

ASSOCIATION
OF AMERICAN
RAILROADS

John T. Gray
Senior Vice President - Policy & Economics

December 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 first quarter 2018 All-Inclusive Index and Rail Cost Adjustment Factor, filed in Ex Parte No. 290 (Sub-No. 5) (2018-1) *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 2017 and the first quarter 2018 results on the **new fourth quarter 2017 base**, and shows the percentage changes from the previous quarter.

	<u>2017Q4</u>	<u>2018Q1</u>	<u>% Change</u>
All-Inclusive Index	101.0	103.8	2.8
Preliminary RCAF	1.01	1.038	2.8
Forecast Error Adjustment	-0.010	-0.011	
RCAF (Unadjusted)	1.000	1.027	2.7
Productivity Adjustment Factor	2.4192	2.4313	
RCAF (Adjusted)	0.413	0.422	2.2
PAF-5	2.5412	2.5539	
RCAF-5	0.394	0.402	2.0

The Staggers Act requires the RCAF to be rebased every five years. The procedure necessary to calculate this rebasing was outlined by the ICC in Ex Parte No. 290 (Sub-No. 5) effective January 1, 1988. The rebasing calculation which will bring the index to the fourth quarter 2017 base is shown on page 1A of the attached filing.

Due to the fact that many people may need to compare the current RCAF to an older version that was calculated using a different base, the AAR has provided Attachment A, which contains historical RCAFs converted to a fourth quarter 2017 base. The AAR's recommended method for converting to another base is shown in the same attachment, as well as factors and indexes necessary to make those calculations.

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.

We have notified Pedro Ramirez, in the STB office handling this proceeding, of our plan to e-file the submission and the non-proprietary work papers in accordance with the ICC's order in Ex Parte No. 290 (Sub-No. 2), Railroad Cost Recovery Procedures, served February 8, 1990. A second copy of the submission and non-proprietary work papers, plus selected highly confidential work papers, will be hand-delivered to a member of Mr. Ramirez's Data Collection and Auditing Team. All workpapers 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

Rail Cost Adjustment Factor — 2017Q4 Base

Attachment A
Page 1 of 6

Yr/Qtr (Col 1)	Preliminary RCAF (Col 2)	Forecast Error Adjustment (Col. 3)	RCAF (Unad- justed) (Col 4)	Productivity-Adjusted RCAF		STB's 2nd Productivity- Adjusted RCAF (Not endorsed by AAR)	
				Productivity Adjustment Factor (Col 5)	RCAF (Adjusted) (Col 6)	PAF-5 (Col 7)	RCAF-5 (Col 8)
2007 Q1	0.869	0.007	0.876	2.1259	0.412	2.2351	0.392
Q2	0.870	-0.036	0.834	2.1348	0.391	2.2456	0.371
Q3	0.885	-0.015	0.870	2.1438	0.406	2.2562	0.386
Q4	0.914	0.015	0.929	2.1528	0.432	2.2668	0.410
2008 Q1	0.962	0.014	0.976	2.1618	0.451	2.2763	0.429
Q2	0.986	0.015	1.001	2.1683	0.462	2.2859	0.438
Q3	1.075	-0.008	1.067	2.1748	0.491	2.2955	0.465
Q4	1.074	0.041	1.115	2.1813	0.511	2.3051	0.484
2009 Q1	0.937	0.013	0.950	2.1878	0.434	2.3120	0.411
Q2	0.882	-0.092	0.790	2.1944	0.360	2.3189	0.341
Q3	0.927	-0.055	0.872	2.2010	0.396	2.3259	0.375
Q4	0.928	-0.002	0.926	2.2076	0.419	2.3329	0.397
2010 Q1	0.971	-0.005	0.966	2.2142	0.436	2.3399	0.413
Q2	0.971	0.015	0.986	2.2208	0.444	2.3469	0.420
Q3	0.991	0.003	0.994	2.2275	0.446	2.3539	0.422
Q4	0.994	0.032	1.026	2.2342	0.459	2.3610	0.435
2011 Q1	1.030	-0.014	1.016	2.2409	0.453	2.3681	0.429
Q2	1.075	0.017	1.092	2.2487	0.486	2.3752	0.460
Q3	1.103	0.019	1.122	2.2566	0.497	2.3823	0.471
Q4	1.100	0.025	1.125	2.2645	0.497	2.3894	0.471
2012 Q1	1.095	-0.007	1.088	2.2724	0.479	2.3978	0.454
Q2	1.123	-0.020	1.103	2.2769	0.484	2.4062	0.458
Q3	1.095	-0.006	1.089	2.2815	0.477	2.4146	0.451
Q4	1.131	-0.006	1.125	2.2861	0.492	2.4231	0.464
2013 Q1	1.124	-0.002	1.122	2.2907	0.490	2.4279	0.462
Q2	1.129	0.004	1.133	2.2957	0.494	2.4328	0.466
Q3	1.113	-0.014	1.099	2.3008	0.478	2.4377	0.451
Q4	1.126	-0.029	1.097	2.3059	0.476	2.4426	0.449
2014 Q1	1.108	-0.004	1.104	2.3110	0.478	2.4480	0.451
Q2	1.122	-0.025	1.097	2.3168	0.473	2.4534	0.447
Q3	1.119	-0.011	1.108	2.3226	0.477	2.4588	0.451
Q4	1.109	-0.009	1.100	2.3284	0.472	2.4642	0.446
2015 Q1	1.074	-0.010	1.064	2.3342	0.456	2.4704	0.431
Q2	1.025	-0.036	0.989	2.3382	0.423	2.4766	0.399
Q3	1.020	-0.086	0.934	2.3422	0.399	2.4828	0.376
Q4	0.996	-0.025	0.971	2.3462	0.414	2.4890	0.390
2016 Q1	0.992	-0.020	0.972	2.3502	0.414	2.4932	0.390
Q2	0.959	-0.014	0.945	2.3584	0.401	2.4974	0.378
Q3	0.994	-0.046	0.948	2.3667	0.401	2.5016	0.379
Q4	0.985	0.005	0.990	2.3750	0.417	2.5059	0.395
2017 Q1	1.011	-0.012	0.999	2.3833	0.419	2.5147	0.397
Q2	1.021	-0.004	1.017	2.3952 *	0.425	2.5235	0.403
Q3	1.016	0.000	1.016	2.4072 *	0.422	2.5323	0.401
Q4	1.010	-0.010	1.000	2.4192 *	0.413	2.5412	0.394
2018 Q1	1.038	-0.011	1.027	2.4313 *	0.422	2.5539 *	0.402

* The Productivity Adjustment Factors for 2017Q2-2018Q1, and the PAF-5 for 2018Q1, are tentative because they are based on a tentative change in productivity adopted by the Surface Transportation Board in a February 2017 decision. In September, the Board proposed a different productivity change, but *had not made* the new calculation effective as of December 5, 2017. A revised change in productivity could affect the productivity-adjusted versions of the Rail Cost Adjustment Factor: the RCAF (Adjusted) for 2017Q2-2018Q1, and the RCAF-5 for 2018Q1. See *Railroad Cost Recovery Procedures - Productivity Adjustment*, Ex Parte 290 (Sub-No. 4), (STB served September 29, 2017).

Rail Cost Adjustment Factor — 2017Q4 Base

Yr/Qtr (Col 1)	Preliminary RCAF (Col 2)	Forecast Error Adjustment (Col. 3)	RCAF (Unad- justed) (Col 4)	Productivity-Adjusted RCAF		STB's 2nd Productivity- Adjusted RCAF (Not endorsed by AAR)		
				Productivity Adjustment Factor (Col 5)	RCAF (Adjusted) (Col 6)	PAF-5 (Col 7)	RCAF-5 (Col 8)	
1996 Q1	0.635	-0.003	0.632	1.3624	0.464	Did not exist.		
	Q2	0.633	-0.003	0.630	1.3820		0.456	
	Q3	0.639	-0.001	0.638	1.4019		0.455	
	Q4	0.644	0.004	0.648	1.4221		0.456	
1997 Q1	0.660	0.001	0.661	1.4426	0.458	1.4733	0.449	
	Q2	0.657	0.005	0.662	1.4603	0.453	1.4945	0.443
	Q3	0.660	-0.001	0.659	1.4783	0.446	1.5160	0.435
	Q4	0.655	0.000	0.655	1.4965	0.438	1.5378	0.426
1998 Q1	0.653	-0.001	0.652	1.5149	0.430	1.5567	0.419	
	Q2	0.648	0.004	0.652	1.5503	0.421	1.5758	0.414
	Q3	0.656	-0.002	0.654	1.5866	0.412	1.5952	0.410
	Q4	0.655	0.002	0.657	1.6237	0.405	1.6148	0.407
1999 Q1	0.654	-0.002	0.652	1.6617	0.392	1.6526	0.395	
	Q2	0.651	0.000	0.651	1.6850	0.386	1.6913	0.385
	Q3	0.659	-0.003	0.656	1.7086	0.384	1.7309	0.379
	Q4	0.658	0.004	0.662	1.7325	0.382	1.7714	0.374
2000 Q1	0.678	0.004	0.682	1.7568	0.388	1.7962	0.380	
	Q2	0.682	0.006	0.688	1.7719	0.388	1.8213	0.378
	Q3	0.687	0.002	0.689	1.7871	0.386	1.8468	0.373
	Q4	0.694	0.002	0.696	1.8025	0.386	1.8727	0.372
2001 Q1	0.707	0.003	0.710	1.8180	0.391	1.8888	0.376	
	Q2	0.702	0.002	0.704	1.8305	0.385	1.9050	0.370
	Q3	0.707	-0.001	0.706	1.8431	0.383	1.9214	0.367
	Q4	0.704	0.003	0.707	1.8558	0.381	1.9379	0.365
2002 Q1	0.705	-0.001	0.704	1.8686	0.377	1.9513	0.361	
	Q2	0.696	-0.002	0.694	1.8878	0.368	1.9648	0.353
	Q3	0.702	-0.007	0.695	1.9072	0.364	1.9784	0.351
	Q4	0.718	0.009	0.727	1.9268	0.377	1.9921	0.365
2003 Q1	0.721	0.003	0.724	1.9466	0.372	2.0126	0.360	
	Q2	0.735	0.007	0.742	1.9557	0.379	2.0333	0.365
	Q3	0.731	0.010	0.741	1.9649	0.377	2.0542	0.361
	Q4	0.741	-0.003	0.738	1.9741	0.374	2.0754	0.356
2004 Q1	0.740	0.005	0.745	1.9834	0.376	2.0852	0.357	
	Q2	0.745	0.005	0.750	1.9943	0.376	2.0950	0.358
	Q3	0.766	0.011	0.777	2.0053	0.387	2.1048	0.369
	Q4	0.781	0.016	0.797	2.0163	0.395	2.1147	0.377
2005 Q1	0.797	0.007	0.804	2.0274	0.397	2.1263	0.378	
	Q2	0.812	0.021	0.833	2.0420	0.408	2.1380	0.390
	Q3	0.820	0.004	0.824	2.0567	0.401	2.1498	0.383
	Q4	0.852	0.009	0.861	2.0715	0.416	2.1616	0.398
2006 Q1	0.847	0.009	0.856	2.0864	0.410	2.1772	0.393	
	Q2	0.846	0.009	0.855	2.0962	0.408	2.1929	0.390
	Q3	0.870	-0.004	0.866	2.1061	0.411	2.2087	0.392
	Q4	0.889	0.019	0.908	2.1160	0.429	2.2246	0.408

Beginning 1989Q2, a productivity adjustment was added to the RCAF. What was formerly called the RCAF is now called the "RCAF (Unadjusted)" because it does not have a productivity adjustment. The productivity-adjusted RCAF is called the "RCAF (Adjusted)".

In its October 3, 1996 decision, the Surface Transportation Board added another version of a productivity-adjusted RCAF called the "RCAF-5". This second productivity adjustment factor began being used with the 1997Q1 Rail Cost Adjustment Factor.

Sample Rebasing Calculations

Preliminary RCAF:

Recommended Method

The All-Inclusive Index (AII) Forecast is divided by the appropriate Basing Factor.

Example calculations (AII and Basing Factors are listed on page 4):

$$2016Q1 \text{ on a 4Q17 basis} = 262.5 / 264.5 = 0.9924386 = 0.992$$

$$2016Q1 \text{ on a 4Q12 basis} = 262.5 / 297.6 = 0.8820565 = 0.882$$

$$2016Q1 \text{ on a 4Q97 basis} = 262.5 / 173.2 = 1.5155889 = 1.516$$

Alternative Method

An alternative method can be used to convert a Preliminary RCAF from one basis to another basis without knowing the All-Inclusive Index. This method will occasionally have small rounding differences, and is not recommended except as a "check" or as an approximation.

New Base Index = (Old Basing Factor / New Basing Factor) x Old Base Index.

Example for converting 2016Q1 on a 4Q12 basis to a 4Q17 basis:

$$(297.6 / 264.5) \times 0.882 = 0.9923750 = 0.992$$

Forecast Error Adjustment:

Recommended Method

1. Use the All-Inclusive Indexes (AII) for the two quarters prior to the quarter to be adjusted.
2. The All Actual is divided by the appropriate Basing Factor and rounded 3 digits after decimal.
3. The All Forecast is divided by the appropriate Basing Factor and rounded.
4. Take the result from step 2 and subtract the result from step 3.

Example calculation for 2016Q1:

1. Use A-I Index from 2 quarters prior, 2015Q3: 264.4 = Actual, 269.7 = Forecast

$$2. \text{ Actual} = 264.4 / 264.5 = 0.9996219 = 1.000$$

$$3. \text{ Forecast} = 269.7 / 264.5 = 1.0196597 = 1.020$$

$$4. \text{ Forecast Error} = 1.000 - 1.020 = -0.020$$

Alternative Method

This method has occasional rounding differences, and is not recommended except as a check or an approximation. The new base Forecast Error Adjustment equals:

(Old Basing Factor / New Basing Factor) x Old Forecast Error Adjustment.

Example for converting 2015Q3 on a 4Q12 basis, which was used for 2016Q1, to a 4Q17 basis:

$$\text{Forecast Error 4Q17 basis} = (297.6 / 264.5) \times -0.018 = -0.0202526 = -0.020$$

RCAF (Unadjusted)

RCAF (Unadjusted) = Preliminary RCAF + Forecast Error Adjustment.

$$\text{Example for 2016Q1, on a 4Q17 basis: } 0.992 + -0.020 = 0.972$$

Productivity Adjustment Factor

Use the Productivity Adjustment Factor as originally calculated for each quarter.

For 2016Q1, the Productivity Adjustment Factor is 2.3502.

RCAF (Adjusted)

RCAF (Adjusted) = RCAF (Unadjusted) / Productivity Adjustment Factor.

$$\text{Example for 2016Q1, on a 4Q17 basis: } 0.972 / 2.3502 = 0.4135818 = 0.414$$

PAF-5

Use the STB's alternative productivity adjustment factor, PAF-5, as originally calculated.

For 2016Q1, the Productivity Adjustment Factor is 2.4932.

RCAF-5

RCAF-5 = RCAF (Unadjusted) / PAF-5

$$\text{Example for 2016Q1, on a 4Q17 basis: } 0.972 / 2.4932 = 0.3898604 = 0.390$$

Indexes & Factors for RCAF

Yr/Qtr	All-Inclusive Index 1980 = 100		Prod. Adj. Factor	PAF-5	Original Basis		Basing Factor	
	Forecast	Actual			Prelim RCAF	Forecast Error		
1991	Q1	151.2	150.1	1.0755	-	1.144	0.001	132.2
	Q2	149.1	148.8	1.0871	-	1.128	0.015	132.2
	Q3	153.0	152.8	1.0988	-	1.157	-0.009	132.2
	Q4	155.5	156.1	1.1107	-	1.176	-0.002	132.2
1992	Q1	154.5	154.1	1.1227	-	1.169	-0.001	132.2
	Q2	152.9	153.7	1.1348	-	1.157	0.005	132.2
	Q3	153.5	154.1	1.1471	-	1.161	-0.003	132.2
	Q4	156.1	156.5	1.1595	-	1.181	0.006	132.2
1993	Q1	158.1	158.4	1.1720	-	1.008	0.004	156.9
	Q2	157.3	157.5	1.1847	-	1.003	0.002	156.9
	Q3	158.6	158.0	1.1975	-	1.011	0.002	156.9
	Q4	160.7	161.0	1.2104	-	1.024	0.001	156.9
1994	Q1	162.1	162.1	1.2253	-	1.033	-0.004	156.9
	Q2	160.4	160.7	1.2404	-	1.022	0.002	156.9
	Q3	164.1	164.6	1.2557	-	1.046	0.000	156.9
	Q4	163.7	164.4	1.2711	-	1.043	0.002	156.9
1995	Q1	165.5	166.2	1.2867	-	1.055	0.003	156.9
	Q2	167.1	167.6	1.3052	-	1.065	0.005	156.9
	Q3	168.8	168.0	1.3240	-	1.076	0.004	156.9
	Q4	168.9	168.2	1.3431	-	1.076	0.003	156.9
1996	Q1	168.0	167.6	1.3624	-	1.071	-0.005	156.9
	Q2	167.4	168.4	1.3820	-	1.067	-0.004	156.9
	Q3	169.0	169.4	1.4019	-	1.077	-0.003	156.9
	Q4	170.4	171.7	1.4221	-	1.086	0.006	156.9
1997	Q1	174.7	174.4	1.4426	1.4733	1.113	0.003	156.9
	Q2	173.7	173.7	1.4603	1.4945	1.107	0.008	156.9
	Q3	174.6	174.4	1.4783	1.5160	1.113	-0.001	156.9
	Q4	173.2	174.2	1.4965	1.5378	1.104	0.000	156.9
1998	Q1	172.7	172.1	1.5149	1.5567	0.997	-0.001	173.2
	Q2	171.5	171.8	1.5503	1.5758	0.990	0.006	173.2
	Q3	173.4	172.9	1.5866	1.5952	1.001	-0.003	173.2
	Q4	173.3	173.2	1.6237	1.6148	1.001	0.002	173.2
1999	Q1	173.0	172.3	1.6617	1.6526	0.999	-0.003	173.2
	Q2	172.1	173.2	1.6850	1.6913	0.994	-0.001	173.2
	Q3	174.2	175.4	1.7086	1.7309	1.006	-0.004	173.2
	Q4	174.1	175.6	1.7325	1.7714	1.005	0.006	173.2
2000	Q1	179.4	179.8	1.7568	1.7962	1.036	0.007	173.2
	Q2	180.3	180.8	1.7719	1.8213	1.041	0.009	173.2
	Q3	181.6	182.5	1.7871	1.8468	1.048	0.002	173.2
	Q4	183.5	184.1	1.8025	1.8727	1.059	0.003	173.2
2001	Q1	186.9	186.8	1.8180	1.8888	1.079	0.006	173.2
	Q2	185.6	186.4	1.8305	1.9050	1.072	0.004	173.2
	Q3	186.9	186.8	1.8431	1.9214	1.079	0.000	173.2
	Q4	186.1	185.7	1.8558	1.9379	1.074	0.004	173.2
2002	Q1	186.4	184.7	1.8686	1.9513	1.076	0.000	173.2
	Q2	184.2	186.4	1.8878	1.9648	1.064	-0.002	173.2
	Q3	185.6	186.4	1.9072	1.9784	1.072	-0.010	173.2
	Q4	189.9	191.7	1.9268	1.9921	1.096	0.012	173.2
2003	Q1	190.6	193.3	1.9466	2.0126	0.992	0.004	192.1
	Q2	194.3	193.6	1.9557	2.0333	1.011	0.009	192.1
	Q3	193.3	194.6	1.9649	2.0542	1.006	0.014	192.1
	Q4	195.9	197.2	1.9741	2.0754	1.020	-0.003	192.1

Indexes & Factors for RCAF

Yr/Qtr	All-Inclusive Index 1980 = 100		Prod. Adj. Factor	PAF-5	Original Basis		Basing Factor
	Forecast	Actual			Prelim RCAF	Forecast Error	
2004 Q1	195.6	198.7	1.9834	2.0852	1.018	0.007	192.1
Q2	197.1	201.3	1.9943	2.0950	1.026	0.007	192.1
Q3	202.6	204.5	2.0053	2.1048	1.055	0.016	192.1
Q4	206.5	212.2	2.0163	2.1147	1.075	0.022	192.1
2005 Q1	210.7	211.9	2.0274	2.1263	1.097	0.010	192.1
Q2	214.9	217.2	2.0420	2.1380	1.119	0.030	192.1
Q3	217.0	219.2	2.0567	2.1498	1.130	0.006	192.1
Q4	225.3	227.8	2.0715	2.1616	1.173	0.012	192.1
2006 Q1	223.9	223.1	2.0864	2.1772	1.166	0.011	192.1
Q2	223.8	228.7	2.0962	2.1929	1.165	0.013	192.1
Q3	230.0	232.0	2.1061	2.2087	1.197	-0.005	192.1
Q4	235.2	225.6	2.1160	2.2246	1.224	0.026	192.1
2007 Q1	229.9	226.0	2.1259	2.2351	1.197	0.011	192.1
Q2	230.0	234.1	2.1348	2.2456	1.197	-0.050	192.1
Q3	234.0	237.7	2.1438	2.2562	1.218	-0.021	192.1
Q4	241.7	245.6	2.1528	2.2668	1.258	0.022	192.1
2008 Q1	254.4	252.3	2.1618	2.2763	1.035	0.015	245.9
Q2	260.9	271.6	2.1683	2.2859	1.061	0.016	245.9
Q3	284.3	287.8	2.1748	2.2955	1.156	-0.009	245.9
Q4	284.1	259.7	2.1813	2.3051	1.155	0.044	245.9
2009 Q1	247.8	233.2	2.1878	2.3120	1.008	0.014	245.9
Q2	233.4	232.8	2.1944 a	2.3189	0.949	-0.099	245.9
Q3	245.3	243.8	2.2010 a	2.3259	0.998	-0.060	245.9
Q4	245.5	249.4	2.2076 a	2.3329	0.998	-0.002	245.9
2010 Q1	256.9	257.6	2.2142 a	2.3399 a	1.045	-0.007	245.9
Q2	256.8	265.3	2.2208	2.3469	1.044	0.016	245.9
Q3	262.0	258.3	2.2275	2.3539	1.065	0.003	245.9
Q4	262.9	267.5	2.2342	2.3610	1.069	0.035	245.9
2011 Q1	272.4	277.4	2.2409	2.3681	1.108	-0.015	245.9
Q2	284.4	291.0	2.2487	2.3752	1.157	0.019	245.9
Q3	291.7	289.8	2.2566	2.3823	1.186	0.020	245.9
Q4	291.0 b	285.7 b	2.2645	2.3894	1.183	0.026	245.9
2012 Q1	289.5 b	288.0 b	2.2724	2.3978	1.177	-0.007	245.9
Q2	297.0 b	295.5 b	2.2769	2.4062	1.208	-0.021	245.9
Q3	289.6 b	289.0 b	2.2815	2.4146	1.178	-0.006	245.9
Q4	299.1 b	300.1 b	2.2861	2.4231	1.216	-0.006	245.9
2013 Q1	297.4 b	293.7 b	2.2907	2.4279	0.999	-0.002	297.6 b
Q2	298.6 b	290.9 b	2.2957	2.4328	1.003	0.003	297.6 b
Q3	294.4 b	293.2	2.3008	2.4377	0.989	-0.012	297.6 b
Q4	297.9 c	291.3	2.3059	2.4426	1.001 b	-0.026	297.6 b
2014 Q1	293.0 d	290.2	2.3110	2.4480	0.985 d	-0.004	297.6
Q2	296.8	294.4	2.3168	2.4534	0.997	-0.022	297.6
Q3	296.1	293.4	2.3226	2.4588	0.995	-0.010	297.6
Q4	293.2	283.9	2.3284	2.4642	0.985	-0.008	297.6

a - restated by STB in Docket No. EP 290 (Sub-No. 4) served January 20, 2012.

b - restated by AAR, as directed by STB, in EP No. EP 290 (Sub-No. 5)(2014-1) submitted December 5, 2013. STB approved in Docket No. EP 290 (Sub-No. 5)(2014-1) served December 20, 2013.

c - restated by AAR, as directed by STB, in EP No. EP 290 (Sub-No. 5)(2014-2) submitted March 18, 2014. This caused a change to number that had been restated in 2014-1 submission. STB approved in decision served March 20, 2014.

d - restated by AAR, as directed by STB, in EP No. EP 290 (Sub-No. 5)(2014-2) submitted March 18, 2014. STB approved in Docket No. EP 290 (Sub-No. 5)(2014-2) served March 20, 2014.

Indexes & Factors for RCAF

Yr/Qtr	All-Inclusive Index 1980 = 100		Prod. Adj. Factor	PAF-5	Original Basis		Basing Factor	
	Forecast	Actual			Prelim RCAF	Forecast Error		
2015	Q1	284.2	261.3	2.3342	2.4704	0.955	-0.009	297.6
	Q2	271.0	264.4	2.3382	2.4766	0.911	-0.031	297.6
	Q3	269.7	264.4	2.3422	2.4828	0.906	-0.077	297.6
	Q4	263.4	259.8	2.3462	2.4890	0.885	-0.023	297.6
2016	Q1	262.5	250.1	2.3502	2.4932	0.882	-0.018	297.6
	Q2	253.7	255.0	2.3584	2.4974	0.852	-0.012	297.6
	Q3	263.0	259.7	2.3667	2.5016	0.884	-0.042	297.6
	Q4	260.6	259.5	2.3750	2.5059	0.876	0.005	297.6
2017	Q1	267.4	267.5	2.3833	2.5147	0.899	-0.011	297.6
	Q2	270.1	267.4	2.3952 e	2.5235	0.908	-0.004	297.6
	Q3	268.7	265.7	2.4072 e	2.5323	0.903	0.000	297.6
	Q4	267.1		2.4192 e	2.5412	0.898	-0.009	297.6
2018	Q1	274.5		2.4313 e	2.5539 e	1.038	-0.011	264.5

e - These productivity adjustment factors could be revised, potentially affecting the RCAF-A or RCAF-5. See Railroad Cost Recovery Prodedures - Productivity Adjustment, STB Ex Parte No. 290 (Sub-No. 4) served September 29, 2017.

Preliminary RCAF = All-Inclusive Index Forecast / Basing Factor
Forecast Error = (A-II Actual/Basing Factor) - (A-II Forecast/Basing Factor)
 where each is rounded to 3 digits after the decimal
 where A-II for forecast error calculation is from 2 quarters earlier
RCAF Unadjusted = Preliminary RCAF less Forecast Error
RCAF Adjusted = RCAF Unadjusted / Productivity Adjustment Factor
RCAF-5 = RCAF Adjusted / PAF-5

Note: Each RCAF is rounded to 3 digits after the decimal. Productivity Adjustment Factors are always 4 digits after the decimal.

Basing Factors

10/1/80 = 102.7
 10/1/82 = 120.9
 4Q/87 = 132.2
 4Q/92 = 156.9
 4Q/97 = 173.2
 4Q/02 = 192.1
 4Q/07 = 245.9
 4Q/12r = 297.6
 4Q/17 = 264.5

**First Quarter 2018
All-Inclusive Index**

Ex Parte No. 290 (Sub-No. 5) (2018-1)

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

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

December 5, 2017

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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.

49 U.S.C. § 10708 requires the RCAF to be rebased every five years, and therefore this quarter's RCAF has been calculated to a rebased figure that uses a fourth quarter 2017 base. The basing calculation is shown on the following page 1A. Attachment A contains earlier versions of the RCAF recalculated on the 4Q2017 base for comparison purposes. In past rebasings, the new basing factor was always higher than before. That was not the case this time. The lower basing factor is the result of a huge drop in fuel prices plus falling prices for materials & supplies and lower interest rates.

This quarter's projection of railroad costs is for the first quarter 2018. Each year's first quarter calculation utilizes new health & welfare rates, which are listed in Appendix A on page 5. New payroll tax rates and maximum taxable earnings (Tier I, Tier II, and Unemployment Insurance) also become effective January 1, and are listed in Appendix A on page 4.

Calculations for the Productivity Adjustment Factor (page 5) utilize the Surface Transportation Board's Productivity Adjustment decision that was served on February 24, 2017. That decision said that the Board 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 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. In a decision served March 16, the deadline for comments on the productivity change was suspended pending further order of the Board.

On September 29, 2017, the STB served another decision that proposed a second tentative productivity adjustment for the change in the railroad productivity for the 2011-2015 averaging period. This version used new data and a new linking factor. The result was a much more realistic Output Index for 2015, and a five-year geometric average change of 0.994, or -0.6 percent. Comments on this calculation were due by November 13, and replies are due by December 13, too late for this filing.

At the time of this December 5 RCAF filing, the AAR has continued to use the original productivity change to calculate the RCAF's two productivity adjustment factors. Although it appears that the STB's second calculation is more realistic, it is not considered final at the time of this filing. Thus, the possibility remains that both productivity-adjusted RCAFs could be revised.

Rebasing

The statute relating to the Rail Cost Adjustment Factor (49 U.S.C. § 10708) requires the RCAF to be rebased every five years. This means that the new base period will be the fourth quarter of 2017, since the previous base period was the fourth quarter of 2012. The calculations are shown below.

Rebasing the Denominator of the RCAF to the Fourth Quarter 2017	
1. Fourth Quarter 2017 Linked Index	267.1
2. Second Quarter 2017 Linked Index	
Calculated Using Actual Data	267.4
Calculated Using Forecasted Data	<u>270.1</u>
Difference	(2.7)
3. Fourth Quarter 2017 Linked Index	
Adjusted for Second Quarter 2017 Forecast Error	264.4
Rounding Adjustment to Force 1.000	<u>0.1</u>
New Basing Factor for 2017Q4 = 100	264.5
<small>Note: Linked Indexes on this page refer to the All Inclusive Index, 1980=100 basis.</small>	

Test of Basing Factor Fourth Quarter 2017 = 100	
1. Fourth Quarter 2017 Linked Index (1980 = 100)	267.1
Divided by 2017Q4 Basing Factor	264.5
Fourth Quarter 2017 Linked Index (2017Q4 = 100)	1.010
2. Second Quarter 2017 Linked Index	
Calculated Using Actual Data (1980 = 100)	267.4
Calculated Using Forecasted Data (1980 = 100)	270.1
Divide both by 2017Q4 Basing Factor	264.5
Calculated Using Actual Data (2017Q4 = 100)	1.011
Calculated Using Forecasted Data (2017Q4 = 100)	<u>1.021</u>
Difference (Forecast Error Adjustment)	(0.010)
3. Fourth Quarter 2017 Linked Index (2017Q4 = 100)	
Adjusted for Second Quarter 2017 Forecast Error	1.000
<small>Note: Fourth Quarter 2017 Linked Index (2017Q4 = 100), after forecast error adjustment, must equal 1.000.</small>	

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 2016 (current) and 2015 (previous) weights are shown below. Weights calculated from 2015 data were used for the fourth quarter of 2016 through the third quarter of 2017. Beginning with the fourth quarter of 2017, weights calculated using 2016 data are used.

Traffic and fuel prices were down again in 2016, causing expenses for most categories to decline. The Fuel and Materials & Supplies categories had double-digit percentage decreases in expenses, and this caused them to be the two categories that had decreases in weights. Depreciation and Interest, the two categories with increased expenses in 2016, had increases in their weights. While Labor, Equipment Rents, and Other all had 5 to 6 percent decreases in expenses, their weights increased because of the larger drops for Fuel and Materials & Supplies. Weights for Labor and Other are the highest they have been since 2004, while Fuel's weight is the lowest it has been since 2003. Depreciation's weight, perhaps pushed by recent spending for Positive Train Control, is the highest it has ever been.

Weights for RCAF's All-Inclusive Index		
	2016	2015
Labor	35.6 %	35.0 %
Fuel	10.7	13.4
Materials & Supplies	5.0	5.4
Equipment Rents	5.9	5.8
Depreciation	15.6	13.9
Interest	2.2	1.9
Other	25.0	24.6
Total	100.0	100.0

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 First Quarter 2018

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.

	2016 Weights	Forecast		Percent Change
		Previous 2017Q4	Current 2018Q1	
1. Labor	35.6%	415.1	423.8	2.1 %
2. Fuel	10.7%	215.5	248.4	15.3
3. M&S	5.0%	254.8	251.0	-1.5
4. Equipment Rents	5.9%	223.9	226.7	1.3
5. Depreciation	15.6%	226.3	226.8	0.2
6. Interest	2.2%	60.5	60.5	0.0
7. Other	25.0%	221.4	226.9	2.5
8. Weighted Average				
a. 1980 = 100		288.8	296.8	
b. 1980 = 100 (linked)		267.1	274.5 ¹	
c. 4Q17 = 100		101.0	103.8 ²	2.8

Note:

As required every five years, this index has been rebased. In this case, the new basis is 4Q17 = 100 (where 2017Q4 equals 100.0 after the forecast error adjustment). For the purpose of this calculation, 2017Q4 has been recalculated using the 4Q17 base in item 8c. Items 1 through 8b are unchanged. See page 1A and Attachment A in this filing for more detail.

¹ Index80 = (Current Index / Previous Index) * the Previous Quarter Linked Index
= (296.8 / 288.8) x 267.1
= 274.5

² To calculate the 4Q17 = 100 index:

Index4Q17 = (Current Linked Index / 4Q17 Basing Factor) * 100
= 274.5 divided by 264.5 times 100
= 103.8

Indexes based on other periods: 4Q12 based index = 274.5 / 297.6 x 100 = 92.2
4Q07 based index = 274.5 / 245.9 x 100 = 111.6
4Q02 based index = 274.5 / 192.1 x 100 = 142.9
4Q97 based index = 274.5 / 173.2 x 100 = 158.5
4Q92 based index = 274.5 / 156.9 x 100 = 175.0

Forecast vs. Actual All-Inclusive Index Third Quarter 2017

Because of data availability, the forecast error adjustment has a two-quarter lag from each filing. As shown below, the third quarter actual index of 100.5 is 1.1 index points below the forecast value of 101.6. Therefore, the forecast error adjustment for first quarter 2018 is -1.1 index points.

	2015 Weights	Third Quarter 2017		Amt Difference
		Forecast	Actual	
1. Labor	35.0%	422.8	422.8	
2. Fuel	13.4%	202.3	192.4	
3. M&S	5.4%	252.6	252.6	
4. Equipment Rents ¹	5.8%	223.8	224.2	
5. Depreciation	13.9%	225.1	226.3	
6. Interest	1.9%	60.6	60.6	
7. Other	24.6%	224.3	223.5	
8. Weighted Average				
a. 1980 = 100		289.3	288.0	
b. 1980 = 100 (linked)		268.7	265.7 ²	
c. 4Q17 = 100 ³		101.6	100.5	-1.1

Forecast error —————> **-1.1 index points**

Note: As required every five years, this index has been rebased. In this case, the new basis is 4Q17 = 100 (where 2017Q4 equals 100.0 after the forecast error adjustment). For the purpose of this calculation, 2017Q4 has been recalculated using the 4Q17 base in item 8c. Items 1 through 8b are unchanged. See page 1A and Attachment A in this filing for more detail.

1	2015 Weights	Third Quarter 2017	
		Forecast	Actual
Car-Hire	58.2%	204.5	205.2
Lease Rentals	41.8%	224.3	223.5
Weighted Average		212.8	212.8
Weighted Average (linked)		223.8	224.2

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

$$265.7 = 288.0 / 289.8 \times 267.4$$

³ The 4Q17 based indexes are 1980 based indexes divided by the 4Q17 basing factor (264.5/100).
 Other basing factors are: 4Q12 = 297.6; 4Q07 = 245.9; 4Q02 = 192.1; 4Q97 = 173.2; and 4Q92 = 156.9.

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. 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".

On September 29, the STB served another decision with a differing (and more realistic) productivity change that was called tentative. At the time (December 5) of this filing, we have still used the original (and probably incorrect) productivity change, because reply comments on the new version are not due until December 13. The Board stated that its productivity adjustment "will not become effective until the Board has had the opportunity to consider comments....." Therefore, it is probable that the Productivity Adjustment Factors used with the RCAF will 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	← 2010-2014
Q2	2017	2.3952	2.5235	
Q3	2017	2.4072	2.5323	← 2011-2015
Q4	2017	2.4192	2.5412	
Q1	2018	2.4313	2.5539	

The PAF and PAF-5 based on 2011-2015 could be revised, possibly affecting the RCAF-A for 2017Q2-2018Q1, and the RCAF-5 for 2018Q1

Additional Information on 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. On September 29, the STB served another decision with a differing (and more realistic) productivity change called tentative, that "**will not become effective until the Board has had the opportunity to consider comments submitted by parties.**" **This (September 29 version) productivity change has not been used in this December 5 filing, and is being provided herein only as information.** It is not known if the STB will decide to use this productivity change instead of that calculated in its decision served February 24, and it is not known if earlier quarters that used the February 24 version will be restated.

The components of this possible average annual value are shown on the following table in ratio format – therefore, 0.994 is the same as a decrease of 0.6 percent. Productivity changes are calculated by multiplying each of the five productivity changes together and taking the result to the one-fifth power. The first table below (Comparison....) matches the STB's Table B in their September 29 decision, **but it is not effective as of December 5, 2017.** The second table (Calculation....) contains productivity adjustment factors (PAF) for each quarter based on the previous (2010-2014) average and **what would result** if the September 29 average (2011-2015) had been used. The factors 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	0.913	0.972	0.939
Average			0.994
Previous Average (2010-2014)			1.014

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

Calculation of Possible PAF and PAF-5				
For 2011-2015, use fourth root of avg. productivity change = 0.9985				
For 2010-2014, use fourth root of avg. productivity change = 1.0035				
The shaded and italicized PAF and PAF-5 are the numbers that would result if the STB decided to replace the productivity change from its February 24 decision with the tentative productivity change from its September 29, 2017 decision.	Quarter	Year	PAF	PAF-5
	Q1	2017	2.3833	2.5147
	Q2	2017	2.3797	2.5235
	Q3	2017	2.3761	2.5323
	Q4	2017	2.3725	2.5412
	Q1	2018	2.3689	2.5374

Rail Cost Adjustment Factor First Quarter 2018

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 the **All-Inclusive Index is now on a 2017Q4=100 basis**.

	Previous 2017Q4	Current 2018Q1	Percent Change
All-Inclusive Index ¹	101.0	103.8	2.8
Preliminary RCAF ²	1.010	1.038	2.8
Forecast Error Adjustment ³	<u>-0.010</u>	<u>-0.011</u>	
RCAF (Unadjusted) ⁴	1.000	1.027	2.7
Productivity Adjustment Factor ⁵	<u>2.4192</u>	<u>2.4313</u>	
RCAF (Adjusted) ⁶	0.413	0.422	2.2
PAF-5 ⁷	2.5412	2.5539	
RCAF-5 ⁸	0.394	0.402	2.0

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

First Quarter 2018

The first quarter 2018 Labor Index increased 2.1 percent from the previous quarter. The increase was caused by five new national labor agreements.

Wage Rate Index

The Wage Rate Index portion of the Labor Index is 3.5 percent higher than the previous quarter. New labor agreements with retroactive wage increases caused the increase.

New National Agreements: On October 6, 2017, a group of railroad unions called the Coordinated Bargaining Group announced a tentative national agreement. The unions involved are the ATDA, BLET, BRS, IBBM, NCFO, and SMART-TD¹. The first wage increase, effective January 2015, was received at that time, and was mutually negotiated to apply as the first increase in this new five-year agreement. The new agreement also has two retroactive (July 2016 and July 2017) wage increases of 2 percent. The future wage increases (July 2018 and July 2019) are for 2.5 and 3.0 percent, respectively. At this time (December 4), the AAR has received signed copies of ratified agreements for ATDA, BLET, BRS, and SMART-TD (including the Yardmasters), so these have been added to the index.

Wage Increases: There are no national union wage increases scheduled for the first quarter 2018. However, the five new national labor agreements have two retroactive general wage increases, and those have been applied to the index effective January 1, 2018. Non-union employees, following past index procedure, are being assigned a 2 percent general wage increase effective January 1, 2018. This matches the July 2017 wage increase to be received by the unions that signed the new labor agreements.² A few independent labor agreements have cost of living allowance increases of 16 cents effective January 1.

Lump Sums: The first quarter lump sum rate is up by 0.1 cents from the previous quarter. One amount was added for a railroad's quarterly performance incentive payment, which effectively offset the performance incentive from one year ago that became completely amortized and removed from the rate.³ However, the 13-Week U.S. Treasury bill rate at the November 27 auction was at a 52-week high – and this higher rate caused the 0.1 cent increase.

Back Pay: The first quarter back pay rate jumped from 1.1 cents to 61.5 cents because of the retroactive wage increases in the five new labor agreements. The back pay amounts were the result of a 2 percent wage increase retroactive to July 1, 2016, and a second increase retroactive to July 1, 2017. Two of the unions involved are among the largest railroad unions: the BLET and SMART-TD. Although the new back pay rate is much higher than it has been in recent years, it is much lower than the rate in 2012 (\$1.092 for 2012Q3) when more unions had retroactive increases in new agreements.

¹ The SMART-TD (International Association of Sheet Metal, Air, Rail and Transportation Workers, Transportation Division) represents workers previously represented by the UTU (conductors, brakemen, etc.). Like the UTU, it also has a Yardmasters Department. See Appendix H.

² The Interstate Commerce Commission decided in 1987 that "it is appropriate" to assign a wage increase, similar to unionized employees, to employees not covered by a labor contract.

³ Index procedure, decided by the Interstate Commerce Commission in 1988, is to amortize lump sums and/or back pay over four quarters using the rates for 13-week (a.k.a. 3-month) U.S. Treasury bills.

Labor

First Quarter 2018

Other: In wages, "Other" contains the amortization of incentive compensation payments that a large railroad makes each year to its dispatchers, yardmasters, and locomotive engineers. This rate is unchanged from the previous quarter.

Supplements Index

The Supplements Index increased 0.4 percent. Factors affecting supplements such as health & welfare premiums, payroll tax rates, and maximum taxable earnings, are typically adjusted on January 1. Higher taxable earnings, partially offset by lower health & welfare costs, caused the higher rate.

Health & Welfare: The Health & Welfare rate decreased 3.2 percent. New employer contributions (premiums) will go into effect January 1. (See pages 4 and 5 of this appendix.) Although supplemental sickness rates increased, lower rates for group health and early retirement major medical caused the overall rate to decline. Employee health & welfare cost sharing was unchanged.

Railroad Retirement: The Railroad Retirement rate increased by 23.9 cents (or 2.9 percent). Most of the change was caused by higher taxable earnings resulting from new labor agreements that increased wages and caused back pay. In addition, the maximum taxable earnings for Railroad Retirement's Tier I and Tier II increased for 2018. Tax rates (for employers) did not change. Page 4 of this appendix lists tax rates and maximum taxable earnings for 2016 through 2018.

Unemployment Insurance: The Unemployment Insurance rate is 4.1 cents higher than the previous quarter. Maximum taxable earnings and the tax rate both increased for 2018. Basic tax rates range from a minimum of 0.65 percent to a maximum of 12 percent. However, if the Railroad Unemployment Insurance Account balance falls below a certain threshold, a surcharge can be imposed. For 2018 (like 2017 and 2016), a surcharge of 1.5 percent will be used – meaning that no railroad will have a tax rate less than 2.15 percent. The tax rate is experience-rated, and monthly Class I railroad employee counts have been lower in recent months – meaning higher unemployment (although some of the decline was caused by retirements that were not replaced). The weighted average Class I railroad rate for 2018 is 3.76 percent compared to 3.37 percent for 2017. Page 4 of this appendix lists tax rates and maximum taxable earnings for 2016 through 2018. The last year with no surcharge was 2014.

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 first quarter rate is 6.3 cents higher. The higher rate was caused mostly by one railroad's annual stock awards.

Labor Index Calculation

As shown in Table A-1 on the next page, a higher Wage Rate Index and a higher Supplements Index combined to cause a 2.1 percent increase for the Labor Index. The linked first quarter 2018 Labor Index is 423.8, which is 0.6 percent higher than one year ago.

Labor First Quarter 2018

Table A-1 Labor Index

	2017Q4	2018Q1	Change	
			Percent	Amount
<u>Base Wage</u> – Straight Time & Pay For Time Not Worked	\$40.058	\$40.852	2.0%	\$0.794
Adjustments:				
Lump Sum	0.312	0.313	0.3%	\$0.001
Back Pay	0.011	0.615	5490.9%	\$0.604
Other	0.136	0.136	0.0%	\$0.000
Total Wages	<u>40.517</u>	<u>41.916</u>	3.5%	\$1.399
Health & Welfare Benefits	8.793	8.515	-3.2%	-\$0.278
RR Retirement & Medicare	8.345	8.584	2.9%	\$0.239
Unemployment Insurance	0.323	0.364	12.7%	\$0.041
Other	0.136	0.199	46.3%	\$0.063
Total Supplements	<u>\$17.597</u>	<u>\$17.662</u>	0.4%	\$0.065
Total Labor (as info only)	\$58.114	\$59.578		
Wage Index¹	346.7	358.7	3.5%	
Supplements Index²	650.3	652.7	0.4%	
Total labor Index, 2016 Weights ³	435.4	444.5		
Labor Index (linked)⁴	415.1	423.8	2.1%	

¹ 1980 wage rate \$11.685

² 1980 supplements rate \$2.706

³ 2016 weights: wages, supplements 70.8% 29.2%

⁴ 2018Q1 linked Index = 2017Q4 linked x (2018Q1 / 2017Q4)
= 415.1 x 444.5 / 435.4

Labor
First Quarter 2018

Supplement Comparisons

Health and Welfare Rates

Plan	Railroad Payment Per Employee Per Month				
	2016	2017	2018	Change	
				'16-'17	'17-'18
Group Health & Welfare	\$1,481.05	\$1,693.72	\$1,662.44	14.4%	-1.8%
Early Retirement Major Medical	134.70	166.75	139.97	23.8%	-16.1%
Group Dental	56.97	65.12	63.67	14.3%	-2.2%
Group Vision	8.41	8.44	8.44	0.4%	0.0%
Supplemental Sickness					
Maintenance of Way	32.87	40.00	51.63	21.7%	29.1%
Shop Crafts	49.11	60.00	75.48	22.2%	25.8%
Signalmen	29.48	37.00	44.34	25.5%	19.8%
Yardmasters	34.22	34.22	34.22	0.0%	0.0%

Railroad Retirement and Medicare

	Earnings Base			Employer Rate		
	2016	2017	2018	2016	2017	2018
Tier I	\$118,500	\$127,200	\$128,700	6.20%	6.20%	6.20%
Tier II	88,200	94,500	95,400	13.10%	13.10%	13.10%
Medicare	no limit	no limit	no limit	1.45%	1.45%	1.45%

Unemployment Insurance

Monthly Taxable Earnings Base			Weighted Avg. Class I Rate		
2016	2017	2018	2016	2017	2018
\$1,455	\$1,545	\$1,560	2.73%	3.37%	3.76%

Labor
First Quarter 2018

NATIONAL RAILWAY LABOR CONFERENCE
EMPLOYEE BENEFITS DEPARTMENT

251 – 18th Street, South, Suite 750, Arlington, VA 22202 ~~~ PHONE: (571) 336-7600

David B. Marcus
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November 17, 2017

Mr. Clyde Crimmel
Director Statistical Information
Policy & Communications Department
AAR-5th Floor
50 F Street N.W.
Washington, D.C. 20009

Dear Mr. Crimmel:

The revised employer Payment Rates which are effective January 1, 2018 are as follows:

Railroad Employees National Health & Welfare Plan & National Railway Carriers/United Transportation Union H&W Plan Non-Hospital Road	\$1,662.44
Railroad Employees National Early Retirement Major Medical Benefit Plan Non-Hospital Road	\$ 139.97
Aetna - National Dental Plan	\$ 63.67
Aetna - Supplemental Sickness Plans	
ShopCrafts	\$ 75.48
Signalmen	\$ 44.34
Maintenance of Way	\$ 51.63
Trustmark - Supplemental Sickness Plans Yardmasters	\$ 34.22
EyeMed - National Vision Plan	\$ 8.44

If you have any questions or need clarification, please contact me.

Very truly yours,



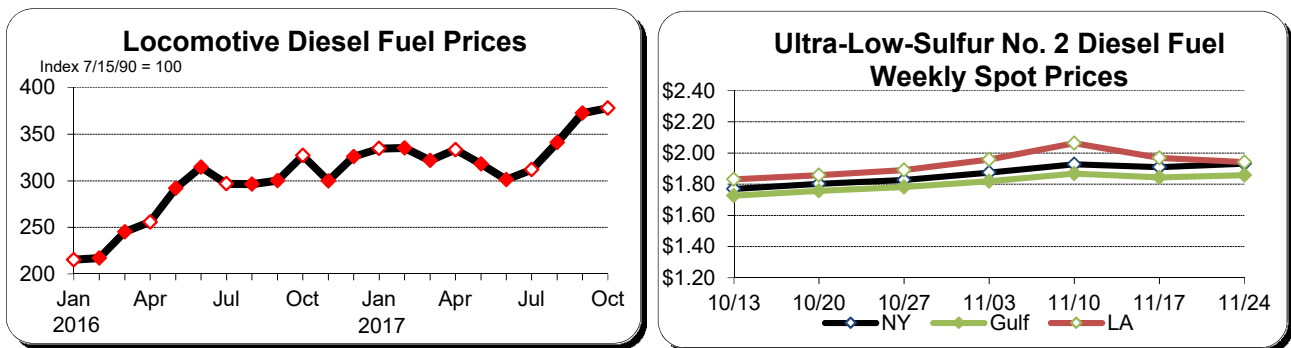
Susan E. Parks

cc: Glen Williams

Fuel First Quarter 2018

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 October 2017, data through four weeks of November are available for related fuel types. According to the Energy Information Administration, weekly spot prices for Ultra-Low-Sulfur Diesel Fuel* for the week ended November 24 are higher than they were in mid-October. Heating oil prices were also up, and inventories are down.* The chart below (on left) shows the AAR's Monthly Locomotive Diesel Fuel Price Index from January 2016 through October 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.



Recent crude oil prices have been rising, and this should continue after the Organization of the Petroleum Exporting Countries (OPEC) extended its output cuts.** Recent daily spot prices for Ultra-Low-Sulfur No. 2 diesel fuel were already 5 to 8 percent higher than their October average. Railroads expect higher prices for locomotive diesel fuel. Prices for Q1 (January 2018) are expected to be 6.5 percent higher than the average price railroads actually paid in October. Because the Q4 (October) forecast was too low, the Q1 forecast is 15.3 percent higher than the previous (Q4) forecast.

Forecast Fuel Index (1980 = 100)	248.4
Change from previous quarter forecast	15.3%
Change from previous quarter actual	6.5%

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

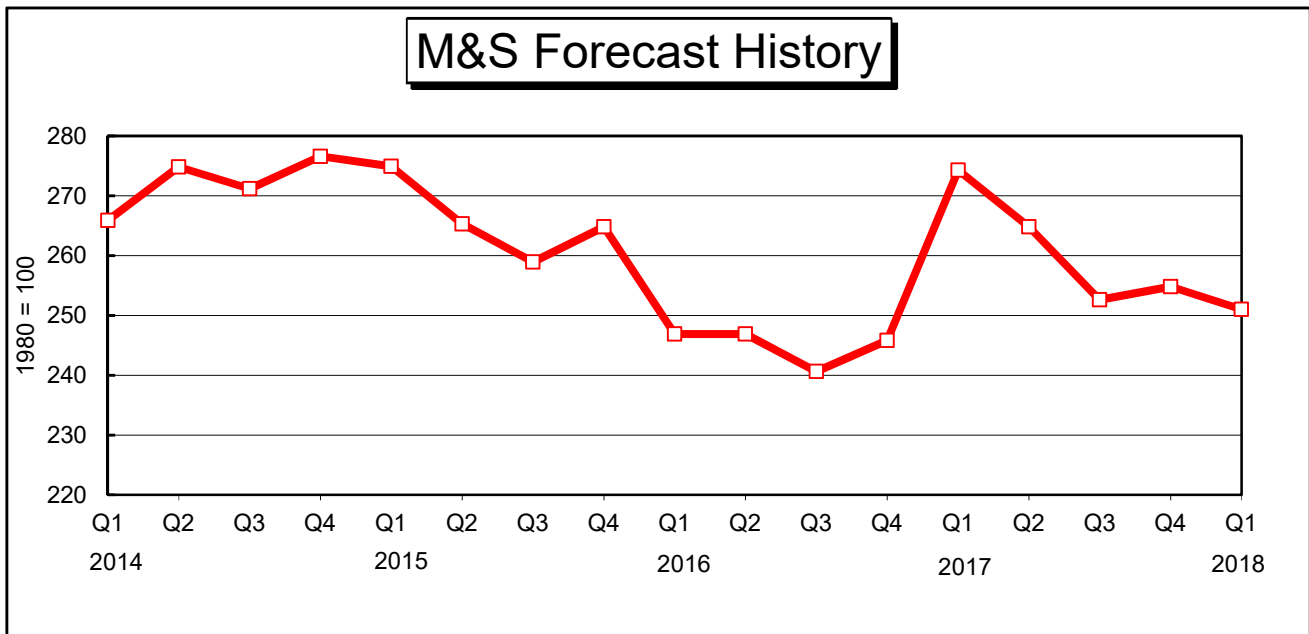
Materials & Supplies First Quarter 2018

The first quarter 2018 Materials & Supplies Index is down 1.5 percent from the previous quarter. The Metal Products Index, which has the largest weight of the three components, rose 1.8 percent. However, the other component indices declined. The Index for Forest Products fell 4.6 percent, while Miscellaneous Products dropped 3.3 percent. The current Materials & Supplies Index is lower than its values for all of 2014 and 2015.

2018Q1 Materials & Supplies Index = 251.0

2017Q4 Materials & Supplies Index = 254.8

Difference	-3.8 basis points
	or
	-1.5 %



Equipment Rents First Quarter 2018

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

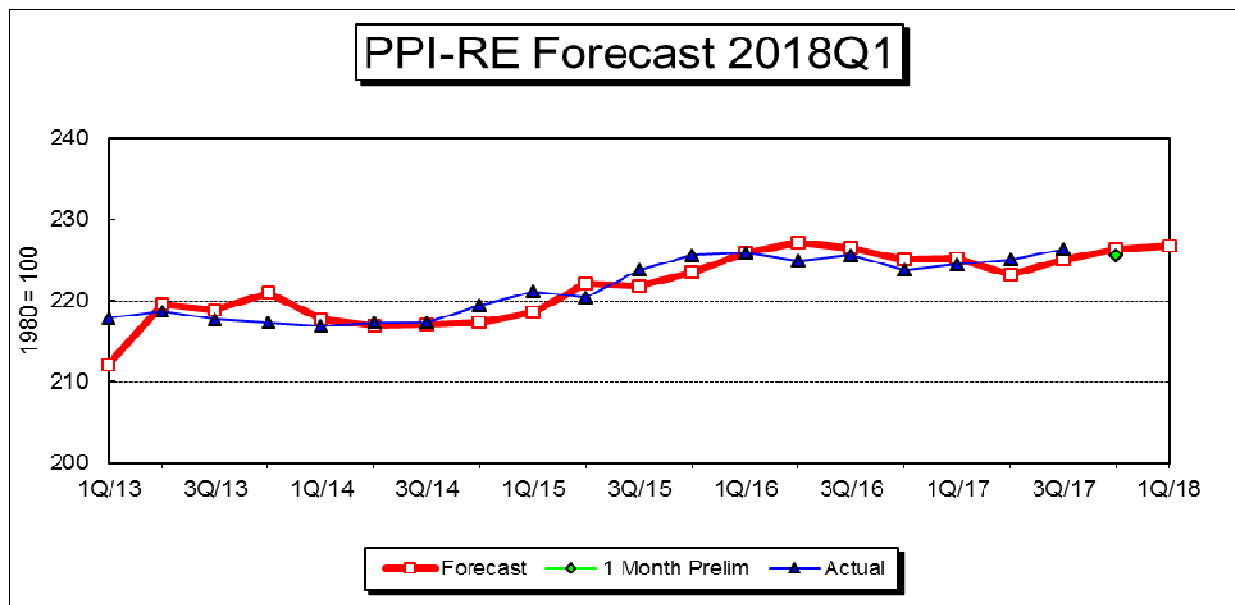
The table below shows the results of the Equipment Rents Index calculation. The first quarter Car Hire portion of the Index rose 0.3 percent because of higher rates for auto racks and privately-owned cars. A 2.5 percent increase for the projected PPI-LF (See Appendix G) used as a proxy for Lease Rentals, combined with the 0.3 percent increase for Car Hire, caused the Equipment Rents Index to increase by 1.3 percent.

	2016	2017Q4	2018Q1	Percent
	Weight			Change
Car Hire	58.3%	206.9	207.5	0.3 %
Lease Rentals	41.7%	221.4	226.9	2.5
Weighted Average		212.9	215.6	1.3
Weighted Average (Linked)		223.9	226.7	1.3

Depreciation First Quarter 2018

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 0.2 percent increase from the previous quarter's forecast, and reflects monthly values that have changed very little during the last few months.

Forecast of Depreciation Index (1982=100)	205.0
Forecast of Depreciation Index (1980=100)	226.8
Change from previous quarter forecast	0.2%
Change from actual first month of previous quarter	0.5%
Change from same quarter of prior year (actual)	1.0%



Depreciation First Quarter 2018

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 0.92, and for Box-Jenkins was 1.26.

Based on the lower Mean Absolute Deviation, Exponential Smoothing was selected.

Forecast Model for PPIRE

Holt exponential smoothing: Linear trend, No seasonality
LN(0.675, 0.018)

Component	Smoothing Wgt	Final Value
Level	0.67550	204.2
Trend	0.01794	0.1834

Within-Sample Statistics

Sample size	72	No. parameters	2
Mean	198.63	Std. deviation	4.81
R-square	0.96	Adj. R-square	0.96
Durbin-Watson	1.99	Ljung-Box(18)	16.00 P=0.40
Forecast error	1.00	BIC	1.05
MAPE	0.36	SMAPE	0.36
RMSE	0.99	MAD	0.72
MAD/Mean Ratio	0.00		

Actual Values for the Most Recent 6 Periods:

Date	Actual
2017-May	203.5
2017-Jun	204.6
2017-Jul	204.6
2017-Aug	204.6
2017-Sep	204.6
2017-Oct	203.9

Forecasted Values

Date	2.5 Lower	Forecast	97.5 Upper
2017-Nov	202.343	204.401	206.459
2017-Dec	202.087	204.584	207.082
2018-Jan	201.897	204.768	207.638
2018-Feb	201.751	204.951	208.151
2018-Mar	201.635	205.134	208.634
QTR AVG	201.761	204.951	208.141

Interest First Quarter 2018

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 2016 data, and was updated in the Q4 filing submitted on September 5, 2017. The Interest Index based on 2016 is at an all-time low. Although the index is based on embedded rates instead of entirely on current market conditions, it is no coincidence that rates for U.S. 20-year bonds are also at their lowest over the last 25 years.

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. Line numbers listed below will have some differences from previous years because the Surface Transportation Board changed some of the line numbers and account definitions.

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	
29	Current Liabilities, Loans and Notes Payable
38	Equipment Obligations and Other Long Term Debt Due Within One Year
40	Non-Current Liabilities: Funded Debt Unmatured
41	Non-Current Liabilities: Equipment Obligations
42	Non-Current Liabilities: Capitalized Lease Obligations
43	Non-Current Liabilities: Debt in Default
44	Non-Current Liabilities: Accounts Payable: Affiliated Companies
45	Non-Current Liabilities: Unamortized Debt Premium

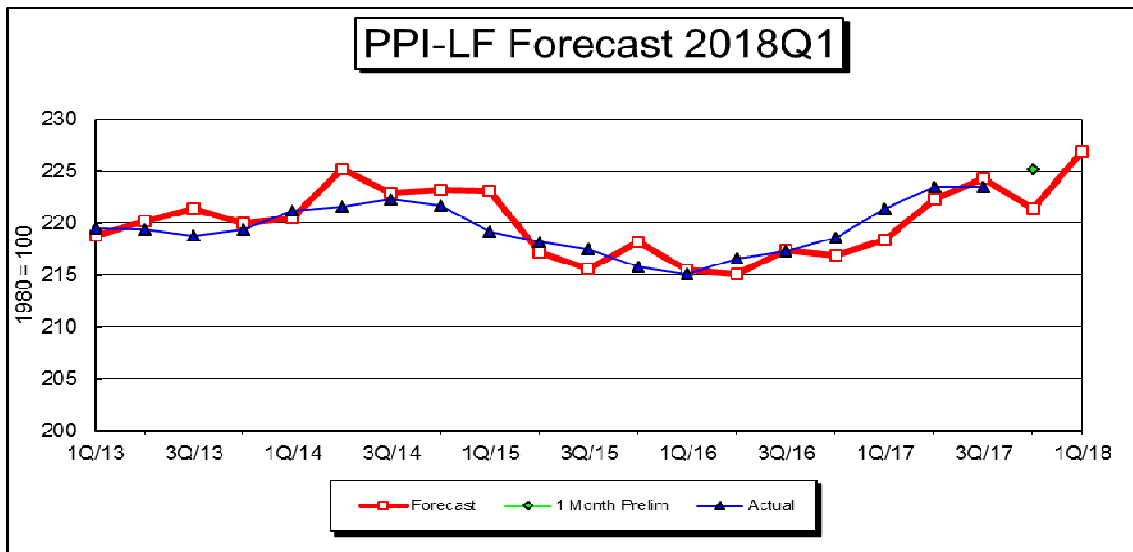
2016	Interest Rate	4.75%
1980	Interest Rate	7.85%
2018Q1	Interest Index	60.5
2017Q4	Interest Index	60.5
	Percent Change	0.0%

Other Expenses First Quarter 2018

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 had small increases over the last three months. Over half of the increase in the forecast was caused by a Q4 forecast that was too low.

Forecast of Other Expense Index (1982=100)	202.4
Forecast of Other Expense Index (1980=100)	226.9
Change from previous quarter forecast	2.5%
Change from actual first month of previous quarter	0.8%
Change from same quarter of prior year (actual)	2.5%



Other Expenses First Quarter 2018

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 = 1.94; Box-Jenkins = 1.81. 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]	0.5962	0.09902	6.021	1

Within-Sample Statistics

Sample size	72	No. parameters	1
Mean	195.54	Std. deviation	2.19
R-square	0.95	Adj. R-square	0.95
Durbin-Watson	1.88	Ljung-Box(18)	22.4 P=0.78
Forecast error	0.47	BIC	0.48
MAPE	0.18	SMAPE	0.19
RMSE	0.47	MAD	0.36
MAD/Mean Ratio	0		

Actual Values for the Most Recent 6 Periods:

Date	Actual
2017-May	199.2
2017-Jun	199.4
2017-Jul	199.0
2017-Aug	199.5
2017-Sep	199.7
2017-Oct	200.9

Forecasted Values

Date	2.5 Lower	Forecast	97.5 Upper
2017-Nov	200.688	201.615	202.543
2017-Dec	200.295	202.042	203.789
2018-Jan	199.780	202.296	204.812
2018-Feb	199.229	202.448	205.666
2018-Mar	198.682	202.538	206.395
QTR AVG	0	202.427	205.624

Railroad and Union Abbreviations

First Quarter 2018

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	International Association of Sheet Metal, Air, Rail, and Transportation Workers - 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

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)
UTU-YMD	United Transportation Union Yardmaster Department (see SMART-TD)

* Represents employees formerly represented by the UTU (conductors and brakemen) and also has a separate yardmasters department.