, and for Box-Jenkins was 1.01.

Based on the lower Mean Absolute Deviation, Box-Jenkins was selected

**Forecast Model for PPIRE**
Box-Jenkins ARIMA(0, 1, 0)

***Within-Sample Statistics***

| | | | | |
|---|---|---|---|---|
| Sample size | 72 | No. parameters | 0 | |
| Mean | 196.48 | Std. deviation | 5.42 | |
| R-square | 197.21 | Adj. R-square | 0.96 | |
| Durbin-Watson | 0.96 | Ljung-Box(18) | 18.6 | P=0.58 |
| Forecast error | 2.48 | BIC | 1.05 | |
| MAPE | 1.05 | SMAPE | 0.38 | |
| RMSE | 0.38 | MAD | 0.74 | |
| MAD/Mean Ratio | 1.05 | | | |

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

| Date | Actual |
|---|---|
| 2016-Nov | 201.5 |
| 2016-Dec | 201.8 |
| 2017-Jan | 201.8 |
| 2017-Feb | 204.1 |
| 2017-Mar | 203.1 |
| 2017-Apr | 203.5 |

***Forecasted Values***

| Date | 2.5 Lower | Forecast | 97.5 Upper |
|---|---|---|---|
| 2017-May | 201.424 | 203.500 | 205.576 |
| 2017-Jun | 200.564 | 203.500 | 206.436 |
| 2017-Jul | 199.905 | 203.500 | 207.095 |
| 2017-Aug | 199.348 | 203.500 | 207.652 |
| 2017-Sep | 198.858 | 203.500 | 208.142 |
| QTR AVG | 199.370 | 203.500 | 207.630 |

# Interest
## Third Quarter 2017

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 the 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 |

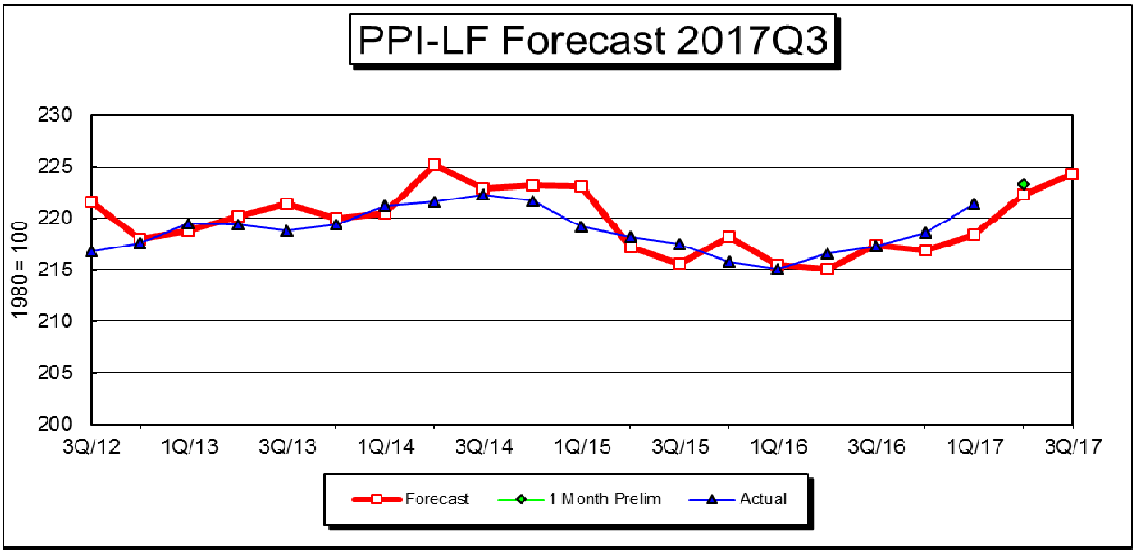
| | | |
|---|---|---|
| 2015 | Interest Rate | 4.76% |
| 1980 | Interest Rate | 7.85% |
| **2017Q3** | **Interest Index** | **60.6** |
| 2017Q2 | Interest Index | 60.6 |
| | Percent Change | 0.0% |

# Other Expenses
## Third Quarter 2017

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 been trending upward since February 2016 after mostly decreasing since August 2014. The forecast for 2017Q3 is 0.9 percent above the previous quarter forecast, which may have been too low.

| | |
|---|---|
| Forecast of Other Expense Index (1982=100) | 200.1 |
| Forecast of Other Expense Index (1980=100) | 224.3 |
| | |
| Change from previous quarter forecast | 0.9% |
| Change from actual first month of previous quarter | 0.4% |
| Change from same quarter of prior year (actual) | 3.2% |



# Other Expenses
## Third Quarter 2017

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

Using rule-based logic, the program narrowed down the choice to exponential smoothing or Box-Jenkins.
An out-of-sample test was used to select between these two approaches.
A rolling out-of-sample test used a maximum horizon of 12 and generated 78 forecasts for each method.
Cumulative MAD: Exponential smoothing = 2.36; Box-Jenkins = 1.98.

Based on the lower Mean Absolute Deviation, Box-Jenkins was selected

**Forecast Model for PPILF**
Box-Jenkins ARIMA(1,1,0)

***Model Details***

| Term | Coefficient | Std. Error | t-Statistic | Significance |
|---|---|---|---|---|
| a[1] | 0.6010 | 0.09621 | 6.247 | 1 |

***Within-Sample Statistics***

| | | | | |
|---|---|---|---|---|
| Sample size | 72 | No. parameters | 1 | |
| Mean | 195.08 | Std. deviation | 1.8 | |
| R-square | 0.93 | Adj. R-square | 0.93 | |
| Durbin-Watson | 1.87 | Ljung-Box(18) | 23.8 | P=0.84 |
| Forecast error | 0.46 | BIC | 0.47 | |
| MAPE | 0.18 | SMAPE | 0.18 | |
| RMSE | 0.46 | MAD | 0.35 | |
| MAD/Mean Ratio | 0 | | | |

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

| Date | Actual |
|---|---|
| 2016-Nov | 194.9 |
| 2016-Dec | 195.6 |
| 2017-Jan | 196.7 |
| 2017-Feb | 197.4 |
| 2017-Mar | 198.5 |
| 2017-Apr | 199.2 |

***Forecasted Values***

| Date | 2.5 Lower | Forecast | 97.5 Upper |
|---|---|---|---|
| 2017-May | 198.720 | 199.621 | 200.521 |
| 2017-Jun | 198.174 | 199.874 | 201.574 |
| 2017-Jul | 197.574 | 200.026 | 202.478 |
| 2017-Aug | 196.976 | 200.117 | 203.258 |
| 2017-Sep | 196.405 | 200.172 | 203.939 |
| QTR AVG | 196.985 | 200.105 | 203.225 |

# Railroad and Union Abbreviations

## Third Quarter 2017

***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: The sale of the southern portion of the D&H received regulatory approval on May 15, 2015.

***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).