



306257

John T. Gray
Senior Vice President - Policy & Economics

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

ENTERED
Office of Proceedings
March 3, 2023
Part of
Public Record

March 3, 2023

This submission is the AAR forecast of the second quarter 2023 All-Inclusive Index and Rail Cost Adjustment Factor, filed in Ex Parte No. 290 (Sub-No. 5) (2023-2) *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 second quarter 2023 results and compares to the previous quarter. Both quarters are shown on a 4Q\2022=100 base.

	<u>2023Q1</u>	<u>2023Q2</u>	<u>% Change</u>
All-Inclusive Index	101.3	100.8	-0.5
Preliminary RCAF	1.013	1.008	-0.5
Forecast Error Adjustment	-0.003	0.019	
RCAF (Unadjusted)	1.010	1.027	1.7
Productivity Adjustment Factor	2.4740	2.4911	
RCAF (Adjusted)	0.408	0.412	1.0
PAF-5	2.5898	2.6059	
RCAF-5	0.390	0.394	1.0

Page 2

March 3, 2023

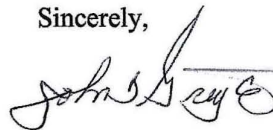
The Staggers Act requires the RCAF to be rebased every five years. The procedure necessary to calculate this rebasing was outlined by the ICC in Ex Parte No. 290 (Sub-No. 5) effective January 1, 1988. The AAR rebased RCAF in the previous quarter filing.

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 2022 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.

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 provided to Mr. Ramirez's Data Collection and Auditing Team. All work papers are available for STB inspection. Questions should be directed to me or Kiara Williams (202 639-2327) of this office.

Sincerely,

A handwritten signature in dark ink, appearing to read "John T. Gray", with a horizontal line extending to the right.

John T. Gray

Attachments

**Second Quarter 2023
All-Inclusive Index**

Ex Parte No. 290 (Sub-No. 5) (2023-2)

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

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

March 3, 2023

Table of Contents

Subject	Page
Introduction	1
Rebasing	1A
Index Weights	2
All-Inclusive Index - Second Quarter 2023	3
Forecast vs. Actual All Inclusive Index - Fourth Quarter 2022	4
Productivity	5
Rail Cost Adjustment Factor - Second Quarter 2023	6
Appendices	
A Labor	
B Fuel	
C Materials & Supplies	
D Equipment Rents	
E Depreciation	
F Interest	
G Other Expenses	
H Railroad and Union Abbreviations	

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 second quarter 2023. Calculations for the productivity adjustment decision, served February 10, 2023, have been utilized to update productivity adjustment factors listed on page 5 herein.

Rail Cost Adjustment Factor — 2022Q4 Base

Attachment A
Page 1 of 6

Yr/Qtr		Preliminary	Forecast Error	RCAF (Unad-justed)	Productivity-Adjusted RCAF		STB's 2nd Productivity-Adjusted RCAF	
					Productivity Adjustment	RCAF	Adjusted RCAF (Not endorsed by AAR)	
							Factor	(Adjusted)
(Col 1)		(Col 2)	(Col. 3)	(Col 4)	(Col 5)	(Col 6)	(Col 7)	(Col 8)
2001	Q1	0.546	0.002	0.548	1.8180	0.301	1.8888	0.290
	Q2	0.542	0.002	0.544	1.8305	0.297	1.9050	0.286
	Q3	0.546	0.000	0.546	1.8431	0.296	1.9214	0.284
	Q4	0.544	0.003	0.547	1.8558	0.295	1.9379	0.282
2002	Q1	0.545	0.000	0.545	1.8686	0.292	1.9513	0.279
	Q2	0.538	-0.001	0.537	1.8878	0.284	1.9648	0.273
	Q3	0.542	-0.005	0.537	1.9072	0.282	1.9784	0.271
	Q4	0.555	0.007	0.562	1.9268	0.292	1.9921	0.282
2003	Q1	0.557	0.003	0.560	1.9466	0.288	2.0126	0.278
	Q2	0.568	0.005	0.573	1.9557	0.293	2.0333	0.282
	Q3	0.565	0.008	0.573	1.9649	0.292	2.0542	0.279
	Q4	0.572	-0.002	0.570	1.9741	0.289	2.0754	0.275
2004	Q1	0.571	0.004	0.575	1.9834	0.290	2.0852	0.276
	Q2	0.576	0.004	0.580	1.9943	0.291	2.0950	0.277
	Q3	0.592	0.009	0.601	2.0053	0.300	2.1048	0.286
	Q4	0.603	0.012	0.615	2.0163	0.305	2.1147	0.291
2005	Q1	0.616	0.005	0.621	2.0274	0.306	2.1263	0.292
	Q2	0.628	0.017	0.645	2.0420	0.316	2.1380	0.302
	Q3	0.634	0.003	0.637	2.0567	0.310	2.1498	0.296
	Q4	0.658	0.007	0.665	2.0715	0.321	2.1616	0.308
2006	Q1	0.654	0.006	0.660	2.0864	0.316	2.1772	0.303
	Q2	0.654	0.007	0.661	2.0962	0.315	2.1929	0.301
	Q3	0.672	-0.002	0.670	2.1061	0.318	2.2087	0.303
	Q4	0.687	0.014	0.701	2.1160	0.331	2.2246	0.315
2007	Q1	0.672	0.006	0.678	2.1259	0.319	2.2351	0.303
	Q2	0.672	-0.028	0.644	2.1348	0.302	2.2456	0.287
	Q3	0.684	-0.012	0.672	2.1438	0.313	2.2562	0.298
	Q4	0.706	0.012	0.718	2.1528	0.334	2.2668	0.317
2008	Q1	0.743	0.010	0.753	2.1618	0.348	2.2763	0.331
	Q2	0.762	0.011	0.773	2.1683	0.357	2.2859	0.338
	Q3	0.831	-0.006	0.825	2.1748	0.379	2.2955	0.359
	Q4	0.830	0.031	0.861	2.1813	0.395	2.3051	0.374
2009	Q1	0.724	0.010	0.734	2.1878	0.335	2.3120	0.317
	Q2	0.682	-0.071	0.611	2.1944	0.278	2.3189	0.263
	Q3	0.717	-0.043	0.674	2.2010	0.306	2.3259	0.290
	Q4	0.717	-0.002	0.715	2.2076	0.324	2.3329	0.306
2010	Q1	0.751	-0.005	0.746	2.2142	0.337	2.3399	0.319
	Q2	0.750	0.012	0.762	2.2208	0.343	2.3469	0.325
	Q3	0.765	0.002	0.767	2.2275	0.344	2.3539	0.326
	Q4	0.768	0.025	0.793	2.2342	0.355	2.3610	0.336
2011	Q1	0.796	-0.010	0.786	2.2409	0.351	2.3681	0.332
	Q2	0.831	0.013	0.844	2.2487	0.375	2.3752	0.355
	Q3	0.852	0.014	0.866	2.2566	0.384	2.3823	0.364
	Q4	0.850	0.019	0.869	2.2645	0.384	2.3894	0.364

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.

Rail Cost Adjustment Factor — 2022Q4 Base

Attachment A
Page 2 of 6

		Productivity-Adjusted RCAF				STB's 2nd Productivity-		
		Preliminary	Forecast Error	RCAF (Unad-justed)	Productivity Adjustment	RCAF (Adjusted)	Adjusted RCAF (Not endorsed by AAR)	
Yr/Qtr		RCAF	Adjustment		Factor			
(Col 1)		(Col 2)	(Col. 3)	(Col 4)	(Col 5)	(Col 6)	(Col 7)	
							(Col 8)	
2012	Q1	0.846	-0.005	0.841	2.2724	0.370	2.3978	0.351
	Q2	0.868	-0.015	0.853	2.2769	0.375	2.4062	0.355
	Q3	0.846	-0.005	0.841	2.2815	0.369	2.4146	0.348
	Q4	0.874	-0.005	0.869	2.2861	0.380	2.4231	0.359
2013	Q1	0.869	-0.002	0.867	2.2907	0.378	2.4279	0.357
	Q2	0.872	0.003	0.875	2.2957	0.381	2.4328	0.360
	Q3	0.860	-0.011	0.849	2.3008	0.369	2.4377	0.348
	Q4	0.870	-0.022	0.848	2.3059	0.368	2.4426	0.347
2014	Q1	0.856	-0.003	0.853	2.3110	0.369	2.4480	0.348
	Q2	0.867	-0.019	0.848	2.3168	0.366	2.4534	0.346
	Q3	0.865	-0.008	0.857	2.3226	0.369	2.4588	0.349
	Q4	0.857	-0.007	0.850	2.3284	0.365	2.4642	0.345
2015	Q1	0.830	-0.008	0.822	2.3342	0.352	2.4704	0.333
	Q2	0.792	-0.028	0.764	2.3382	0.327	2.4766	0.308
	Q3	0.788	-0.067	0.721	2.3422	0.308	2.4828	0.290
	Q4	0.770	-0.020	0.750	2.3462	0.320	2.4890	0.301
2016	Q1	0.767	-0.016	0.751	2.3502	0.320	2.4932	0.301
	Q2	0.741	-0.011	0.730	2.3584	0.310	2.4974	0.292
	Q3	0.768	-0.036	0.732	2.3667	0.309	2.5016	0.293
	Q4	0.761	0.004	0.765	2.3750	0.322	2.5059	0.305
2017	Q1	0.781	-0.009	0.772	2.3833	0.324	2.5147	0.307
	Q2	0.789	-0.003	0.786	2.3952	0.328	2.5235	0.311
	Q3	0.785	0.000	0.785	2.4072	0.326	2.5323	0.310
	Q4	0.780	-0.008	0.772	2.4192	0.319	2.5412	0.304
2018	Q1	0.802	-0.009	0.793	2.3689	0.335	2.5374	0.313
	Q2	0.803	0.002	0.805	2.3665	0.340	2.5336	0.318
	Q3	0.829	-0.009	0.820	2.3641	0.347	2.5298	0.324
	Q4	0.835	-0.002	0.833	2.3617	0.353	2.5260	0.330
2019	Q1	0.828	-0.010	0.818	2.3593	0.347	2.5235	0.324
	Q2	0.824	-0.002	0.822	2.3621	0.348	2.5210	0.326
	Q3	0.836	-0.020	0.816	2.3649	0.345	2.5185	0.324
	Q4	0.832	-0.001	0.831	2.3677	0.351	2.5160	0.330
2020	Q1	0.823	-0.017	0.806	2.3705	0.340	2.5190	0.320
	Q2	0.817	-0.004	0.813	2.3764	0.342	2.5220	0.322
	Q3	0.770	-0.006	0.764	2.3823	0.321	2.5250	0.303
	Q4	0.781	-0.055	0.726	2.3883	0.304	2.5280	0.287
2021	Q1	0.794	0.011	0.805	2.3943	0.336	2.5343	0.318
	Q2	0.825	-0.006	0.819	2.3991	0.341	2.5406	0.322
	Q3	0.860	0.016	0.876	2.4039	0.364	2.5470	0.344
	Q4	0.871	0.009	0.880	2.4087	0.365	2.5534	0.345
2022	Q1	0.897	-0.005	0.892	2.414	0.370	2.559	0.349
	Q2	0.917	0.008	0.925	2.429	0.381	2.564	0.361
	Q3	0.960	0.005	0.965	2.444	0.395	2.569	0.376
	Q4	0.968	0.032	1.000	2.459	0.407	2.574	0.389
2023	Q1	1.013	-0.003	1.010	2.474	0.408	2.590	0.390
	Q2	1.008	0.019	1.027	2.491	0.412	2.606	0.394

Sample Rebasing Calculations

Attachment A
Page 3 of 6

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):

2020Q1 on a 4Q22 basis = $281.7 / 342.6 = 0.8221697 = 0.822$

2020Q1 on a 4Q17 basis = $281.7 / 264.5 = 1.0650284 = 1.065$

2020Q1 on a 4Q97 basis = $281.7 / 173.2 = 1.6264434 = 1.626$

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 2020Q1 on a 4Q17 basis to a 4Q22 basis:

$(264.5 / 342.6) \times 1.065 = 0.8221478 = 0.822$

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 2020Q1:

1. Use A-I Index from 2 quarters prior, 2019Q3: 280.4 = Actual, 286.2 = Forecast
2. Actual = $280.4 / 342.6 = 0.8183755 = 0.818$
3. Forecast = $286.2 / 342.6 = 0.8353034 = 0.835$
4. Forecast Error = $0.818 - 0.835 = -0.017$

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 2019Q3 on a 4Q17 basis, which was used for 2020Q1, to a 4Q22 basis:

Forecast Error 4Q22 basis = $(264.5 / 342.6) \times -0.022 = -0.0169833 = -0.017$

RCAF (Unadjusted)

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

Example for 2020Q1, on a 4Q22 basis: $0.822 + -0.017 = 0.805$

Productivity Adjustment Factor

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

For 2020Q1, the Productivity Adjustment Factor is 2.3705.

RCAF (Adjusted)

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

Example for 2020Q1, on a 4Q22 basis: $0.805 / 2.3705 = 0.3395908 = 0.340$

PAF-5

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

For 2020Q1, the Productivity Adjustment Factor is 2.5190.

RCAF-5

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

Example for 2020Q1, on a 4Q22 basis: $0.805 / 2.5190 = 0.3195713 = 0.320$

Indexes & Factors for RCAF

Attachment A
Page 4 of 6

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

Attachment A
Page 5 of 6

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

Attachment A
Page 6 of 6

Yr/Qtr	All-Inclusive Index 1980 = 100		Prod. Adj.	Original Basis			Basing Factor	
	Forecast	Actual	Factor	PAF-5	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	2.5235	0.908	-0.004	297.6
	Q3	268.7	265.7	2.4072	2.5323	0.903	0.000	297.6
	Q4	267.1	267.7	2.4192	2.5412	0.898	-0.009	297.6
2018	Q1	274.5	271.6	2.3689	2.5374	1.038	-0.011	264.5
	Q2	274.9	274.2	2.3665	2.5336	1.039	0.002	264.5
	Q3	283.6	280.2	2.3641	2.5298	1.072	-0.011	264.5
	Q4	285.9	285.3	2.3617	2.5260	1.081	-0.002	264.5
2019	Q1	283.3	276.6	2.3593	2.5235	1.071	-0.013	264.5
	Q2	282.1	281.8	2.3621	2.5210	1.067	-0.002	264.5
	Q3	286.2	280.4	2.3649	2.5185	1.082	-0.025	264.5
	Q4	284.8	283.4	2.3677	2.5160	1.077	-0.002	264.5
2020	Q1	281.7	279.5	2.3705	2.5190	1.065	-0.022	264.5
	Q2	279.6	261.0	2.3764	2.5220	1.057	-0.006	264.5
	Q3	263.7	267.2	2.3823	2.5250	0.997	-0.008	264.5
	Q4	267.4	265.3	2.3883	2.5280	1.011	-0.070	264.5
2021	Q1	271.7	277.1	2.3943	2.5343	1.038	0.013	264.5
	Q2	282.3	285.4	2.3991	2.5406	1.067	-0.008	264.5
	Q3	294.4	292.8	2.4039	2.5470	1.113	0.021	264.5
	Q4	298.0	300.9	2.4087	2.5534	1.127	0.012	264.5
2022	Q1	306.9	308.8	2.4135	2.5585	1.038	-0.006	264.5
	Q2	313.8	324.8	2.4285	2.5636	1.186	0.011	264.5
	Q3	328.7	327.7	2.4436	2.5687	1.243	0.007	264.5
	Q4	331.3	337.7	2.4588	2.5738	1.253	0.042	264.5
2023	Q1	346.7	0.0	2.4740	2.5898	1.038	-0.004	342.3
	Q2	344.9	0.0	2.4911	2.6059	1.008	0.019	342.3

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 Unadjusted / 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
 4Q/22 = 342.3

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 expense 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 2021 (current) and 2020 (previous) weights are shown below. Weights calculated from 2020 data were used for the fourth quarter of 2021 through the third quarter of 2022. Beginning with the fourth quarter of 2022, weights calculated using 2021 data are used. The component with the biggest change in weight was Fuel, which increased by 4.5 percentage points. Labor and Equipment Rents fell by 1 and 0.3 percentage points, respectively. Materials & Supplies was unchanged. The weight for Depreciation decreased 1 percentage point, and Other decreased by 1.9 percentage points.

Weights for RCAF's All-Inclusive Index		
	2021	2020
Labor	31.4 %	32.4 %
Fuel	14.2	9.7
Materials & Supplies	4.5	4.5
Equipment Rents	4.9	5.2
Depreciation	17.5	18.5
Interest	2.4	2.7
Other	25.1	27.0
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

Second Quarter 2023

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.

	2021 Weights	Forecast		Percent Change
		Previous 2023Q1	Current 2023Q2	
1. Labor	31.4%	546.0	570.2	4.4 %
2. Fuel	14.2%	467.1	378.2	-19.0
3. M&S	4.5%	328.9	322.6	-1.9
4. Equipment Rents	4.9%	250.1	261.4	4.5
5. Depreciation	17.5%	234.8	235.5	0.3
6. Interest	2.4%	50.1	50.1	0.0
7. Other	25.1%	280.0	290.4	3.7
8. Weighted Average				
a. 1980 = 100		377.4	375.4	
b. 1980 = 100 (linked)		346.7	344.9 ¹	
c. 4Q22 = 100		101.3	100.8 ²	-0.5

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

$$= (375.4 / 377.4) \times 346.7$$

$$= 344.9$$

² To calculate the 4Q22 = 100 index:
Index4Q22 = (Current Linked Index / 4Q22 Basing Factor) * 100

$$= 344.9 \text{ divided by } 342.3 \text{ times } 100$$

$$= 100.8$$

Indexes based on other periods:

4Q17 based index = $344.9 / 264.5 \times 100 = 130.4$
4Q12 based index = $344.9 / 297.6 \times 100 = 115.9$
4Q07 based index = $344.9 / 245.9 \times 100 = 140.3$
4Q02 based index = $344.9 / 192.1 \times 100 = 179.5$
4Q97 based index = $344.9 / 173.2 \times 100 = 199.1$
4Q92 based index = $344.9 / 156.9 \times 100 = 219.8$

Forecast vs. Actual All-Inclusive Index

Fourth Quarter 2022

Because of data availability, the forecast error adjustment has a two-quarter lag from each filing. As shown below, the fourth quarter actual index of 98.7 is 1.9 index points above the forecast value of 96.8. Therefore, the forecast error adjustment for second quarter 2023 is 1.9 index points.

	2021	Fourth Quarter 2022		Amt
	Weights	Forecast	Actual	Difference
1. Labor	31.4%	479.6	479.6	
2. Fuel	14.2%	475.2	480.7	
3. M&S	4.5%	335.3	335.3	
4. Equipment Rents ¹	4.9%	253.8	249.1	
5. Depreciation	17.5%	233.3	235.2	
6. Interest	2.4%	50.1	50.1	
7. Other	25.1%	290.6	286.5	
8. Weighted Average				
a. 1980 = 100		360.6	360.4	
b. 1980 = 100 (linked)		331.3	337.7 ²	
c. 4Q22 = 100 ³		96.8	98.7	1.9

Forecast error —————→ **1.9 index points**

Notes: New weights have been utilized. The standard linking procedure has been used to eliminate any changes to indexes that would be caused by updating weights. The Q3 unlinked weighted averages for the All-Inclusive Indexes (forecast and actual) and for Equipment Rents (forecast and actual) were recalculated using the new (2021) weights.

	2021	Fourth Quarter 2022	
	Weights	Forecast	Actual
Car-Hire	68.1%	209.5	209.6
Lease Rentals	31.9%	290.6	286.5
Weighted Average		235.4	234.1
Weighted Average (linked)		253.8	249.1

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

$$337.7 = 360.4 / 349.7 \times 327.7$$

The 4Q22 based indexes are 1980 based indexes divided by the 4Q22 basing factor (342.3/100).

Other basing factors are: 4Q22 = 264.5; 4Q12 = 297.6; 4Q07 = 245.9; 4Q02 = 192.1; 4Q97 = 173.2; and 4Q92 = 156.9.

Productivity

On February 10, 2023, the Surface Transportation Board served a decision which proposed to adopt 2.8 percent as the geometric average productivity change for the five most recent years available. Their five year rolling geometric average calculation added the year 2021 and removed the year 2016. The components of this average annual value are shown on the following table in ratio format – therefore, 1.028 is the same as an increase of 2.8 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			
2017 - 2021			
Year	Output Index (1)	Input Index (2)	Productivity Changes (3)
2017	1.045	0.992	1.053
2018	1.032	1.004	1.028
2019	0.968	0.961	1.007
2020	0.923	0.904	1.021
2021	1.028	0.999	1.029
Average			1.028
Previous Average (2016-2020)			1.025

Calculation of PAF and PAF-5			
For 2017-2021, use fourth root of avg. productivity change = 1.0069			
For 2016-2020, use fourth root of avg. productivity change = 1.0062			
Quarter	Year	PAF	PAF-5
Q1	2023	2.4740	2.5898
Q2	2023	2.4911	2.6059
Q3	2023	2.5083	2.6221
Q4	2023	2.5256	2.6384
Q1	2024	2.5430	2.6566

Rail Cost Adjustment Factor

Second Quarter 2023

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 the 2023Q1 index, the All-Inclusive Index was rebased to a 2022Q4=100 basis as required in the applicable statute.

	Previous 2023Q1	Current 2023Q2	Percent Change
All-Inclusive Index ¹	101.3	100.8	-0.5 %
Preliminary RCAF ²	1.013	1.008	-0.5
Forecast Error Adjustment ³	<u>-0.003</u>	<u>0.019</u>	
RCAF (Unadjusted) ⁴	1.010	1.027	1.7
Productivity Adjustment Factor ⁵	<u>2.4740</u>	<u>2.4911</u>	
RCAF (Adjusted) ⁶	0.408	0.412	1.0
PAF-5 ⁷	2.5898	2.6059	
RCAF-5 ⁸	0.390	0.394	1.0

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

Second Quarter 2023

The second quarter 2023 Labor Index is 4.4 percent higher than the previous quarter. The increase was primarily caused by an increase in Railroad Retirement and Medicare.

Wage Rate Index

The Wage Rate Index portion of the Labor Index remained relatively unchanged, with a .2 percent decrease. The previous quarter captured labor changes due to national negotiations. However, this quarter incorporated several independent agreements.

New Independent Agreements: New labor agreements were signed in first quarter 2023. The new agreements are structured similarly to the national agreements, but incorporate varying contract periods.

Lump Sums: The first quarter lump sum rate decreased from the previous quarter. There were several fully amortized and removed payments, which were replaced by new payments at lower amounts.

Back Pay: Back pay increased slightly due to retroactive wage increases in the new independent contracts. These wage increases were accompanied by three retroactive \$1000 lump sum payments, which increased the back pay rate to \$7.045. As always, back pay amounts will be removed from the index after they have been amortized for four quarters.¹

Other: In wages, "Other" contains the amortization of incentive compensation payments (similar to lump sums) that one railroad makes each year to its dispatchers, yardmasters, and locomotive engineers. The second quarter rate is relatively the same as last quarter.

¹ 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

Second Quarter 2023

Supplements Index

The Supplements Index increased 11.7 percent this quarter.

Health & Welfare: The Health & Welfare remained unchanged.

Railroad Retirement: The Railroad Retirement rate increased 24.5 percent. The maximum taxable earnings for Railroad Retirement's Tier I and Tier II both increased for 2023 and captures the increase from higher wage rates in 2023.

Unemployment Insurance: The Unemployment Insurance rate decreased .2 percent, as the result of the small decline in taxable wages.

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 second quarter rate is 1.8 cents lower than last quarter.

Labor Index Calculation

As shown in Table A-1 on the next page, the relatively unchanged Wage Rate Index and the increase in the Supplements Index combined to cause the Labor Index to be 4.4 percent higher than the previous quarter. The linked second quarter 2023 Labor index is 570.2, which is 21.2 percent higher than one year ago.

Labor

Second Quarter 2023

Table A-1 Labor Index

	2023Q1	2023Q2	Change	
			Percent	Amount
<u>Base Wage</u> – Straight Time & Pay For Time Not Worked	\$50.768	\$50.758	0.0%	-\$0.010
Adjustments:				
Lump Sum	0.271	0.162	-40.2%	-\$0.109
Back Pay	7.021	7.045	0.3%	\$0.024
Other	0.259	0.260	0.4%	\$0.001
Total Wages	<u>58.319</u>	<u>58.225</u>	-0.2%	-\$0.094
Health & Welfare Benefits	9.530	9.530	0.0%	\$0.000
RR Retirement & Medicare	9.769	12.162	24.5%	\$2.393
Unemployment Insurance	0.877	0.875	-0.2%	-\$0.002
Other	0.189	0.171	-9.5%	-\$0.018
Total Supplements	<u>\$20.365</u>	<u>\$22.738</u>	11.7%	\$2.373
Total Labor (as info only)	\$78.684	\$80.963		
Wage Index¹	499.1	498.3	-0.2%	
Supplements Index²	752.6	840.3	11.7%	
Total labor Index, 2021 Weights ³	574.1	599.5		
Labor Index (linked)⁴	546.0	570.2	4.4%	

¹ 1980 wage rate \$11.685

² 1980 supplements rate \$2.706

³ 2021 weights: wages, supplements 70.4% 29.6%

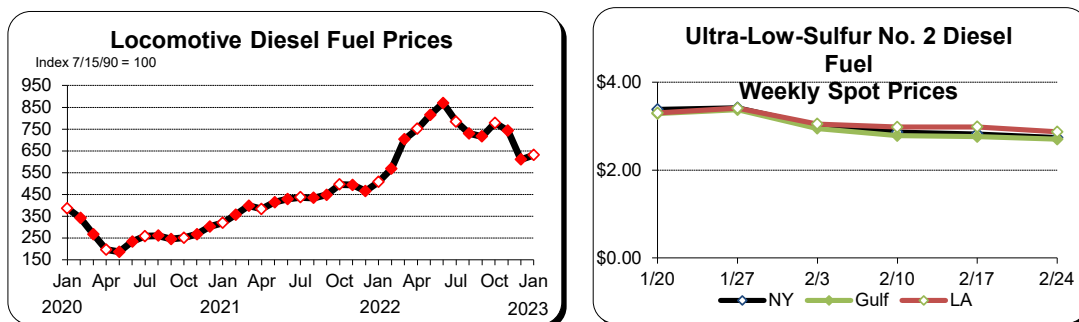
⁴ 2023Q2 linked Index = 2023Q1 linked x (2023Q2 / 2023Q1)
= 546.0 x 599.5 / 574.1

Fuel

Second Quarter 2023

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 hit a peak point in June 2022, but has declined since then. While average prices for locomotive diesel fuel are available only through January 2023, data through four weeks of February are available for related fuel types. According to the Energy Information Administration, the daily spot price as of February 27 for Ultra-Low-Sulfur Diesel Fuel* is an average of 1.1 percent lower than the average for February. The chart below (on left) shows the AAR's Monthly Locomotive Diesel Fuel Price Index through January 2023. The second chart (on right) shows recent spot prices for Ultra-Low-Sulfur No. 2 Diesel Fuel as reported by the Energy Information Administration.



Using information from the EIA, prices towards the end of February are lower than prices that actually occurred in January. Railroads that responded to the AAR's forecast survey expect prices to decrease by April (Q2) compared to prices that actually occurred for January (Q1). The second quarter 2023 forecast is 19 percent lower than the previous quarter forecast, and 2.9 percent lower than the prior quarter actual.

Forecast Fuel Index (1980 = 100)	378.2
Change from previous quarter forecast	-19.0%
Change from previous quarter actual	-2.9%

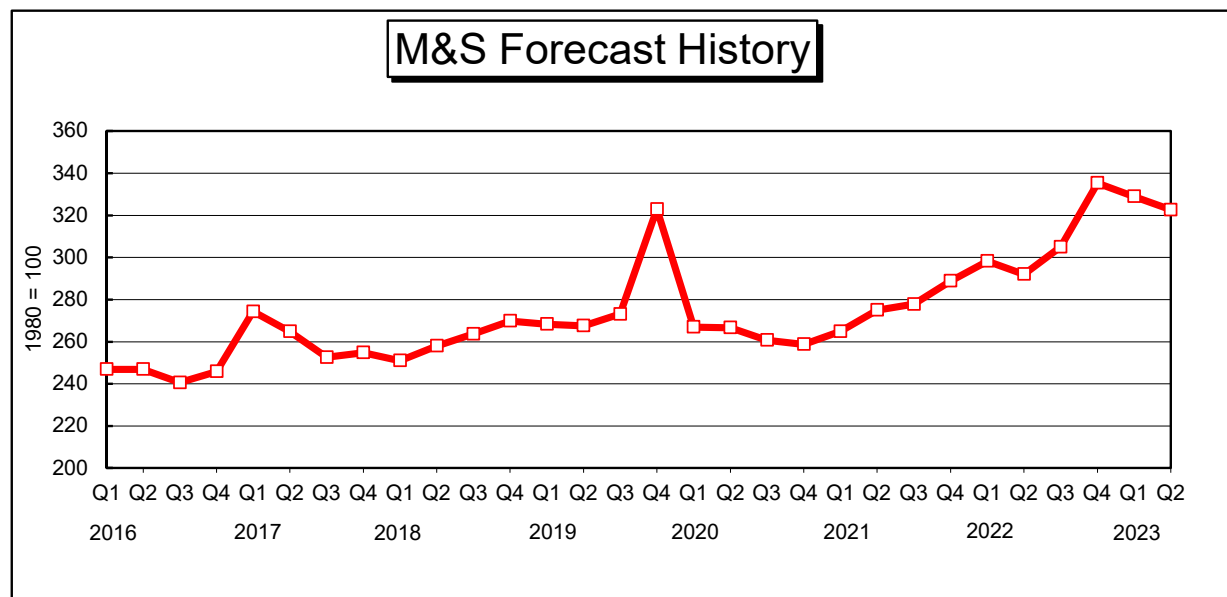
* Heating oil, Ultra-Low-Sulfur No. 2 Diesel Fuel, and locomotive diesel fuel are part of a group of closely related products, commonly labeled as distillates, that differ mostly by their sulfur content. Because of these similarities, these fuels are produced together and have similar pricing trends.

Materials & Supplies

Second Quarter 2023

The second quarter 2023 Materials & Supplies Index decreased 1.9 percent from the previous quarter. Prices increased for Forest Products, but decreased for Metal and Miscellaneous Products.

2023Q2	Materials & Supplies Index =	322.6
2023Q1	Materials & Supplies Index =	328.9
	Difference	-6.3 basis points or -1.9 %



Equipment Rents

Second Quarter 2023

The Equipment Rents Index consists of two components – car hire and lease rentals. The methodologies 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.

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 second quarter Car Hire portion of the Index increased 5.1 percent because of higher rates for privately-owned cars. A 3.7 percent increase for the projected PPI-LF (See Appendix G) used as a proxy for Lease Rentals, combined with the increase in Car Hire rate, caused the Equipment Rents Index to increase 4.5 percent.

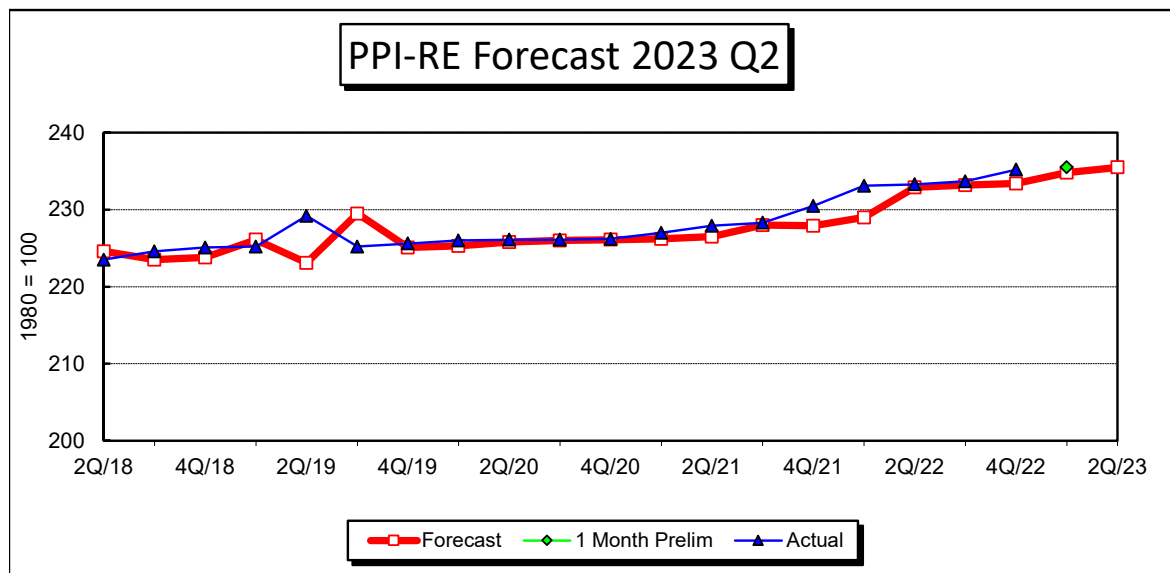
	2021			Percent
	Weight	2023Q1	2023Q2	Change
Car Hire	68.1%	209.5	220.1	5.1 %
Lease Rentals	31.9%	280.0	290.4	3.7
Weighted Average		232.0	242.5	4.5
Weighted Average (Linked)		250.1	261.4	4.5

Depreciation

Second Quarter 2023

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 0.30% (rounds to 0.3) higher than the previous quarter's forecast.

Forecast of Depreciation Index (1982=100)	212.9
Forecast of Depreciation Index (1980=100)	235.5
Change from previous quarter forecast	0.3% = 0.30%
Change from actual first month of previous quarter	0.0% = 0.00%
Change from same quarter of prior year (actual)	0.9%



Depreciation

Second Quarter 2023

PPI RAILROAD EQUIPMENT

Expert Analysis

Using rule-based logic I have narrowed down the choice to exponential smoothing or Box-Jenkins.
I will perform an out-of-sample test to select between these two approaches.

The cumulative MAD for Exponential smoothing was 1.08 and for Box-Jenkins was 1.04.
The rolling out-of-sample test used a maximum horizon of 12 and generated 78 forecasts for each method.

Based on the lower MAD, I will use Box-Jenkins.

Model Details

Expert selection

Box-Jenkins

ARIMA(0, 1, 0)

Within-Sample Statistics

Sample size	72	No. parameters	0
Mean	205.39	Std. deviation	3.35
R-square	0.94	Adj. R-square	0.94
Durbin-Watson	2.15	Ljung-Box(18)	20.5 P=0.69
Forecast error	0.83	BIC	0.83
MAPE	0.0021	SMAPE	0.0021
RMSE	0.83	MAD	0.42
MAD/Mean Ratio	0		

Actual Values for the Most Recent 6 Periods:

Actual

2022-Aug	211.7
2022-Sep	212.3
2022-Oct	212.4
2022-Nov	212.7
2022-Dec	212.8
2023-Jan	212.9

Forecasted Values

2.5 Lower	Forecast	97.5 Upper	
Date	2.5 Lower	Forecast	97.5 Upper
2023-Feb	211.266	212.900	214.534
2023-Mar	210.589	212.900	215.211
2023-Apr	210.069	212.900	215.731
2023-May	209.632	212.900	216.168
2023-Jun	209.246	212.900	216.554
QTR AVG	209.649	212.900	216.151

Interest

Second Quarter 2023

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 2021 data, and was updated in the Q4 filing submitted on September 2, 2022. The Interest Index based on 2021 decreased from 51.1 in 2020 to 50.1 in 2021, and is the lowest in recent history.

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 listed below account for the line number changes effective beginning with the 2016 annual report.

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

2021	Interest Rate	3.93%
1980	Interest Rate	7.85%
2023Q2	Interest Index	50.1
2023Q1	Interest Index	50.1
	Percent Change	0.0%

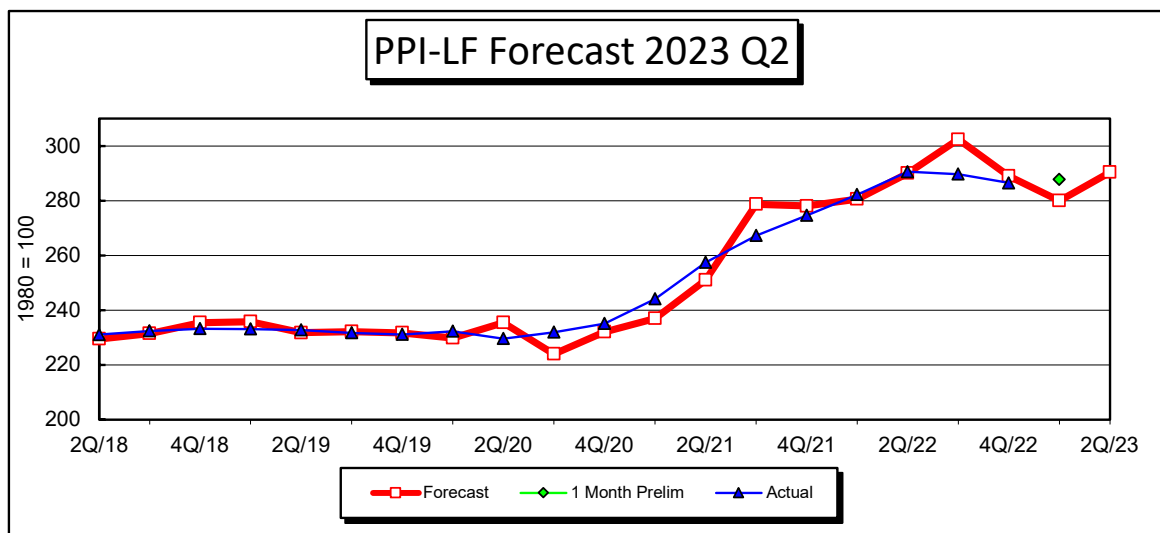
Other Expenses

Second Quarter 2023

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

Like the PPI-RE, the PPI-LF is forecast using an ARIMA process on 6 years of monthly data (a sample size of 72) with the most recent available monthly data being the first month of the quarter prior to the forecast quarter. For a first quarter forecast, the most recent month of data available would be for October of the prior year. For a second quarter forecast, January would normally be the most recent month available. April and July would be the most recent months available for third and fourth quarter forecasts, respectively. The output from the forecast model is shown on page 2 of this appendix for 1982=100. The figure forecast by the model is.1 percent lower than the prior quarter forecast.

Forecast of Other Expense Index (1982=100)	259.1
Forecast of Other Expense Index (1980=100)	290.4
Change from previous quarter forecast	3.7%
Change from actual first month of previous quarter	0.9%
Change from same quarter of prior year (actual)	-0.1%



Other Expenses

Second Quarter 2023

PPI INDUSTRIAL COMMODITIES LESS FUEL AND RELATED PRODUCTS AND POWER

Expert Analysis

Using rule-based logic I have narrowed down the choice to exponential smoothing or Box-Jenkins.
I will perform an out-of-sample test to select between these two approaches.

The cumulative MAD for Exponential smoothing was 8.36 and for Box-Jenkins was 10.50.
The rolling out-of-sample test used a maximum horizon of 12 and generated 78 forecasts for each method.

Based on the lower MAD, I will use Exponential Smoothing.

Model Details

Expert selection

Multiplicative Winters: Linear trend, Multiplicative seasonality
LM(0.940, 0.996, 0.999)

Confidence limits proportional to indexes and level

Component	Smoothing Wgt		Final Value
Level	0.94		256.3
Trend	0.9962		0.7504
Seasonal	0.9989		
Seasonal Indexes			
Jan - Mar	1.002	0.999	1
Apr - Jun	0.9992	0.9993	0.9993
Jul - Sep	0.9995	1	0.9998
Oct - Dec	1.001	1.001	0.9996

Within-Sample Statistics

Sample size	72	No. parameters	3
Mean	219.1	Std. deviation	20.97
R-square	1	Adj. R-square	1
Durbin-Watson	1.71	Ljung-Box(18)	22.6 P=0.79
Forecast error	0.76	BIC	0.81
MAPE	0.0024	SMAPE	0.0024
RMSE	0.74	MAD	0.55
MAD/Mean Ratio	0		

Actual Values for the Most Recent 6 Periods:

Actual

2022-Aug	258.7
2022-Sep	257.1
2022-Oct	255.8
2022-Nov	255.7
2022-Dec	255.4
2023-Jan	256.7

Forecasted Values

Date	2.5 Lower	Forecast	97.5 Upper
2023-Feb	254.960	256.753	258.547
2023-Mar	254.007	257.823	261.638
2023-Apr	253.207	258.297	263.387
2023-May	252.989	259.092	265.195
2023-Jun	252.861	259.831	266.802
QTR AVG	253.019	259.073	265.128

Railroad and Union Abbreviations

Second Quarter 2023

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.)
CMQ	Central Maine & Quebec (Part of Canadian Pacific's U.S. operations, included beginning 2021Q4.)
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.)

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*
SMART-MD	International Association of Sheet Metal, Air, Rail, and Transportation Workers - Mechanical Division**
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)
SMW	Sheet Metal Workers' International Association (see SMART-MD)
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.

** Represents employees formerly represented by the SMW (steel workers)

AAR Workpapers Sent to STB for 2023 Q2 RCAF

March 3, 2023

- 1 . Index Calculation Spreadsheet (index_calc.xlsx, 2 pages)
- 2 . Summary of ST and PFTNW Hourly Rates (Summary.xlsx)
- 3 . RCAF Taxable Wages adjustment calculation (TaxableRate.xlsx)
- 4 . National Contracts spreadsheet, 2 sections (2 and 5 pages)
- 5 . Wall Street Journal - 13 week Treasury Bill Rate from recent auction (a.k.a. 3-Mo. T-Bill)
- 6 . 2023/Q2 RCAF Lump Sum Amortization summary, public version (1 page)
- 7 . 2023/Q2 RCAF Back Pay Amortization summary, public version (1 page)
- 8 . Health & Welfare worksheet (1 page)
- 9 . Railroad Retirement spreadsheet (5 pages)
- 10 . Unemployment Insurance Tax worksheet (1 page)
- 11 . 2-page SAS run for 2023 Q2 Unemployment Insurance Tax
- 12 . 2 pages from EIA including spot prices for various distillates
- 13 . Summary of Materials & Supplies - "U.S. Summary by Composition Category" (1 page)
- 14 . RCAF Car Hire Forecast Spreadsheet for Equipment Rents (2 pages) plus source data page
- 15 . 3 pages of PPI-RE for Depreciation including graph page, input/output, and BLS source data
- 16 . 3 pages of PPI-LF for Other (and Lease Rentals) incl. graph page, input/output, BLS source data
- 17 . Forecast Error calc. and workpapers (4pages: calc, fuel, deprec, other)

RCAF All-Inclusive Index's Labor Index Based on 2021 Benchmarks

	21 Wts.	3Q/22	3Q/22 Rebenched As Info Only	% Chg	4Q/22	% Chg	1Q/23	% Chg	2Q/23	% Chg	3Q/23	% Chg
Straight Time		\$37.452	\$37.443	0.0%	\$37.460	0.0%	\$42.590	13.7%	\$42.582	0.0%		--
PFTNW		\$7.213	\$7.192	-0.3%	\$7.195	-0.2%	\$8.178	13.7%	\$8.176	0.0%		--
Total		\$44.665	\$44.635	-0.1%	\$44.655	0.0%	\$50.768	13.7%	\$50.758	0.0%	\$0.000	--
Adjustments												
Lump Sum		\$0.260	\$0.271		\$0.271		\$0.271		\$0.162			
Back Pay		\$0.002	\$0.002		\$0.013		\$7.021		\$7.045			
Other		\$0.244	\$0.254		\$0.257		\$0.259		\$0.260			
Total Wages		\$45.171	\$45.162	0.0%	\$45.195	0.1%	\$58.319	29.0%	\$58.225	-0.2%	\$0.000	--
Pre-Tax Reduction		(\$1.439)	(\$1.437)		(\$1.437)		(\$1.444)		(\$1.444)			
Taxable Wages		\$43.732	\$43.725		\$43.758		\$56.875		\$56.781		\$0.000	
H & W		\$9.623	\$10.193	5.9%	\$10.193	5.9%	\$9.530	-6.5%	\$9.530	0.0%		--
RR Ret & Medicare		\$9.424	\$9.689	2.8%	\$9.694	2.9%	\$9.769	0.8%	\$12.162	24.5%		--
Unemp. Insurance		\$1.201	\$1.162	-3.3%	\$1.162	-3.3%	\$0.877	-24.5%	\$0.875	-0.2%		--
Other		\$0.279	\$0.291	4.3%	\$0.162	-41.8%	\$0.189	16.5%	\$0.171	-9.5%		--
Total		\$20.527	\$21.336	3.9%	\$21.212	3.3%	\$20.365	-4.0%	\$22.738	11.7%	\$0.000	--
Adjustments												
Total Supplements		\$20.527	\$21.336	3.9%	\$21.212	3.3%	\$20.365	-4.0%	\$22.738	11.7%	\$0.000	--
Total Labor		\$65.698	\$66.497	1.2%	\$66.407	1.1%	\$78.684	18.5%	\$80.963	2.9%	\$0.000	--
Wage Rate Index	0.7040	386.6	386.5	0.0%	386.8	0.1%	499.1	29.0%	498.3	-0.2%	0.0	--
Supplements Index	0.2960	758.6	788.5	3.9%	783.9	3.3%	752.6	-4.0%	840.3	11.7%	0.0	--
Total Labor Index '20 Wts.		495.6										
Total Labor Index '21 Wts.		496.7	505.5	1.8%	504.3	1.5%	574.1	13.8%	599.5	4.4%	0.0	--
Labor Index (Linked)		472.4			479.6	1.5%	546.0	13.8%	570.2	4.4%	0.0	-100.0%

All Inclusive Index and RCAF using 2021 Benchmarks and Weights

	21 Wts.	3Q/22	21 Wts. 3Q/22	% Chg	4Q/22	% Chg	1Q/23	% Chg	2Q/23	% Chg	3Q/23	% Chg
Labor	0.314	472.40	472.4	0.0%	479.6	1.5%	546.0	13.8%	570.2	4.4%	0.0	-100.0%
Fuel	0.142	459.60	459.6	0.0%	475.2	3.4%	467.1	-1.7%	378.2	-19.0%		--
M&S	0.045	305.00	305.0	0.0%	335.3	9.9%	328.9	-1.9%	322.6	-1.9%		--
Equip. Rents	0.049	256.00	256.0	0.0%	253.8	-0.9%	250.1	-1.5%	261.4	4.5%	0.0	-100.0%
Depreciation	0.175	233.20	233.2	0.0%	233.3	0.0%	234.8	0.6%	235.5	0.3%		--
Interest	0.024	51.10	51.1	0.0%	50.1	-2.0%	50.1	0.0%	50.1	0.0%	50.1	0.0%
Other	0.251	302.40	302.4	0.0%	290.6	-3.9%	280.0	-3.6%	290.4	3.7%		--
Weighted Avg.	1.000	350.80	357.8	2.0%	360.6	0.8%	377.4	4.7%	375.4	-0.5%	1.2	-99.7%
Linked		328.70			331.3	0.8%	346.7	4.6%	344.9	-0.5%	1.1	-99.7%
Basing Factor												
10/1/80 basis	102.7	320.1			322.6	0.8%	337.6	4.6%	335.8	-0.5%	1.1	-99.7%
10/1/82	120.9	271.9			274.0	0.8%	286.8	4.7%	285.3	-0.5%	0.9	-99.7%
4Q/87	132.2	248.6			250.6	0.8%	262.3	4.7%	260.9	-0.5%	0.8	-99.7%
4Q/92	156.9	209.5			211.2	0.8%	221.0	4.6%	219.8	-0.5%	0.7	-99.7%
4Q/97	173.2	189.8			191.3	0.8%	200.2	4.7%	199.1	-0.5%	0.6	-99.7%
4Q/02	192.1	171.1			172.5	0.8%	180.5	4.6%	179.5	-0.6%	0.6	-99.7%
4Q/07	245.9	133.7			134.7	0.7%	141.0	4.7%	140.3	-0.5%	0.4	-99.7%
4Q/12	297.6	110.5			111.3	0.7%	116.5	4.7%	115.9	-0.5%	0.4	-99.7%
4Q/17	264.5	124.3			125.3	0.8%	131.1	4.6%	130.4	-0.5%	0.4	-99.7%
4Q/22 basis	342.3	96.0			96.8	0.8%	101.3	4.6%	100.8	-0.5%	0.3	-99.7%
Car Hire	0.681	206.90	206.9	0.0%	209.5	1.3%	209.5	0.0%	220.1	5.1%		--
Lease Rents	0.319	302.40	302.4	0.0%	290.6	-3.9%	280.0	-3.6%	290.4	3.7%	0.0	--
Weighted Avg Eq Rents		240.60	237.4	-1.3%	235.4	-0.8%	232.0	-1.4%	242.5	4.5%	0.0	--
Linked Equipment Rents		256.00			253.8	-0.9%	250.1	-1.5%	261.4	4.5%	0.0	-100.0%
Preliminary RCAF		0.960			0.968	0.83%	1.013	4.6%	1.008	-0.5%	0.003	-99.7%
Forecast Error Adj.		0.005			0.032		(0.003)		0.019			
RCAF Unadjusted		0.965			1.000	3.63%	1.010	1.0%	1.027	1.7%	0.003	-99.7%
PAF		2.4436			2.4588	0.62%	2.4740	0.62%	2.4911	0.69%		--
RCAF Adjusted		0.395			0.407	3.04%	0.408	0.2%	0.412	1.0%	#DIV/0!	--
PAF-5		2.5687			2.5738	0.20%	2.5898	0.62%	2.6059	0.62%		--
RCAF-5		0.376			0.389	3.46%	0.390	0.3%	0.394	1.0%	#DIV/0!	--

Hourly Rate for 2023 Q2

Straight Time and Time Paid For But Not Worked

2023Q1 Straight Time Hourly Rate (from national spreadsheet) \$42.564
 Rebenchmark

Adjustments to 2021 base:

Added 2022 Q2

Miscellaneous Independents	Nothing	0.000
Soo Corp.	Nothing	0.000

Added 2022 Q3

Miscellaneous Independents	Nothing	0.000
Soo Corp.	Nothing	0.000

Added 2022 Q4

Miscellaneous Independents	Nothing	0.000
Soo Corp.	1 new agreement and a few GWIs	0.007

Added 2023Q1

Miscellaneous Independents	Nothing	0.000
Soo Corp.	1 new GWIs	0.003

Added 2023Q2

Miscellaneous Independents	Nothing	0.000
Soo Corp.	9 new agreements and a few GWIs with retro	0.008

Adjusted STHR Total	\$42.582
----------------------------	-----------------

Pay For Time Not Worked

PFTNW (from national spreadsheet)		\$8.173
Ratio Adj STHR to Nat STHR	42.582 / 42.564 =	1.00041

Adjusted Pay For Time Not Worked	\$8.176
---	----------------

Adjusted STHR + Adjusted Pay For Time Not Worked	\$50.758
---	-----------------

Notes:

1. Miscellaneous Independent is mostly trainmen, yardmasters, and non-union plus CN's IAM employees.
Includes 20 union groups with employees and 5 non-union groups with employees.
2. Soo Corp. includes SOO, D&H, DM&E, and CMQ.

RCAF Taxable Wages

(To Use for Railroad Retirement and Unemployment Insurance Payroll Tax Calculations)

In the RCAF calculation, Total Wages are the wages paid, while Taxable Wages are the wages on which to base payroll tax calculations. The difference is caused by pre-tax employee contributions to help pay Health & Welfare costs. This page calculates that wage rate difference.

The national agreements feature employee Health & Welfare cost sharing. Some of the independent agreements adopt the dollar amount contributed under the national agreement, and some have their own employee contribution rate. This Cost Sharing is a pre-tax employee contribution to Health & Welfare insurance premiums paid by the employer. The employee contribution reduces employer Health & Welfare costs, while the Health & Welfare insurance premiums paid to the provider are unchanged. In the RCAF calculation, the reduction to the employer's Health & Welfare costs affect the Supplements portion of the Labor component of the index. The Taxable Wage Rate is used for Railroad Retirement and Unemployment Insurance calculations.

Reduction Calculation for 2Q/20223

U.S. ST Hours = 223,038,929
 Wage Statistics are for 2021

Union Group	Employees	Mo. Rate	Annual \$
National ATDA (BNSF, CSX, KCS, NS, SOO, GTW, WC)	1,486	(\$309.21)	(\$5,513,832.72)
National BLET (BNSF, CSX, KCS, NS, UP, SOO, DH)	18,899	(\$309.21)	(\$70,125,117.48)
National BMW (All except SOO, DME, DH)	19,151	(\$309.21)	(\$71,060,168.52)
National BRS (All except DME)	5,667	(\$309.21)	(\$21,027,516.84)
National IAM (BNSF, CSX, KCS, NS, SOO, UP)	4,628	(\$309.21)	(\$17,172,286.56)
National IBBM (BNSF, CSX, KCS, NS, SOO, UP, IC)	366	(\$309.21)	(\$1,358,050.32)
National IBEW (All except DME)	3,896	(\$309.21)	(\$14,456,185.92)
National NCFO (All except DME and WC)	1,477	(\$309.21)	(\$5,480,438.04)
National SMW (BNSF, CSX, KCS, NS, UP, IC)	546	(\$309.21)	(\$2,025,943.92)
National TCU (All except DME and DH)	3,768	(\$309.21)	(\$13,981,239.36)
National TCU-CAR (All except DME)	5,958	(\$309.21)	(\$22,107,278.16)
National UTU (BNSF, CSX, KCS, NS, UP, SOO, DH)	26,843	(\$309.21)	(\$99,601,488.36)
Yardmasters (BNSF, CSX, KCS, NS, UP, SOO, DH)	1,249	(\$309.21)	(\$4,634,439.48)
Misc Indep (DME, CMQ, portions of DH & SOO, portions of CN)	3,357	(\$299.75)	(\$12,075,129.00)
Total Union	97,291		(\$360,619,114.68)
All Other @ -\$3,207,823.72 total per month			\$38,493,884.64
Total			(\$322,125,230.04)

Reduction in Wage Rate Per ST Hour	-\$1.44425564
Deduct this amount from the Wage Rate	-\$1.444

National Contracts U.S.

Straight Time Hourly Rate															Check
Weight	UTU	TCU	BLET	SMWIA	BRS	BMWE	TCU-CAR	NCFO	IAM	IBBM	IBEW	ATDA	YDMSTRS	OTHER	Sum
	0.230785	0.029979	0.179992	0.004321	0.047407	0.15861	0.048182	0.011768	0.037162	0.00287	0.031464	0.015627	0.009963	0.191872	1.00000
2021 Avg.	32.747	32.360	35.312	33.481	35.546	30.812	33.489	29.154	34.140	33.504	34.064	45.113	44.124	53.393	507.240
12/31/21	32.747	32.360	35.312	33.481	35.550	30.812	33.490	29.156	34.143	33.504	34.068	46.279	44.131	53.393	508.426
1/1/22	32.747	32.360	35.312	33.481	35.550	30.812	33.490	29.156	34.143	33.504	34.068	46.279	44.131	53.393	
4/1/22	32.747	32.360	35.312	33.481	35.550	30.812	33.490	29.156	34.143	33.504	34.068	46.279	44.131	53.393	
7/1/22	32.747	32.360	35.312	33.481	35.550	30.812	33.490	29.156	34.143	33.504	34.068	46.279	44.131	53.393	
10/1/22	37.267	36.830	40.178	38.202	40.462	35.040	38.121	33.213	38.902	37.801	38.798	50.823	50.245	60.921	
1/1/23	37.267	36.830	40.178	38.202	40.462	35.040	38.121	33.213	38.902	37.801	38.798	50.823	50.245	60.921	
4/1/23	37.267	36.830	40.178	38.202	40.462	35.040	38.121	33.213	38.902	37.801	38.798	50.823	50.245	60.921	
7/1/23	38.726	38.273	41.748	39.730	42.048	36.404	39.617	34.524	40.440	39.176	40.326	52.238	52.219	63.358	

Weighted Straight Time Hourly Rate															
	UTU	TCU	BLET	SMWIA	BRS	BMWE	TCU-CAR	NCFO	IAM	IBBM	IBEW	ATDA	YDMSTRS	OTHER	Total
2021 Avg.	7.558	0.970	6.356	0.145	1.685	4.887	1.614	0.343	1.269	0.096	1.072	0.705	0.440	10.245	37.383
12/31/21	7.558	0.970	6.356	0.145	1.685	4.887	1.614	0.343	1.269	0.096	1.072	0.723	0.440	10.245	37.402
1/1/22	7.558	0.970	6.356	0.145	1.685	4.887	1.614	0.343	1.269	0.096	1.072	0.723	0.440	10.245	37.402
4/1/22	7.558	0.970	6.356	0.145	1.685	4.887	1.614	0.343	1.269	0.096	1.072	0.723	0.440	10.245	37.402
7/1/22	7.558	0.970	6.356	0.145	1.685	4.887	1.614	0.343	1.269	0.096	1.072	0.723	0.440	10.245	37.402
10/1/22	8.601	1.104	7.232	0.165	1.918	5.558	1.837	0.391	1.446	0.108	1.221	0.794	0.501	11.689	42.564
1/1/23	8.601	1.104	7.232	0.165	1.918	5.558	1.837	0.391	1.446	0.108	1.221	0.794	0.501	11.689	42.564
4/1/23	8.601	1.104	7.232	0.165	1.918	5.558	1.837	0.391	1.446	0.108	1.221	0.794	0.501	11.689	42.564
7/1/23	8.937	1.147	7.514	0.172	1.993	5.774	1.909	0.406	1.503	0.112	1.269	0.816	0.520	12.157	44.231

Note: The 2021 Average and 12/31/21 Straight Time Hourly Rates are the industry rates, and include all Class I railroad employees. The rates for 1/1/22 through 7/1/23 are based on the industry year-end rates updated by NATIONAL UNION wage increases using contract information. These national increases are diluted using "percent national" ratios to account for non-national union contracts. The impacts of non-national (or independent contract) increases after 2021 are not shown on this page and are handled separately.

National Contracts U.S.

Pay For Time Not Worked Hourly Rate															Check Sum
Weight	UTU	TCU	BLET	SMWIA	BRS	BMWE	TCU-CAR	NCFO	IAM	IBBM	IBEW	ATDA	YDMSTRS	OTHER	1.00000
2021 Avg.	0.230785	0.029979	0.179992	0.004321	0.047407	0.15861	0.048182	0.011768	0.037162	0.00287	0.031464	0.015627	0.009963	0.191872	89.319
12/31/21	10.448	4.742	12.377	5.361	8.257	5.523	4.691	3.993	5.203	5.164	6.057	8.695	7.621	1.187	
1/1/22	10.448	4.742	12.377	5.361	8.258	5.523	4.691	3.993	5.203	5.164	6.058	8.919	7.622	1.187	
4/1/22	10.448	4.742	12.377	5.361	8.258	5.523	4.691	3.993	5.203	5.164	6.058	8.919	7.622	1.187	
7/1/22	10.448	4.742	12.377	5.361	8.258	5.523	4.691	3.993	5.203	5.164	6.058	8.919	7.622	1.187	
10/1/22	11.890	5.397	14.082	6.117	9.399	6.281	5.340	4.549	5.928	5.827	6.899	9.795	8.678	1.354	
1/1/23	11.890	5.397	14.082	6.117	9.399	6.281	5.340	4.549	5.928	5.827	6.899	9.795	8.678	1.354	
4/1/23	11.890	5.397	14.082	6.117	9.399	6.281	5.340	4.549	5.928	5.827	6.899	9.795	8.678	1.354	
7/1/23	12.355	5.609	14.633	6.362	9.767	6.526	5.549	4.728	6.163	6.039	7.170	10.068	9.019	1.408	

Pay For Time Not Worked Hourly Rate															
	UTU	TCU	BLET	SMWIA	BRS	BMWE	TCU-CAR	NCFO	IAM	IBBM	IBEW	ATDA	YDMSTRS	OTHER	Total
2021 Avg.	2.411	0.142	2.228	0.023	0.391	0.876	0.226	0.047	0.193	0.015	0.191	0.136	0.076	0.228	7.183
12/31/21	2.411	0.142	2.228	0.023	0.391	0.876	0.226	0.047	0.193	0.015	0.191	0.139	0.076	0.228	7.187
1/1/22	2.411	0.142	2.228	0.023	0.391	0.876	0.226	0.047	0.193	0.015	0.191	0.139	0.076	0.228	7.187
4/1/22	2.411	0.142	2.228	0.023	0.391	0.876	0.226	0.047	0.193	0.015	0.191	0.139	0.076	0.228	7.187
7/1/22	2.411	0.142	2.228	0.023	0.391	0.876	0.226	0.047	0.193	0.015	0.191	0.139	0.076	0.228	7.187
10/1/22	2.744	0.162	2.535	0.026	0.446	0.996	0.257	0.054	0.220	0.017	0.217	0.153	0.086	0.260	8.173
1/1/23	2.744	0.162	2.535	0.026	0.446	0.996	0.257	0.054	0.220	0.017	0.217	0.153	0.086	0.260	8.173
4/1/23	2.744	0.162	2.535	0.026	0.446	0.996	0.257	0.054	0.220	0.017	0.217	0.153	0.086	0.260	8.173
7/1/23	2.851	0.168	2.634	0.027	0.463	1.035	0.267	0.056	0.229	0.017	0.226	0.157	0.090	0.270	8.491

U.S. National Contract

Page 1 of 5

UTU

	Percentage Increase	Cents Increase	Applicable	ST HR	PFTNW HR
2021 Industry Avg.				32.74741	10.44784
12/31/21 Industry Rate				32.74742	10.44784
1/1/22			97.885%	32.74742	10.44784
4/1/22			97.885%	32.74742	10.44784
7/1/22			97.885%	32.74742	10.44784
11/1/22	14.10%		97.885%	37.26712	11.88983
1/1/23			97.885%	37.26712	11.88983
4/1/23			97.885%	37.26712	11.88983
7/1/23	4.00%		97.885%	38.72627	12.35536

TCU

	Percentage Increase	Cents Increase	Applicable	ST HR	PFTNW HR
2021 Industry Avg.				32.35976	4.74238
12/31/21 Industry Rate				32.35968	4.74237
1/1/22			97.971%	32.35968	4.74237
4/1/22			97.971%	32.35968	4.74237
7/1/22			97.971%	32.35968	4.74237
11/1/22	14.10%		97.971%	36.82980	5.39748
1/1/23			97.971%	36.82980	5.39748
4/1/23			97.971%	36.82980	5.39748
7/1/23	4.00%		97.971%	38.27310	5.60899

BLET

	Percentage Increase	Cents Increase	Applicable	ST HR	PFTNW HR
2021 Industry Avg.				35.31235	12.37704
12/31/21 Industry Rate				35.31235	12.37704
1/1/22			97.720%	35.31235	12.37704
4/1/22			97.720%	35.31235	12.37704
7/1/22			97.720%	35.31235	12.37704
11/1/22	14.10%		97.720%	40.17788	14.08242
1/1/23			97.720%	40.17788	14.08242
4/1/23			97.720%	40.17788	14.08242
7/1/23	4.00%		97.720%	41.74836	14.63287

U.S. National Contract

SMWIA

	Percentage Increase	Cents Increase	Applicable	ST HR	PFTNW HR
2021 Industry Avg.				33.48139	5.36105
12/31/21 Industry Rate				33.48137	5.36104
1/1/22			100.000%	33.48137	5.36104
4/1/22			100.000%	33.48137	5.36104
7/1/22			100.000%	33.48137	5.36104
11/1/22	14.10%		100.000%	38.20224	6.11695
1/1/23			100.000%	38.20224	6.11695
4/1/23			100.000%	38.20224	6.11695
7/1/23	4.00%		100.000%	39.73033	6.36163

BRS

	Percentage Increase	Cents Increase	Applicable	ST HR	PFTNW HR
2021 Industry Avg.				35.54567	8.25699
12/31/21 Industry Rate				35.55011	8.25802
1/1/22			97.989%	35.55011	8.25802
4/1/22			97.989%	35.55011	8.25802
7/1/22			97.989%	35.55011	8.25802
11/1/22	14.10%		97.989%	40.46186	9.39898
1/1/23			97.989%	40.46186	9.39898
4/1/23			97.989%	40.46186	9.39898
7/1/23	4.00%		97.989%	42.04779	9.76738

BMWE

	Percentage Increase	Cents Increase	Applicable	ST HR	PFTNW HR
2021 Industry Avg.				30.81232	5.52317
12/31/21 Industry Rate				30.81246	5.52319
1/1/22			97.313%	30.81246	5.52319
4/1/22			97.313%	30.81246	5.52319
7/1/22			97.313%	30.81246	5.52319
11/1/22	14.10%		97.313%	35.04026	6.28103
1/1/23			97.313%	35.04026	6.28103
4/1/23			97.313%	35.04026	6.28103
7/1/23	4.00%		97.313%	36.40421	6.52552

U.S. National Contract

TCU-Carmen

	Percentage Increase	Cents Increase	Applicable	ST HR	PFTNW HR
2021 Industry Avg.				33.48920	4.69104
12/31/21 Industry Rate				33.48958	4.69109
1/1/22			98.086%	33.48958	4.69109
4/1/22			98.086%	33.48958	4.69109
7/1/22			98.086%	33.48958	4.69109
11/1/22	14.10%		98.086%	38.12124	5.33988
1/1/23			98.086%	38.12124	5.33988
4/1/23			98.086%	38.12124	5.33988
7/1/23	4.00%		98.086%	39.61690	5.54938

NCFO

	Percentage Increase	Cents Increase	Applicable	ST HR	PFTNW HR
2021 Industry Avg.				29.15387	3.99301
12/31/21 Industry Rate				29.15645	3.99337
1/1/22			98.671%	29.15645	3.99337
4/1/22			98.671%	29.15645	3.99337
7/1/22			98.671%	29.15645	3.99337
11/1/22	14.10%		98.671%	33.21286	4.54895
1/1/23			98.671%	33.21286	4.54895
4/1/23			98.671%	33.21286	4.54895
7/1/23	4.00%		98.671%	34.52371	4.72849

IAM

	Percentage Increase	Cents Increase	Applicable	ST HR	PFTNW HR
2021 Industry Avg.				34.13992	5.20275
12/31/21 Industry Rate				34.14250	5.20314
1/1/22			98.858%	34.14250	5.20314
4/1/22			98.858%	34.14250	5.20314
7/1/22			98.858%	34.14250	5.20314
11/1/22	14.10%		98.858%	38.90162	5.92840
1/1/23			98.858%	38.90162	5.92840
4/1/23			98.858%	38.90162	5.92840
7/1/23	4.00%		98.858%	40.43991	6.16283

U.S. National Contract

IBBM

	Percentage Increase	Cents Increase	Applicable	ST HR	PFTNW HR
2021 Industry Avg.				33.50351	5.16418
12/31/21 Industry Rate				33.50352	5.16418
1/1/22			90.962%	33.50352	5.16418
4/1/22			90.962%	33.50352	5.16418
7/1/22			90.962%	33.50352	5.16418
11/1/22	14.10%		90.962%	37.80057	5.82652
1/1/23			90.962%	37.80057	5.82652
4/1/23			90.962%	37.80057	5.82652
7/1/23	4.00%		90.962%	39.17593	6.03852

IBEW

	Percentage Increase	Cents Increase	Applicable	ST HR	PFTNW HR
2021 Industry Avg.				34.06429	6.05711
12/31/21 Industry Rate				34.06779	6.05773
1/1/22			98.467%	34.06779	6.05773
4/1/22			98.467%	34.06779	6.05773
7/1/22			98.467%	34.06779	6.05773
11/1/22	14.10%		98.467%	38.79773	6.89878
1/1/23			98.467%	38.79773	6.89878
4/1/23			98.467%	38.79773	6.89878
7/1/23	4.00%		98.467%	40.32585	7.17050

ATDA

	Percentage Increase	Cents Increase	Applicable	ST HR	PFTNW HR
2021 Industry Avg.				45.11347	8.69475
12/31/21 Industry Rate				46.27890	8.91936
1/1/22			69.635%	46.27890	8.91936
4/1/22			69.635%	46.27890	8.91936
7/1/22			69.635%	46.27890	8.91936
11/1/22	14.10%		69.635%	50.82283	9.79511
1/1/23			69.635%	50.82283	9.79511
4/1/23			69.635%	50.82283	9.79511
7/1/23	4.00%		69.635%	52.23846	10.06795

YDMSTRS

	Percentage Increase	Cents Increase	Applicable	ST HR	PFTNW HR
2021 Industry Avg.				44.12424	7.62126
12/31/21 Industry Rate				44.13085	7.62240
1/1/22			98.252%	44.13085	7.62240
4/1/22			98.252%	44.13085	7.62240
7/1/22			98.252%	44.13085	7.62240
11/1/22	14.10%		98.252%	50.24455	8.67838
1/1/23			98.252%	50.24455	8.67838
4/1/23			98.252%	50.24455	8.67838
7/1/23	4.00%		98.252%	52.21921	9.01945

OTHER

	Percentage Increase	Cents Increase	Applicable	ST HR	PFTNW HR
2021 Industry Avg.				53.39284	1.18678
12/31/21 Industry Rate				53.39287	1.18678
1/1/22			100.000%	53.39287	1.18678
4/1/22			100.000%	53.39287	1.18678
7/1/22			100.000%	53.39287	1.18678
11/1/22	14.10%		100.000%	60.92127	1.35412
1/1/23			100.000%	60.92127	1.35412
4/1/23			100.000%	60.92127	1.35412
7/1/23	4.00%		100.000%	63.35812	1.40828

Check Sums

	Increase	Applicable	ST HR	PFTNW HR
2021 AVG			507.24025	89.31934
12/31/21			508.42584	
		1341.809%		
		ok matches	ok matches	ok matches
			ok matches	

Should match check sum on National Increase Applicability for U.S. Total page.

1341.809%

All three should match check sums on U.S. Benchmark page.

	LATEST	WK AGO	HIGH	LOW
Effective rate	4.59	4.59	4.60	0.08
Target rate	4.50-4.75	4.50-4.75	4.50-4.75	0.00-0.25
High	4.9000	4.9000	4.9090	0.1000
Low	4.5500	4.5500	4.5900	0.0500
Bid	4.5800	4.5700	4.5800	0.0700
Offer	4.6000	4.5800	4.6200	0.0900

Treasury Bill Auction

	LATEST	WK AGO	52-WEEK	
			HIGH	LOW
4 weeks	4.515	4.510	4.520	0.050
13 weeks	4.750	4.680	4.750	0.360
26 weeks	4.940	4.840	4.940	0.670

Weekly Survey

Thursday, February 23, 2023

Freddie Mac

	LATEST	WK AGO	52-WEEK
			YEAR AGO
30-year fixed	6.50	6.32	3.89
15-year fixed	5.76	5.51	3.14

U.S. prime rate is the base rate on corporate loans posted by at least 70% of the 10 largest U.S. banks, and is effective 2/02/23. **Other prime rates** aren't directly comparable; lending practices vary widely by location; **Discount rate** is the charge on loans to depository institutions by the New York Federal Reserve Banks, and is effective 2/02/23; **Federal-funds rate** are Tullett Prebon rates as of 5:30 p.m. on reserves traded among commercial banks for overnight use; **Call money rate** is the charge on loans to brokers on stock-exchange collateral; **Commercial Paper (AA financial)** is from the Federal Reserve and is presented with a one-day lag. **Secured Overnight Financing Rate** is the average rate at which institutions can borrow US dollars overnight while posting US Treasury bonds as collateral. **DTCC GCF Repo Index** is Depository Trust & Clearing Corp.'s weighted average for overnight trades in applicable CUSIPs. Value traded is in billions of U.S. dollars.

Sources: Federal Reserve, Bureau of Labor Statistics, [DTCC](#), [FactSet](#), Tullett Prebon

We are in the process of updating our Market Data experience and we want to hear from you.
Please send us your feedback via our [Customer Center](#)

**RCAF Lump Sum Amortization
2023/Q2**

	Quarter of Payment	Quarter Amortization Began	Amount	Annual Per ST Hour	1 Quarter Per ST Hour	U.S. ST Hours
CSX - ATDA 2022Q3	2022Q3	2022Q3				223,038,929
NS - BLET 2022Q1 PPI	2022Q2	2022Q3				223,038,929
NS - BLET 2022Q2 PPI	2022Q3	2022Q4				223,038,929
NS - BLET 2022Q3 PPI	2022Q4	2023Q1				223,038,929
NS - BLET 2022Q4 PPI	2023Q1	2023Q2				223,038,929
NS - BLET 2023 Ave PPI	2023Q1	2023Q2				223,038,929
NS - BLET 2023 TPB	2023Q1	2023Q2				223,038,929
Total			\$13,495,805	0.06051		

Should be slightly less
than amortized amount.

Fell out

NS - BLET 2021Q2 PPI	2021Q3	2021Q4				233,382,710
NS - BLET 2021Q3 PPI	2021Q4	2022Q1				224,055,761
NS - BLET 2021Q4 PPI	2022Q1	2022Q2				223,038,929
NS - BLET 2022 Ave PPI	2022Q1	2022Q2				223,038,929
NS - BLET 2022 TPB	2022Q1	2022Q2				223,038,929

Interest Rate

2021/Q2	0.030
2021/Q3	0.015
2021/Q4	0.055
2022/Q1	0.050
2022/Q2	0.380
2022/Q3	1.060
2022/Q4	2.740
2023/Q1	4.285
2023/Q2	4.750
2023/Q3	
2023/Q4	
2024/Q1	

Lump Sum Adjustment for 2023/Q2	→ 0.161689
	or
	0.162

**RCAF Back Pay Amortization
2023/Q2**

	Quarter of Payment	Quarter Amortization Began	Amount	Annual Per ST Hour	1 Quarter Per ST Hr.	U.S. ST Hours	
CSX - ATDA 2022Q3	2022Q2	2022Q3	\$362,400	0.00162483	0.00650	223,038,929	2021
DME - BLET 2022Q4	2022Q3	2022Q4	\$2,419,146	0.01084629	0.04339	223,038,929	2021
National Contract (All)	2022Q4	2023Q1	\$1,522,044,290	6.82411944	27.29648	223,038,929	2021
DH and Soo Indep	2023Q1	2023Q2	1,867,327	0.00837220	0.03349	223,038,929	2021
Total			\$1,526,693,163	6.84496276			
Should be slightly less than amortized amount.							
Fell out							
CMQ - all unions 2022	2022Q1	2022Q2	(\$350)	-0.00000156	-0.00001	224,055,761	2021
DME - all unions 2022	2022Q1	2022Q2	\$21,203	0.00009463	0.00038	224,055,761	2021

Notes:

"UTU" is now called SMART-TD (Transportation Division), and SMW is now called SMART-MD (Mechanical Division)

CN railroads 2018Q4 = IC BLET, CCP BLET, GTW UTU, GTW UTU-YMD, WC UTU-YMD

CP railroads 2018Q4 = DH BRC, DH IAM, SOO NCFO, SOO IBEW, SOO BRS, SOO UTU-YDM

CP railroads 2019Q3 = DME IAM, SOO IAM, SOO BRC

New National Contracts 2023Q1 = (All Unions) except CP Railroads

Interest Rate

2020/Q2	1.505
2020/Q3	0.130
2020/Q4	0.100
2021/Q1	0.085
2021/Q2	0.030
2021/Q3	0.015
2021/Q4	0.055
2022/Q1	0.050
2022/Q2	0.380
2022/Q3	1.060
2022/Q4	2.740
2023/Q1	4.285
2023/Q2	4.750

Back Pay Adjustment for 2023/Q2	→ 7.04534
	or
	7.045

Health and Welfare 2023Q2

	Employees Receiving					
	Pay	Monthly Contribution		Total	Total	
	2021	2022	2023	2022	2023	
1. All Employees						
a. Group health	117,419	\$1,856.96	\$1,972.43	\$218,042,386.24	\$231,600,758.17	
b. Group dental	117,419	75.01	69.10	8,807,599.19	8,113,652.90	
c. Early retirement major medical	117,419	84.14	65.94	9,879,634.66	7,742,608.86	
d. Group vision	117,419	8.51	8.51	999,235.69	999,235.69	
2. Supplemental Sickness						
a. Signalmen	5,700	62.17	62.17	354,369.00	354,369.00	
b. Shopcrafts	15,459	98.52	98.52	1,523,020.68	1,523,020.68	
c. MOW	19,695	48.22	48.22	949,692.90	949,692.90	
d. Yardmasters	1,333	74.61	76.77	99,455.13	102,334.41	
3. Short-Term Disability						
a. Engineers (CSX, KCS, SOO, UP)	9,062	40.00	40.00	362,480.00	362,480.00	
4. Monthly Total Premiums				241,017,873.49	251,748,152.61	
5. Monthly Employee Contributions To H&W						
a. National ATDA (BNSF, CSX, KCS, NS, SOO, GTW, WC)	1,486	(\$228.89)	(\$309.21)	(\$340,130.54)	(459,486.06)	
b. National BLET (BNSF, CSX, KCS, NS, UP, SOO, DH)	18,899	(\$228.89)	(\$309.21)	(\$4,325,792.11)	(5,843,759.79)	
c. National BMW (All except SOO, DME, DH)	19,151	(\$228.89)	(\$309.21)	(\$4,383,472.39)	(5,921,680.71)	
d. National BRS (All except DME)	5,667	(\$228.89)	(\$309.21)	(\$1,297,119.63)	(1,752,293.07)	
e. National IAM (BNSF, CSX, KCS, NS, SOO, UP)	4,628	(\$228.89)	(\$309.21)	(\$1,059,302.92)	(1,431,023.88)	
f. National IBBM (BNSF, CSX, KCS, NS, SOO, UP, IC)	366	(\$228.89)	(\$309.21)	(\$83,773.74)	(113,170.86)	
g. National IBEW (All except DME)	3,896	(\$228.89)	(\$309.21)	(\$891,755.44)	(1,204,682.16)	
h. National NCFO (All except DME and WC)	1,477	(\$228.89)	(\$309.21)	(\$338,070.53)	(456,703.17)	
i. National SMW (BNSF, CSX, KCS, NS, UP, IC)	546	(\$228.89)	(\$309.21)	(\$124,973.94)	(168,828.66)	
j. National TCU (All except DME and DH)	3,768	(\$228.89)	(\$309.21)	(\$862,457.52)	(1,165,103.28)	
k. National TCU-CAR (All except DME)	5,958	(\$228.89)	(\$309.21)	(\$1,363,726.62)	(1,842,273.18)	
l. National UTU (BNSF, CSX, KCS, NS, UP, SOO, DH)	26,843	(\$228.89)	(\$309.21)	(\$6,144,094.27)	(8,300,124.03)	
m. Yardmasters (BNSF, CSX, KCS, NS, UP*, SOO, DH)	1,249	(\$228.89)	(\$309.21)	(\$285,883.61)	(\$386,203.29)	
n. Misc Indep (DME, CMQ, portions of DH & SOO, portions of CN)	3,357	(\$232.23)	(\$299.75)	(\$779,606.12)	(1,006,269.16)	
Total Major Union				97,291	(\$22,280,159.38)	(\$30,051,601.30)
All Other Employee Contributions*					(\$3,207,823.72)	(\$3,207,823.72)
6. Net Employer Monthly Payments					\$215,529,890.39	\$218,488,727.59
7. Ratio Projected Year to Base Year, Based on Net Monthly Payments						1.01373
8. H&W hourly rate for base year 2021					\$9.401	
9. H&W hourly rate for projected quarter						\$9.530

* Non-union employee contributions net of opt-outs. The \$22,280,159.38 in major union contributions, plus \$3,207,823.72 in all other employee contributions, totals to the 12-month average of the total employee contributions reported to the AAR in its WF survey.

Railroad Retirement and Medicare for RCAF

Inputs:

RRB Earnings Distribution Year	2020	Tier I Maximum Taxable Earnings for 2023	160,200
Wage Statistics Year	2021	Tier II Maximum Taxable Earnings for 2023	118,800
Current Year	2023	Medicare Maximum Taxable Earnings for 2023	no limit
Employees Receiving Pay*	117,419	Tier I Employer Tax Rate for 2023	6.20%
* from 2021 final wage statistics		Tier II Employer Tax Rate for 2023	13.10%
		Medicare Employer Tax Rate for 2023	1.45%

USA RCAF	Wage Rate	Update Factor	Railroad Retirement Tax	Hourly Rate
2020	\$43.981			
2021	\$43.459	0.98813	\$529,869,982	\$9.587
1Q/2023	\$43.482	0.98866	\$539,933,467	\$9.769
2Q/2023	\$56.781	1.29104	\$672,184,691	\$12.162
3Q/2023		0.00000	--	\$0.000
4Q/2023		0.00000	--	\$0.000

Railroad Retirement & Medicare, U.S.

From 2020 Earnings Distribution			1Q/2023 Updated Using Earnings Distribution & Wage Statistics, plus Current Wage Rates with Current Tax Info								
Earnings Groups	Avg Ann. Earnings	% of Total Employees	Employees Recvg. Pay	Annual Earnings	Avg Qtly Earnings	Tier I Taxable	Tier II Taxable	Medicare Taxable	Total Taxable Earnings (Taxable x Employees)		
									Tier I	Tier II	Medicare
\$0 - 41,699	\$29,135	1.023 %	1,201	\$28,805	\$7,201	\$7,201	\$7,201	\$7,201	\$8,649,975	\$8,649,975	\$8,649,975
41,700 - 43,699	\$43,170	0.241	283	42,680	10,670	10,670	10,670	10,670	3,019,418	3,019,418	3,019,418
43,700 - 45,699	\$44,951	0.602	707	44,441	11,110	11,110	11,110	11,110	7,853,442	7,853,442	7,853,442
45,700 - 47,699	\$46,889	0.722	848	46,357	11,589	11,589	11,589	11,589	9,824,996	9,824,996	9,824,996
47,700 - 49,699	\$49,192	0.301	353	48,634	12,159	12,159	12,159	12,159	4,297,196	4,297,196	4,297,196
49,700 - 51,699	\$50,718	0.903	1,060	50,143	12,536	12,536	12,536	12,536	13,291,503	13,291,503	13,291,503
51,700 - 53,699	\$52,814	0.662	777	52,215	13,054	13,054	13,054	13,054	10,146,851	10,146,851	10,146,851
53,700 - 55,699	\$54,722	1.144	1,343	54,101	13,525	13,525	13,525	13,525	18,168,212	18,168,212	18,168,212
55,700 - 57,699	\$56,670	1.445	1,697	56,027	14,007	14,007	14,007	14,007	23,765,408	23,765,408	23,765,408
57,700 - 59,699	\$58,720	0.963	1,131	58,054	14,513	14,513	14,513	14,513	16,411,057	16,411,057	16,411,057
59,700 - 61,699	\$60,685	1.505	1,767	59,997	14,999	14,999	14,999	14,999	26,505,870	26,505,870	26,505,870
61,700 - 63,699	\$62,702	2.288	2,687	61,991	15,498	15,498	15,498	15,498	41,635,293	41,635,293	41,635,293
63,700 - 65,699	\$64,670	2.769	3,251	63,936	15,984	15,984	15,984	15,984	51,969,678	51,969,678	51,969,678
65,700 - 67,699	\$66,717	4.214	4,948	65,960	16,490	16,490	16,490	16,490	81,593,442	81,593,442	81,593,442
67,700 - 69,699	\$68,810	3.793	4,454	68,030	17,007	17,007	17,007	17,007	75,745,810	75,745,810	75,745,810
69,700 - 71,699	\$70,608	4.455	5,231	69,807	17,452	17,452	17,452	17,452	91,290,551	91,290,551	91,290,551
71,700 - 73,699	\$72,626	3.913	4,595	71,802	17,951	17,951	17,951	17,951	82,475,733	82,475,733	82,475,733
73,700 - 75,699	\$74,684	3.793	4,454	73,837	18,459	18,459	18,459	18,459	82,211,889	82,211,889	82,211,889
75,700 - 77,699	\$76,849	3.070	3,605	75,977	18,994	18,994	18,994	18,994	68,470,076	68,470,076	68,470,076
77,700 - 79,699	\$78,714	3.070	3,605	77,821	19,455	19,455	19,455	19,455	70,131,733	70,131,733	70,131,733
79,700 - 81,699	\$80,712	3.552	4,171	79,797	19,949	19,949	19,949	19,949	83,202,290	83,202,290	83,202,290
81,700 - 83,699	\$82,591	2.047	2,404	81,654	20,414	20,414	20,414	20,414	49,065,336	49,065,336	49,065,336
83,700 - 85,699	\$84,572	2.709	3,181	83,613	20,903	20,903	20,903	20,903	66,490,534	66,490,534	66,490,534
85,700 - 87,699	\$86,748	2.830	3,323	85,764	21,441	21,441	21,441	21,441	71,247,580	71,247,580	71,247,580
87,700 - 89,699	\$88,822	3.371	3,958	87,815	21,954	21,954	21,954	21,954	86,896,746	86,896,746	86,896,746
89,700 - 91,699	\$90,488	2.047	2,404	89,462	22,365	22,365	22,365	22,365	53,756,755	53,756,755	53,756,755
91,700 - 93,699	\$92,856	2.709	3,181	91,803	22,951	22,951	22,951	22,951	73,003,417	73,003,417	73,003,417
93,700 - 95,699	\$94,580	2.950	3,464	93,507	23,377	23,377	23,377	23,377	80,973,990	80,973,990	80,973,990
95,700 - 97,699	\$96,766	1.746	2,050	95,668	23,917	23,917	23,917	23,917	49,033,313	49,033,313	49,033,313
97,700 - 99,699	\$98,698	2.589	3,040	97,579	24,395	24,395	24,395	24,395	74,159,128	74,159,128	74,159,128
99,700 - 101,699	\$100,644	2.228	2,616	99,502	24,876	24,876	24,876	24,876	65,076,965	65,076,965	65,076,965
101,700 - 103,699	\$102,670	1.746	2,050	101,505	25,376	25,376	25,376	25,376	52,024,991	52,024,991	52,024,991
103,700 - 105,699	\$104,718	2.167	2,544	103,530	25,883	25,883	25,883	25,883	65,857,382	65,857,382	65,857,382
105,700 - 107,699	\$106,632	2.529	2,970	105,423	26,356	26,356	26,356	26,356	78,263,740	78,263,740	78,263,740
107,700 - 109,699	\$108,627	1.385	1,626	107,395	26,849	26,849	26,849	26,849	43,662,819	43,662,819	43,662,819
109,700 - 111,699	\$110,789	1.445	1,697	109,532	27,383	27,383	27,383	27,383	46,461,016	46,461,016	46,461,016
111,700 - 113,699	\$112,619	1.866	2,191	111,342	27,835	27,835	27,835	27,835	60,988,439	60,988,439	60,988,439
113,700 - 115,699	\$114,639	1.626	1,909	113,339	28,335	28,335	28,335	28,335	54,097,493	54,097,493	54,097,493
\$115,700 - over	\$145,306	17.580	20,642	143,658	35,914	35,914	29,700	35,914	741,355,699	613,075,128	741,355,699
TOTAL	\$92,450	99.998	117,417								
Total Taxable Earnings									2,683,075,766	2,554,795,195	2,683,075,766
Employer Tax Rate									6.20%	13.10%	1.45%
Quarterly Payment									\$166,350,698	\$334,678,171	\$38,904,599
Total Tier I, Tier II, and Medicare Paid this Quarter											\$539,933,467

Railroad Retirement & Medicare, U.S.

From 2020 Earnings Distribution			2Q/2023 Updated Using Earnings Distribution & Wage Statistics, plus Current Wage Rates with Current Tax Info									
Earnings Groups	Avg Ann. Earnings	% of Total Employees	Employees Recvg. Pay	Annual Earnings	Avg Qtly Earnings	Tier I Taxable	Tier II Taxable	Medicare Taxable	Total Taxable Earnings (Taxable x Employees)			
									Tier I	Tier II	Medicare	
\$0 - 41,699	\$29,135	1.023 %	1,201	\$37,614	\$9,404	\$9,404	\$9,404	\$9,404	\$11,295,576	\$11,295,576	\$11,295,576	
41,700 - 43,699	\$43,170	0.241	283	55,734	13,934	13,934	13,934	13,934	3,942,910	3,942,910	3,942,910	
43,700 - 45,699	\$44,951	0.602	707	58,033	14,508	14,508	14,508	14,508	10,255,423	10,255,423	10,255,423	
45,700 - 47,699	\$46,889	0.722	848	60,536	15,134	15,134	15,134	15,134	12,829,978	12,829,978	12,829,978	
47,700 - 49,699	\$49,192	0.301	353	63,509	15,877	15,877	15,877	15,877	5,611,497	5,611,497	5,611,497	
49,700 - 51,699	\$50,718	0.903	1,060	65,479	16,370	16,370	16,370	16,370	17,356,718	17,356,718	17,356,718	
51,700 - 53,699	\$52,814	0.662	777	68,185	17,046	17,046	17,046	17,046	13,250,272	13,250,272	13,250,272	
53,700 - 55,699	\$54,722	1.144	1,343	70,648	17,662	17,662	17,662	17,662	23,724,973	23,724,973	23,724,973	
55,700 - 57,699	\$56,670	1.445	1,697	73,163	18,291	18,291	18,291	18,291	31,034,074	31,034,074	31,034,074	
57,700 - 59,699	\$58,720	0.963	1,131	75,810	18,952	18,952	18,952	18,952	21,430,390	21,430,390	21,430,390	
59,700 - 61,699	\$60,685	1.505	1,767	78,347	19,587	19,587	19,587	19,587	34,612,709	34,612,709	34,612,709	
61,700 - 63,699	\$62,702	2.288	2,687	80,951	20,238	20,238	20,238	20,238	54,369,476	54,369,476	54,369,476	
63,700 - 65,699	\$64,670	2.769	3,251	83,491	20,873	20,873	20,873	20,873	67,864,641	67,864,641	67,864,641	
65,700 - 67,699	\$66,717	4.214	4,948	86,134	21,534	21,534	21,534	21,534	106,548,853	106,548,853	106,548,853	
67,700 - 69,699	\$68,810	3.793	4,454	88,836	22,209	22,209	22,209	22,209	98,912,718	98,912,718	98,912,718	
69,700 - 71,699	\$70,608	4.455	5,231	91,158	22,789	22,789	22,789	22,789	119,211,830	119,211,830	119,211,830	
71,700 - 73,699	\$72,626	3.913	4,595	93,763	23,441	23,441	23,441	23,441	107,700,994	107,700,994	107,700,994	
73,700 - 75,699	\$74,684	3.793	4,454	96,420	24,105	24,105	24,105	24,105	107,356,452	107,356,452	107,356,452	
75,700 - 77,699	\$76,849	3.070	3,605	99,215	24,804	24,804	24,804	24,804	89,411,696	89,411,696	89,411,696	
77,700 - 79,699	\$78,714	3.070	3,605	101,623	25,406	25,406	25,406	25,406	91,581,572	91,581,572	91,581,572	
79,700 - 81,699	\$80,712	3.552	4,171	104,202	26,051	26,051	26,051	26,051	108,649,768	108,649,768	108,649,768	
81,700 - 83,699	\$82,591	2.047	2,404	106,628	26,657	26,657	26,657	26,657	64,072,004	64,072,004	64,072,004	
83,700 - 85,699	\$84,572	2.709	3,181	109,186	27,296	27,296	27,296	27,296	86,826,710	86,826,710	86,826,710	
85,700 - 87,699	\$86,748	2.830	3,323	111,995	27,999	27,999	27,999	27,999	93,038,702	93,038,702	93,038,702	
87,700 - 89,699	\$88,822	3.371	3,958	114,673	28,668	28,668	28,668	28,668	113,474,176	113,474,176	113,474,176	
89,700 - 91,699	\$90,488	2.047	2,404	116,824	29,206	29,206	29,206	29,206	70,198,296	70,198,296	70,198,296	
91,700 - 93,699	\$92,856	2.709	3,181	119,881	29,970	29,970	29,970	29,970	95,331,563	95,331,563	95,331,563	
93,700 - 95,699	\$94,580	2.950	3,464	122,106	30,527	30,527	30,527	30,527	105,739,941	105,739,941	105,739,941	
95,700 - 97,699	\$96,766	1.746	2,050	124,929	31,232	31,232	31,232	31,232	64,030,186	64,030,186	64,030,186	
97,700 - 99,699	\$98,698	2.589	3,040	127,423	31,856	31,856	31,856	31,856	96,840,749	96,840,749	96,840,749	
99,700 - 101,699	\$100,644	2.228	2,616	129,935	32,484	32,484	32,484	32,484	84,980,800	84,980,800	84,980,800	
101,700 - 103,699	\$102,670	1.746	2,050	132,551	33,138	33,138	33,138	33,138	67,936,871	67,936,871	67,936,871	
103,700 - 105,699	\$104,718	2.167	2,544	135,195	33,799	33,799	33,517	33,799	85,999,908	85,284,120	85,999,908	
105,700 - 107,699	\$106,632	2.529	2,970	137,666	34,417	34,417	33,044	34,417	102,200,759	98,126,135	102,200,759	
107,700 - 109,699	\$108,627	1.385	1,626	140,242	35,060	35,060	32,551	35,060	57,017,123	52,936,618	57,017,123	
109,700 - 111,699	\$110,789	1.445	1,697	143,033	35,758	35,758	32,017	35,758	60,671,150	54,323,234	60,671,150	
111,700 - 113,699	\$112,619	1.866	2,191	145,396	36,349	36,349	31,565	36,349	79,641,796	69,159,250	79,641,796	
113,700 - 115,699	\$114,639	1.626	1,909	148,003	37,001	37,001	31,065	37,001	70,643,249	59,310,943	70,643,249	
\$115,700 - over	\$145,306	17.580	20,642	187,596	46,899	44,186	29,700	46,899	912,089,343	613,075,128	968,099,856	
TOTAL		99.998	117,417						Total Taxable Earnings	3,447,685,846	3,111,637,946	3,503,696,359
									Employer Tax Rate	6.20%	13.10%	1.45%
									Quarterly Payment	\$213,756,522	\$407,624,571	\$50,803,597

Total Tier I, Tier II, and Medicare Paid this Quarter

\$672,184,691

Railroad Retirement & Medicare, U.S.

From 2020 Earnings Distribution			3Q/2023 Updated Using Earnings Distribution & Wage Statistics, plus Current Wage Rates with Current Tax Info								
Earnings Groups	Avg Ann. Earnings	% of Total Employees	Employees Recvg. Pay	Annual Earnings	Avg Qtly Earnings	Tier I Taxable	Tier II Taxable	Medicare Taxable	Total Taxable Earnings (Taxable x Employees)		
									Tier I	Tier II	Medicare
\$0 - 41,699	\$29,135	1.023 %	1,201	\$0	\$0	(\$0)	(\$0)	\$0	(\$0)	(\$0)	\$0
41,700 - 43,699	\$43,170	0.241	283	0	0	0	0	0	0	0	0
43,700 - 45,699	\$44,951	0.602	707	0	0	0	0	0	0	0	0
45,700 - 47,699	\$46,889	0.722	848	0	0	0	0	0	0	0	0
47,700 - 49,699	\$49,192	0.301	353	0	0	0	0	0	0	0	0
49,700 - 51,699	\$50,718	0.903	1,060	0	0	0	0	0	0	0	0
51,700 - 53,699	\$52,814	0.662	777	0	0	0	0	0	0	0	0
53,700 - 55,699	\$54,722	1.144	1,343	0	0	0	0	0	0	0	0
55,700 - 57,699	\$56,670	1.445	1,697	0	0	0	0	0	0	0	0
57,700 - 59,699	\$58,720	0.963	1,131	0	0	0	0	0	0	0	0
59,700 - 61,699	\$60,685	1.505	1,767	0	0	(0)	(0)	0	(0)	(0)	0
61,700 - 63,699	\$62,702	2.288	2,687	0	0	(0)	(0)	0	(0)	(0)	0
63,700 - 65,699	\$64,670	2.769	3,251	0	0	0	0	0	0	0	0
65,700 - 67,699	\$66,717	4.214	4,948	0	0	0	0	0	0	0	0
67,700 - 69,699	\$68,810	3.793	4,454	0	0	0	0	0	0	0	0
69,700 - 71,699	\$70,608	4.455	5,231	0	0	0	0	0	0	0	0
71,700 - 73,699	\$72,626	3.913	4,595	0	0	0	0	0	0	0	0
73,700 - 75,699	\$74,684	3.793	4,454	0	0	0	0	0	0	0	0
75,700 - 77,699	\$76,849	3.070	3,605	0	0	0	0	0	0	0	0
77,700 - 79,699	\$78,714	3.070	3,605	0	0	0	0	0	0	0	0
79,700 - 81,699	\$80,712	3.552	4,171	0	0	0	0	0	0	0	0
81,700 - 83,699	\$82,591	2.047	2,404	0	0	0	0	0	0	0	0
83,700 - 85,699	\$84,572	2.709	3,181	0	0	0	0	0	0	0	0
85,700 - 87,699	\$86,748	2.830	3,323	0	0	0	0	0	0	0	0
87,700 - 89,699	\$88,822	3.371	3,958	0	0	0	0	0	0	0	0
89,700 - 91,699	\$90,488	2.047	2,404	0	0	0	0	0	0	0	0
91,700 - 93,699	\$92,856	2.709	3,181	0	0	0	0	0	0	0	0
93,700 - 95,699	\$94,580	2.950	3,464	0	0	0	0	0	0	0	0
95,700 - 97,699	\$96,766	1.746	2,050	0	0	0	0	0	0	0	0
97,700 - 99,699	\$98,698	2.589	3,040	0	0	0	0	0	0	0	0
99,700 - 101,699	\$100,644	2.228	2,616	0	0	0	0	0	0	0	0
101,700 - 103,699	\$102,670	1.746	2,050	0	0	0	0	0	0	0	0
103,700 - 105,699	\$104,718	2.167	2,544	0	0	(0)	281	0	(0)	715,788	0
105,700 - 107,699	\$106,632	2.529	2,970	0	0	0	1,372	0	0	4,074,624	0
107,700 - 109,699	\$108,627	1.385	1,626	0	0	0	2,509	0	0	4,080,504	0
109,700 - 111,699	\$110,789	1.445	1,697	0	0	0	3,741	0	0	6,347,916	0
111,700 - 113,699	\$112,619	1.866	2,191	0	0	0	4,784	0	0	10,482,545	0
113,700 - 115,699	\$114,639	1.626	1,909	0	0	0	5,936	0	0	11,332,306	0
\$115,700 - over	\$145,306	17.580	20,642	0	0	2,713	23,413	0	<u>56,010,514</u>	<u>483,305,300</u>	<u>0</u>
TOTAL		99.998	117,417						56,010,514	520,338,984	0
									Employer Tax Rate	6.20%	13.10%
									Quarterly Payment	\$3,472,652	\$68,164,407
											\$0

Total Tier I, Tier II, and Medicare Paid this Quarter

\$71,637,059

Railroad Retirement & Medicare, U.S.

From 2020 Earnings Distribution			4Q/2023 Updated Using Earnings Distribution & Wage Statistics, plus Current Wage Rates with Current Tax Info								
Earnings Groups	Avg Ann. Earnings	% of Total Employees	Employees Recvg. Pay	Annual Earnings	Avg Qtly Earnings	Tier I Taxable	Tier II Taxable	Medicare Taxable	Total Taxable Earnings (Taxable x Employees)		
									Tier I	Tier II	Medicare
\$0 - 41,699	\$29,135	1.023 %	1,201	\$0	\$0	(\$0)	(\$0)	\$0	(\$0)	(\$0)	\$0
41,700 - 43,699	\$43,170	0.241	283	0	0	0	0	0	0	0	0
43,700 - 45,699	\$44,951	0.602	707	0	0	0	0	0	0	0	0
45,700 - 47,699	\$46,889	0.722	848	0	0	0	0	0	0	0	0
47,700 - 49,699	\$49,192	0.301	353	0	0	0	0	0	0	0	0
49,700 - 51,699	\$50,718	0.903	1,060	0	0	0	0	0	0	0	0
51,700 - 53,699	\$52,814	0.662	777	0	0	0	0	0	0	0	0
53,700 - 55,699	\$54,722	1.144	1,343	0	0	0	0	0	0	0	0
55,700 - 57,699	\$56,670	1.445	1,697	0	0	0	0	0	0	0	0
57,700 - 59,699	\$58,720	0.963	1,131	0	0	0	0	0	0	0	0
59,700 - 61,699	\$60,685	1.505	1,767	0	0	(0)	(0)	0	(0)	(0)	0
61,700 - 63,699	\$62,702	2.288	2,687	0	0	(0)	(0)	0	(0)	(0)	0
63,700 - 65,699	\$64,670	2.769	3,251	0	0	0	0	0	0	0	0
65,700 - 67,699	\$66,717	4.214	4,948	0	0	0	0	0	0	0	0
67,700 - 69,699	\$68,810	3.793	4,454	0	0	0	0	0	0	0	0
69,700 - 71,699	\$70,608	4.455	5,231	0	0	0	0	0	0	0	0
71,700 - 73,699	\$72,626	3.913	4,595	0	0	0	0	0	0	0	0
73,700 - 75,699	\$74,684	3.793	4,454	0	0	0	0	0	0	0	0
75,700 - 77,699	\$76,849	3.070	3,605	0	0	0	0	0	0	0	0
77,700 - 79,699	\$78,714	3.070	3,605	0	0	0	0	0	0	0	0
79,700 - 81,699	\$80,712	3.552	4,171	0	0	0	0	0	0	0	0
81,700 - 83,699	\$82,591	2.047	2,404	0	0	0	0	0	0	0	0
83,700 - 85,699	\$84,572	2.709	3,181	0	0	0	0	0	0	0	0
85,700 - 87,699	\$86,748	2.830	3,323	0	0	0	0	0	0	0	0
87,700 - 89,699	\$88,822	3.371	3,958	0	0	0	0	0	0	0	0
89,700 - 91,699	\$90,488	2.047	2,404	0	0	0	0	0	0	0	0
91,700 - 93,699	\$92,856	2.709	3,181	0	0	0	0	0	0	0	0
93,700 - 95,699	\$94,580	2.950	3,464	0	0	0	0	0	0	0	0
95,700 - 97,699	\$96,766	1.746	2,050	0	0	0	0	0	0	0	0
97,700 - 99,699	\$98,698	2.589	3,040	0	0	0	0	0	0	0	0
99,700 - 101,699	\$100,644	2.228	2,616	0	0	0	0	0	0	0	0
101,700 - 103,699	\$102,670	1.746	2,050	0	0	0	0	0	0	0	0
103,700 - 105,699	\$104,718	2.167	2,544	0	0	(0)	(0)	0	(0)	(0)	0
105,700 - 107,699	\$106,632	2.529	2,970	0	0	0	0	0	0	0	0
107,700 - 109,699	\$108,627	1.385	1,626	0	0	0	0	0	0	0	0
109,700 - 111,699	\$110,789	1.445	1,697	0	0	0	0	0	0	0	0
111,700 - 113,699	\$112,619	1.866	2,191	0	0	0	0	0	0	0	0
113,700 - 115,699	\$114,639	1.626	1,909	0	0	0	0	0	0	0	0
\$115,700 - over	\$145,306	17.580	20,642	0	0	0	0	0	0	0	0
TOTAL		99.998	117,417			Total Taxable Earnings			0	0	0
						Employer Tax Rate			6.20%	13.10%	1.45%
						Quarterly Payment			\$0	\$0	\$0
						Total Tier I, Tier II, and Medicare Paid this Quarter					\$0

RCAF Unemployment Insurance Tax

	Unemployment Ins.			RRB	Factor	Avg. Ann.	Un. Ins.
	Tax	Earnings	Hourly	Sample	To Update	Taxable	Hourly
	Rate	Base	Earnings	Year	RRB Sample	Earnings	Rate
			\$39.599	(2017)			
2018 Avg.	3.76%	\$18,720	\$41.687		1.052729	\$17,600.87	\$0.347
3Q/19 reb.	3.38%	\$19,260	\$43.672		1.102856	\$18,120.16	\$0.321
4Q/19	3.38%	\$19,260	\$43.660		1.102553	\$18,119.99	\$0.321
1Q/20	0.99%	\$19,860	\$43.839		1.107073	\$18,666.82	\$0.097
2Q/20	0.99%	\$19,860	\$43.626		1.101694	\$18,663.57	\$0.097
3Q/20	0.99%	\$19,860	\$43.572		1.100331	\$18,662.74	\$0.097
			\$41.687	(2018)			
2019 Avg.	3.38%	\$19,260	\$43.000		1.031497	\$17,742.46	\$0.318
3Q/20 reb.	0.99%	\$19,860	\$43.596		1.045794	\$18,283.51	\$0.096
4Q/20	0.99%	\$19,860	\$43.596		1.045794	\$18,283.51	\$0.096
1Q/21	5.69%	\$20,520	\$43.620		1.046369	\$18,867.16	\$0.569
2Q/21	5.69%	\$20,520	\$43.397		1.041020	\$18,863.22	\$0.569
3Q/21	5.69%	\$20,520	\$43.326		1.039317	\$18,861.96	\$0.569
			\$43.000	(2019)			
2020 Avg.	0.99%	\$19,860	\$43.981		1.022814	\$18,813.21	\$0.100
3Q/21 reb.	5.69%	\$20,520	\$43.508		1.011814	\$19,413.47	\$0.593
4Q/21	5.69%	\$20,520	\$43.504		1.011721	\$19,413.42	\$0.593
1Q/22	11.23%	\$21,060	\$43.482		1.011209	\$19,907.93	\$1.200
2Q/22	11.23%	\$21,060	\$43.606		1.014093	\$19,909.70	\$1.200
3Q/22	11.23%	\$21,060	\$43.732		1.017023	\$19,911.50	\$1.201
		\$1,755	\$43.981	(2020)			
2021 Avg.	5.69%	\$20,520	\$43.459		0.988125	\$19,350.22	\$0.574
3Q/22 reb.	11.23%	\$21,060	\$43.725		0.994174	\$19,846.09	\$1.162
4Q/22	11.23%	\$21,060	\$43.758		0.994933	\$19,846.60	\$1.162
1Q/23	7.79%	\$22,740	\$56.875		1.293172	\$21,601.54	\$0.877
2Q/23	7.79%	\$22,740	\$56.781		1.291035	\$21,549.68	\$0.875
3Q/23					0.000000		\$0.000

Note: Average Annual Taxable Earnings is calculated from the RRB 1% sample data, by multiplying the average annual earnings in the file times the "Factor", and limiting the amount to the earnings base. Thus, the annual hourly earnings used for the calculation of the Factor is for the RRB sample year, and the Factor brings the earnings in the RRB 1% sample file to the current quarter's level.

The SAS System
TOTAL GROSS EARNINGS AND AVERAGE GROSS EARNINGS-2020 RRB File

The MEANS Procedure

Variable	N	Sum	Mean
ANUAL_US	2207	43791239.27	19841.98
QTRLY_US	2207	47560138.86	21549.68

The SAS System
Factors and Caps 2021 and 2023Q2

The MEANS Procedure

Variable	N	Sum	Mean
FactorA	2207	2180.79	0.9881250
FactorQ	2207	2849.31	1.2910350
Capa	2207	46479420.00	21060.00
Capq	2207	50187180.00	22740.00

PETROLEUM & OTHER LIQUIDS

[OVERVIEW](#)
[DATA](#)
[ANALYSIS & PROJECTIONS](#)
[GLOSSARY ›](#)
[FAQS ›](#)

Spot Prices

(Crude Oil in Dollars per Barrel, Products in Dollars per Gallon)

Period: Weekly ▼

Product by Area	Graph Clear	01/20/23	01/27/23	02/03/23	02/10/23	02/17/23	02/24/23	View History
Crude Oil								
WTI - Cushing, Oklahoma	☐	80.34	80.33	76.51	77.51	78.51	75.42	1986-2023
Brent - Europe	☐	84.57	85.90	81.87	83.30	84.17	81.77	1987-2023
Conventional Gasoline								
New York Harbor, Regular	☐	2.683	2.726	2.568	2.586	2.578	2.445	1986-2023
U.S. Gulf Coast, Regular	☐	2.651	2.685	2.503	2.502	2.502	2.275	1986-2023
RBOB Regular Gasoline								
Los Angeles	☐	2.590	2.658	2.836	2.848	2.986	2.902	2003-2023
No. 2 Heating Oil								
New York Harbor	☐	3.207	3.230	2.822	2.685	2.636	2.547	1986-2023
Ultra-Low-Sulfur No. 2 Diesel Fuel								
New York Harbor	☐	3.384	3.420	3.012	2.865	2.825	2.741	2006-2023
U.S. Gulf Coast	☐	3.286	3.371	2.949	2.785	2.763	2.706	2006-2023
Los Angeles	☐	3.301	3.411	3.050	2.981	2.986	2.868	1996-2023
Kerosene-Type Jet Fuel								
U.S. Gulf Coast	☐	3.661	3.830	3.072	2.811	2.702	2.776	1990-2023
Propane								
Mont Belvieu, Texas	☐	0.886	0.916	0.853	0.838	0.826	0.812	1992-2023

Click on the source key icon to learn how to download series into Excel, or to embed a chart or map on your website.

-- = No Data Reported; -- = Not Applicable; **NA** = Not Available; **W** = Withheld to avoid disclosure of individual company data.

Notes: Weekly, monthly, and annual prices are calculated by EIA from daily data by taking an unweighted average of the daily closing spot prices for a given product over the specified time period. See Definitions, Sources, and Notes link above for more information on this table.

Release Date: 3/1/2023

Next Release Date: 3/8/2023

PETROLEUM & OTHER LIQUIDS

[OVERVIEW](#)
[DATA](#)
[ANALYSIS & PROJECTIONS](#)
[GLOSSARY ›](#)
[FAQS ›](#)

Spot Prices

(Crude Oil in Dollars per Barrel, Products in Dollars per Gallon)

Period: ▼

Product by Area	Graph Clear	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	View History
Crude Oil								
WTI - Cushing, Oklahoma	☐	84.26	87.55	84.37	76.44	78.12	76.83	1986-2023
Brent - Europe	☐	89.76	93.33	91.42	80.92	82.50	82.61	1987-2023
Conventional Gasoline								
New York Harbor, Regular	☐	2.642	3.013	2.852	2.366	2.593	2.534	1986-2023
U.S. Gulf Coast, Regular	☐	2.578	2.837	2.456	2.157	2.534	2.426	1986-2023
RBOB Regular Gasoline								
Los Angeles	☐	3.884	3.227	2.854	2.249	2.571	2.896	2003-2023
No. 2 Heating Oil								
New York Harbor	☐	3.257	4.163	3.821	2.937	3.085	2.645	1986-2023
Ultra-Low-Sulfur No. 2 Diesel Fuel								
New York Harbor	☐	3.435	4.345	4.063	3.117	3.267	2.833	2006-2023
U.S. Gulf Coast	☐	3.357	3.963	3.344	2.975	3.207	2.770	2006-2023
Los Angeles	☐	3.531	3.858	3.348	2.942	3.184	2.947	1996-2023
Kerosene-Type Jet Fuel								
U.S. Gulf Coast	☐	3.262	3.715	3.160	2.897	3.542	2.780	1990-2023
Propane								
Mont Belvieu, Texas	☐	0.991	0.859	0.852	0.692	0.842	0.826	1992-2023

Click on the source key icon to learn how to download series into Excel, or to embed a chart or map on your website.

- = No Data Reported; -- = Not Applicable; **NA** = Not Available; **W** = Withheld to avoid disclosure of individual company data.

Notes: Weekly, monthly, and annual prices are calculated by EIA from daily data by taking an unweighted average of the daily closing spot prices for a given product over the specified time period. See Definitions, Sources, and Notes link above for more information on this table.

Release Date: 3/1/2023

Next Release Date: 3/8/2023

PETROLEUM & OTHER LIQUIDS

[OVERVIEW](#)
[DATA](#)
[ANALYSIS & PROJECTIONS](#)
[GLOSSARY ›](#)
[FAQS ›](#)

Spot Prices

(Crude Oil in Dollars per Barrel, Products in Dollars per Gallon)

Period: ▼

Product by Area	Graph Clear	02/20/23	02/21/23	02/22/23	02/23/23	02/24/23	02/27/23	View History
Crude Oil								
WTI - Cushing, Oklahoma	☐		76.28	73.95	75.26	76.19	75.57	1986-2023
Brent - Europe	☐	82.79	82.14	79.55	82.08	82.31	82.31	1987-2023
Conventional Gasoline								
New York Harbor, Regular	☐		2.495	2.413	2.449	2.423	2.444	1986-2023
U.S. Gulf Coast, Regular	☐		2.452	2.320	2.171	2.155	2.176	1986-2023
RBOB Regular Gasoline								
Los Angeles	☐		2.917	2.825	2.936	2.930	2.996	2003-2023
No. 2 Heating Oil								
New York Harbor	☐		2.585	2.495	2.514	2.595	2.617	1986-2023
Ultra-Low-Sulfur No. 2 Diesel Fuel								
New York Harbor	☐		2.775	2.685	2.704	2.800	2.807	2006-2023
U.S. Gulf Coast	☐		2.730	2.640	2.679	2.775	2.797	2006-2023
Los Angeles	☐		2.932	2.852	2.861	2.828	2.850	1996-2023
Kerosene-Type Jet Fuel								
U.S. Gulf Coast	☐		2.600	2.780	2.766	2.957	3.069	1990-2023
Propane								
Mont Belvieu, Texas	☐		0.810	0.808	0.810	0.820	0.830	1992-2023

Click on the source key icon to learn how to download series into Excel, or to embed a chart or map on your website.

-- = No Data Reported; -- = Not Applicable; **NA** = Not Available; **W** = Withheld to avoid disclosure of individual company data.

Notes: Weekly, monthly, and annual prices are calculated by EIA from daily data by taking an unweighted average of the daily closing spot prices for a given product over the specified time period. See Definitions, Sources, and Notes link above for more information on this table.

Release Date: 3/1/2023

Next Release Date: 3/8/2023

U.S.

Summary by Composition Category

	MS-2021		Prev. Idx	2023Q1		Calculation		Relative of Change
	MS Amount	Weight		Cur Idx		Prev. Idx	Cur Idx	
Forest Products	748,703,531	0.1729	399.31	416.28		69.04	71.97	
Metal Products	2,475,909,550	0.5717	211.27	203.52		120.78	116.35	
Misc. Products	1,106,315,926	0.2554	497.90	479.88		127.16	122.56	
Total	4,330,929,007	1.0000	316.98	310.88				0.9808
Total Linked			310.03	304.08				
'77 = 100 Link Fact.= 1.423			441.17	432.71				
'80 = 100 Link Fact.= 1.061			328.94	322.63				

As info only	Change
Forest Products	4.25%
Metal Products	-3.67%
Misc. Products	<u>-3.62%</u>
Total ('80=100)	-1.92%
Rounded 80 Indices	-1.9%
Rounded 77 Indices	-1.9%

Car Hire for RCAF - 2021 Weights

Car Hire Index used in RCAF's All-Inclusive Index (Forecast)

		1980	June 3Q/22	Sept. 4Q/22	Dec. 1Q/23	Mar. 2Q/23	June 3Q/23
RATE							
RR-OWNED TIME		31.00	66.00	66.00	65.00	65.00	--
RR-OWNED MILEAGE		4.69	6.60	6.50	6.50	6.50	--
PRIVATELY-OWNED CARS		25.47	54.50	55.30	55.33	58.50	--
AUTORACKS		47.00	84.28	85.28	86.55	86.53	--
INDEX							
RR-OWNED TIME		100.0	212.9	212.9	209.7	209.7	--
RR-OWNED MILEAGE		100.0	140.7	138.6	138.6	138.6	--
PRIVATELY-OWNED CARS		100.0	214.0	217.1	217.2	229.7	--
AUTORACKS		100.0	179.3	181.4	184.2	184.1	--
CAR HIRE INDEX (old wts)	2020	100.0	209.9	--	--	--	--
CAR HIRE INDEX (new wts)	2021	100.0	209.8	212.4	212.4	223.1	--
CAR HIRE INDEX (LINKED)		100.0	206.9	209.5	209.5	220.1	--

Note: The Car Hire Index for third quarter using *old weights* and *linked* should match that quarter's filing. The third quarter *new weights* version is used in the fourth quarter linked index calculation to ensure that the transition from old weights to new weights does not impact the linked index.

Note: Indexes are rounded, rates are full float.

Car Hire Data From CHARM

	2022 (first day of month)						2023 (first day of month)							
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Railroad Equipment														
No. of Cars (cars with rates only)														
Superstructures (Vehicular Flats)	11,290	11,241	11,227	11,170	11,145	11,076	11,053	11,032	11,017					
Rate (in cents)														
Superstructures #3 - Auto Rack	96.0	96.0	96.0	94.0	94.0	94.0	94.0	94.0	94.0					
All other #1 - Time	66.0	66.0	66.0	66.0	65.0	65.0	65.0	65.0	65.0					
All other #2 - Mileage	6.6	6.6	6.5	6.5	6.5	6.5	6.5	6.5	6.5					
Private Equipment														
No. of Cars (cars with rates only)														
Superstructures (Vehicular Flats)	52,889	52,862	52,821	52,861	52,954	53,099	53,316	53,476	53,748					
Covered Hoppers	432,908	433,070	433,230	433,142	433,214	433,335	433,615	433,263	433,595					
Tank Cars	424,667	424,855	424,771	424,425	424,653	424,680	424,753	424,542	424,644					
Others	291,898	292,890	294,113	294,736	295,326	296,149	297,062	297,489	298,245					
Rate (in cents)														
Superstructures #1 - Time	86.0	86.0	86.0	86.0	85.0	85.0	85.0	85.0	85.0					
Superstructures #2 - Mileage	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.6					
Superstructures #3 - Auto Rack	82.0	83.0	83.0	84.0	84.0	85.0	83.0	84.0	85.0					
Covered Hoppers #2 - Mileage	45.1	45.1	45.2	45.2	45.2	45.3	45.0	45.0	45.1					
Tank Cars #2 - Mileage	83.8	83.8	86.2	86.2	86.2	86.2	85.9	85.9	95.6					
Others #1 -Time	105.0	105.0	104.0	104.0	105.0	105.0	105.0	105.0	105.0					
Others #2 - Mileage	8.4	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5					
AVERAGE RATES														
Private Superstructures	21.61	21.61	21.61	21.61	21.38	21.38	21.38	21.48	21.58	0.00	0.00	0.00	0.00	0.00
Private Others	31.71	31.81	31.59	31.59	31.81	31.81	31.81	31.81	31.81	0.00	0.00	0.00	0.00	0.00
Private Total	54.48	54.49	55.30	55.28	55.31	55.33	55.09	55.08	58.50	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Autoracks	84.46	85.28	85.28	85.74	85.74	86.55	84.89	85.71	86.53	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Car Hire Weights	"Old Wts" "New Wts"	
	2020	2021
For RCAF & RCR		
RR-owned Time	0.052	0.065
RR-owned Mileage	0.039	0.038
Privately-owned Cars	0.874	0.857
Autoracks	0.035	0.040
----- Check sum	1.000	1.000

Weights for Equipment Rents		
(not used in Car Hire calculation)		
	2020	2021
Car Hire - U.S.	0.614	0.647
Lease Rentals - U.S.	0.386	0.353
----- Check sum	1.000	1.000

Notes:

The Car Hire Index and Lease Rentals Index are weighed together to calculate the Equipment Rents Index

CHARM is the Car Hire Accounting Rate Master

The 4 bold lines are used for the Car Hire Rate. Private Total uses a weighted average of the Covered Hoppers, Tank Cars, Combined Private Superstructures, and Combined Private Others rates.

[The purpose of this page is to provide more insight on the calculation of the **private total rate**.]

Beginning with 2012 data, only active cars are used.

CHARM Process - Car Hire Rate Report

Average Car Rental Rates for 03/23

Ownership	Car Group	Car Count	Time Rate (cents/hour)	Mileage Rate (\$/mile)	Auto Rack Rate (cents/hour)
Railroad	Vehicular Flats	11,017	109	0.057	94
Railroad	Number of Zero-Rated Vehicular Flats	171			
Railroad	All Other Cars	364,106	65	0.065	
Railroad	Number of Zero-Rated Other Cars	10,906			
Railroad	Total Railroad Equipment	386,200			
Private	Vehicular Flats	53,748	85	0.016	85
Private	Number of Zero-Rated Vehicular Flats	94			
Private	Covered Hoppers	433,595	0	0.451	
Private	Number of Zero-Rated Covered Hoppers	14,349			
Private	Tanks	424,644	0	0.956	
Private	Number of Zero-Rated Tanks	15,033			
Private	All Other Cars	298,245	105	0.085	
Private	Number of Zero-Rated Other Cars	21,580			
Private	Total Private Equipment	1,261,290			

This report excludes these car types: D (Locomotives), M (MoW, EOTs, etc.), U (Containers), Z (Trailers).

All TTX equipment (including ABOX, RBOX, GONX) is contained in the Private section of report.

Equipment can be zero rated due to owners supplying incorrect or insufficient information to the car accounting process.

Zero-rated equipment includes those with Umler Rate_Indicator of 6 and 0 (zero).

Zero-rated equipment is excluded from the averages shown in this report.

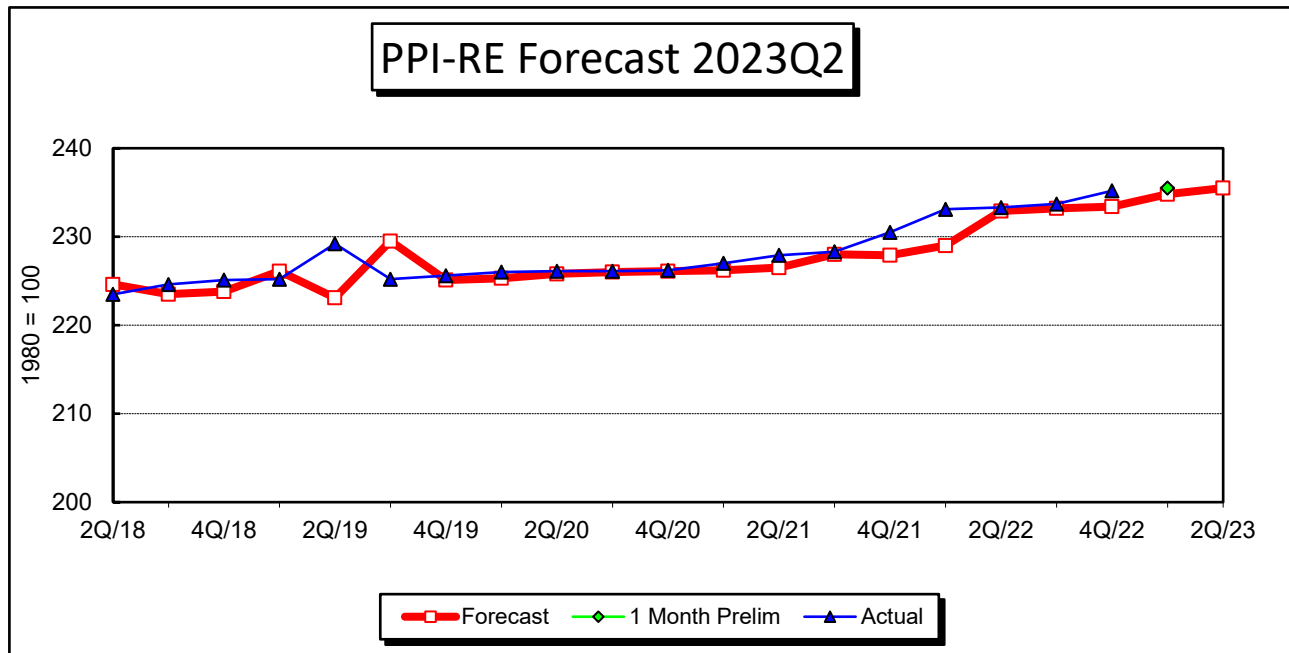
Equipment must be Active in Umler to be included in this report; Pre-registered and Inactive cars are excluded.

PPI-RE Forecast (for Depreciation Component)

	Forecast	Actual	1 Month Prelim
2Q/18	224.6	223.5	
3Q/18	223.5	224.6	
4Q/18	223.8	225.1	
1Q/19	226.1	225.2	
2Q/19	223.1	229.2	
3Q/19	229.5	225.2	
4Q/19	225.1	225.6	
1Q/20	225.3	226	
2Q/20	225.8	226.1	
3Q/20	226.0	226.1	
4Q/20	226.1	226.2	
1Q/21	226.2	227	
2Q/21	226.5	227.9	
3Q/21	228.0	228.3	
4Q/21	227.9	230.5	
1Q/22	229.0	233.1	
2Q/22	232.9	233.3	
3Q/22	233.2	233.7	
4Q/22	233.4	235.2	
1Q/23	234.8		235.5
2Q/23	235.5		

1980 Base

	PPI-RE Forecast		Percent Change			
	(82=100)	(80=100)	Yr Ago Actual	Latest Month Actual	2nd Prev Qtr Actual	Previous Forecast
2023Q2						
Low	209.6	231.9	-0.6%			
Midpoint	212.9	235.5	0.9%	0.0%	0.1%	0.3%
High	216.2	239.2	2.5%			



3/3/2023

PPI RAILROAD EQUIPMENT

Expert Analysis

Using rule-based logic I have narrowed down the choice to exponential smoothing or Box-Jenkins.
I will perform an out-of-sample test to select between these two approaches.

The cumulative MAD for Exponential smoothing was 1.08 and for Box-Jenkins was 1.04.
The rolling out-of-sample test used a maximum horizon of 12 and generated 78 forecasts for each method.

Based on the lower MAD, I will use Box-Jenkins.

Model Details

Expert selection

Box-Jenkins

ARIMA(0, 1, 0)

Within-Sample Statistics

Sample size	72	No. parameters	0
Mean	205.39	Std. deviation	3.35
R-square	0.94	Adj. R-square	0.94
Durbin-Watson	2.15	Ljung-Box(18)	20.5 P=0.69
Forecast error	0.83	BIC	0.83
MAPE	0.21%	SMAPE	0.21%
RMSE	0.83	MAD	0.42
MAD/Mean Ratio	0		

Actual Values for the Most Recent 6 Periods:

Actual

2022-Aug	211.7
2022-Sep	212.3
2022-Oct	212.4
2022-Nov	212.7
2022-Dec	212.8
2023-Jan	212.9

Forecasted Values

	2.5 Lower	Forecast	97.5 Upper
Date	2.5 Lower	Forecast	97.5 Upper
2023-Feb	211.266	212.900	214.534
2023-Mar	210.589	212.900	215.211
2023-Apr	210.069	212.900	215.731
2023-May	209.632	212.900	216.168
2023-Jun	209.246	212.900	216.554
QTR AVG	209.649	212.900	216.151



Databases, Tables & Calculators by Subject

Change Output Options:

From: 2022 ▼ To: 2023 ▼ 

☐ include graphs ☐ include annual averages

[More Formatting Options](#) 

Data extracted on: February 24, 2023 (11:34:56 AM)

PPI Commodity Data

Series Id: WPU144
Not Seasonally Adjusted
Series Title: PPI Commodity data for Transportation equipment-Railroad equipment, not seasonally adjusted
Group: Transportation equipment
Item: Railroad equipment
Base Date: 198200

Download:  [xlsx](#)

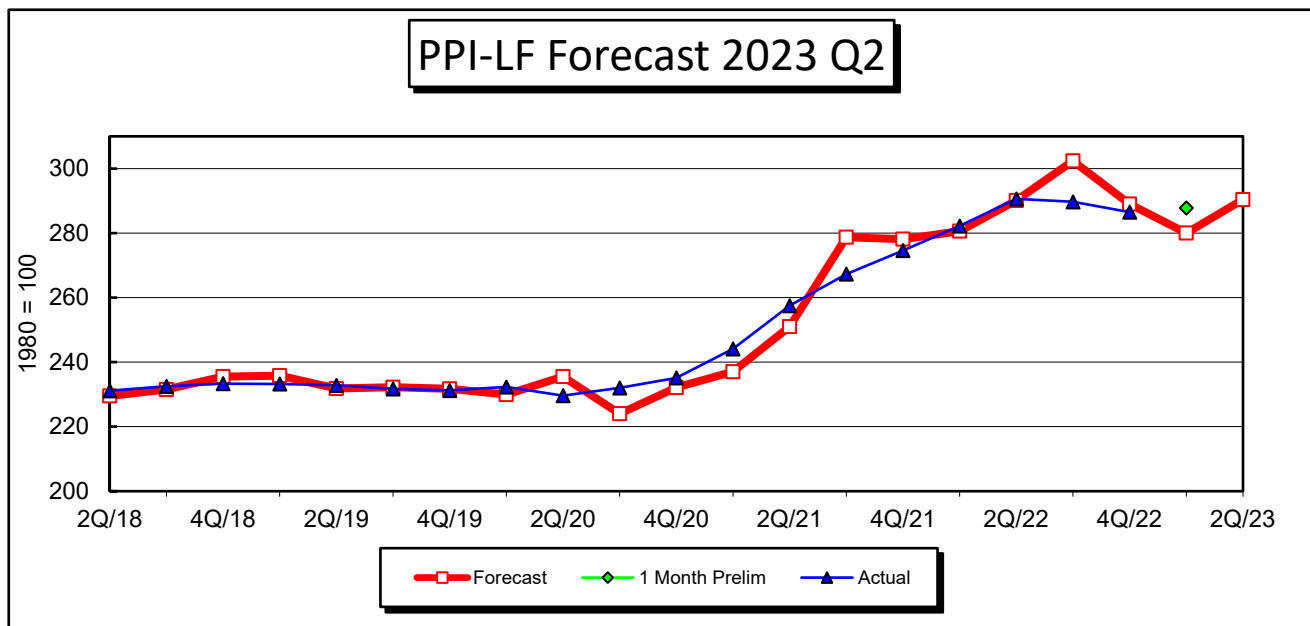
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	210.629	210.710	210.731	210.761	210.942	210.986	211.080	211.724	212.338	212.425(P)	212.669(P)	212.751(P)
2023	212.851(P)											
P : Preliminary. All indexes are subject to monthly revisions up to four months after original publication.												

PPI-LF Forecast (for Other and Lease Rentals Components)

	Forecast	Actual	1 Month Prelim
2Q/18	229.5	231.1	
3Q/18	231.5	232.5	
4Q/18	235.5	233.3	
1Q/19	235.8	233.2	
2Q/19	231.8	232.8	
3Q/19	232.2	231.7	
4Q/19	231.7	231.2	
1Q/20	229.9	232.3	
2Q/20	235.5	229.6	
3Q/20	224.0	232.0	
4Q/20	232.1	235.1	
1Q/21	237.0	244.1	
2Q/21	251.0	257.5	
3Q/21	278.7	267.3	
4Q/21	278.1	274.6	
1Q/22	280.6	282.2	
2Q/22	290.1	290.6	
3Q/22	302.4	289.7	
4Q/22	289.0	286.5	
1Q/23	280.0		287.8
2Q/23	290.4		

1980 Base

	PPI-LF Forecast		Percent Change			
	(82=100)	(80=100)	Yr Ago Actual	Latest Month Actual	2nd Prev Qtr Actual	Previous Forecast
2023Q1						
Low	253.0	283.7	-2.4%			
Midpoint	259.1	290.4	-0.1%	0.9%	1.4%	3.7%
High	265.1	297.2	2.3%			



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

Expert Analysis

Using rule-based logic I have narrowed down the choice to exponential smoothing or Box-Jenkins.
I will perform an out-of-sample test to select between these two approaches.

The cumulative MAD for Exponential smoothing was 8.36 and for Box-Jenkins was 10.50.
The rolling out-of-sample test used a maximum horizon of 12 and generated 78 forecasts for each method.

Based on the lower MAD, I will use Exponential Smoothing.

Model Details

Expert selection

Multiplicative Winters: Linear trend, Multiplicative seasonality

LM(0.940, 0.996, 0.999)

Confidence limits proportional to indexes and level

Component	Smoothing Wgt		Final Value
Level	0.94		256.3
Trend	0.9962		0.7504
Seasonal	0.9989		
Seasonal Indexes			
Jan - Mar	1.002	0.999	1
Apr - Jun	0.9992	0.9993	0.9993
Jul - Sep	0.9995	1	0.9998
Oct - Dec	1.001	1.001	0.9996

Within-Sample Statistics

Sample size	72	No. parameters	3
Mean	219.1	Std. deviation	20.97
R-square	1	Adj. R-square	1
Durbin-Watson	1.71	Ljung-Box(18)	22.6 P=0.79
Forecast error	0.76	BIC	0.81
MAPE	0.0024	SMAPE	0.0024
RMSE	0.74	MAD	0.55
MAD/Mean Ratio	0		

Actual Values for the Most Recent 6 Periods:

Actual

2022-Aug	258.7
2022-Sep	257.1
2022-Oct	255.8
2022-Nov	255.7
2022-Dec	255.4
2023-Jan	256.7

Forecasted Values

Date	2.5 Lower	Forecast	97.5 Upper
2023-Feb	254.960	256.753	258.547
2023-Mar	254.007	257.823	261.638
2023-Apr	253.207	258.297	263.387
2023-May	252.989	259.092	265.195
2023-Jun	252.861	259.831	266.802
QTR AVG	253.019	259.073	265.128



Databases, Tables & Calculators by Subject

Change Output Options:

From: 2022 ▼ To: 2023 ▼ 

☐ include graphs ☐ include annual averages

[More Formatting Options](#) 

Data extracted on: February 27, 2023 (2:53:43 PM)

PPI Commodity Data

Series Id: WPU03T15M05
Not Seasonally Adjusted
Series Title: PPI Commodity data for Industrial commodities less fuels, not seasonally adjusted
Group: Industrial Commodities less fuels
Item: Industrial commodities less fuels
Base Date: 198200

Download:  [xlsx](#)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	249.774	251.330	254.556	257.425	260.128	260.449	259.519	258.706	257.140	255.796(P)	255.711(P)	255.361(P)
2023	256.678(P)											

P : Preliminary. All indexes are subject to monthly revisions up to four months after original publication.

U.S. BUREAU OF LABOR STATISTICS Postal Square Building 2 Massachusetts Avenue NE Washington, DC 20212-0001

Telephone:1-202-691-5200_ Telecommunications Relay Service:7-1-1_ [www.bls.gov](#) [Contact Us](#)

Forecast Error Calculation

	2021 Weight	Fourth Quarter 2022		Difference		Notes
		2022Q4 Forecast	2022Q4 Actual	Pt.	Pct.	
Labor	31.4%	479.6	479.6	0.0	0%	* actual=forecast
Fuel	14.2%	475.2	480.7	5.5	1%	from 1st month of quarter
M&S	4.5%	335.3	335.3	0.0	0%	* actual=forecast
Equip Rents	4.9%	253.8	249.1	-4.7	-2%	
Depreciation	17.5%	233.3	235.2	1.9	1%	
Interest	2.4%	50.1	50.1	0.0	0%	
Other	25.1%	290.6	286.5	-4.1	-1%	
Weighted Avg	100.0%					
1980 = 100		360.6	360.4			calculated
1980 = 100 (linked)		331.3	337.7			calculated
4Q22 = 100	3.423	96.8	98.7			calculated
4Q17 = 100	2.645	125.3	127.7			calculated
4Q12 = 100	2.976	111.3	113.5			calculated
4Q07 = 100	2.459	134.7	137.3			calculated
4Q02 = 100	1.921	172.5	175.8			calculated
4Q97 = 100	1.732	191.3	195.0			calculated
Forecast Error		1.9				calculated 0.019 = RCAF adj.
Prior Quarter						
1980 = 100		357.8	349.7 **			Re-calculated using new weights
1980 = 100 (linked)		328.7	327.7			
4Q17 = 100		124.3	123.9			calculated
4Q12 = 100		110.5	110.1			calculated
4Q07 = 100		133.7	133.3			calculated
4Q02 = 100		171.1	170.6			calculated
4Q97 = 100		189.8	189.2			calculated
Equipment Rents						
Car Hire	68.1%	209.5	209.6			from Equipment Rents/CHARM
Lease Rentals	31.9%	290.6	286.5			(equals PPI-LF from above)
Weighted Average		235.4	234.1			calculated
Linked		253.6	249.1			calculated
Prior Quarter						
Weighted Average		237.4	236.3 **			Re-calculated using new weights
Linked		255.8	251.4			
Sum of Weights	ok					** if fourth quarter, only weighted avg for prior needs to use new weights, linked is ok (found in 3Q index calc)
Sum of ER Wt.	ok					

Factors to change from
1982=100 to 1980 = 100

PPI-RE	212.43	212.67	212.75	0.9040
* actual=forecast				
PPI-LF	255.80	255.71	255.36	0.8920

RCAF Fuel (Actual All-Inclusive Index)

January 2023

Monthly Report

	January 2023 Price (cents) (1)	1/1/81 Price (cents) (2)	1/91 New Method Linking Factors (3)	January 2023 Index 1/1/81=100 (4)	Linking Factor 1980=100 (5)	January 2023 1980=100 Current Index (6)
U.S.	318.73	89.34	99.415	354.67	1.096	388.72

(4) = (1) / (2) x (3)

(6) = (4) x (5)

Final Actual All-inclusive Index Used for RCAF's Forecast Error Adjustment

	January 2023 1980=100 Current Index	Adjustment Factor	January 2023 1980=100 Linked Index
U.S.	388.72	1.00192	389.47 ←

January	=	Q1
April	=	Q2
July	=	Q3
October	=	Q4

RCAF - Depreciation

Series ID : wpu144

Not Seasonally Adjusted

Group : Transportation equipment

Item : Railroad equipment

		Forecast Year 2023			
		As reported at end of month 82=100			
		Nov.	Feb.	May	Aug.
For Forecast	→	23Q1	23Q2	23Q3	23Q4
For Actual	→	22Q3	22Q4	22Q1	22Q2
January	2022	210.6	210.6		
February	2022	210.7	210.7		
March	2022	210.7	210.7		
April	2022	210.8	210.8		
May	2022	210.9	210.9		
June	2022	211.0	211.0		
July	2022	211.0	211.1		
August	2022	211.7	211.7		
September	2022	211.2	212.3		
October	2022	211.3	212.4		
November	2022		212.7		
December	2022		212.8		
January	2023		212.9		
February	2023				
March	2023				
April	2023				
May	2023				
June	2023				
July	2023				
Actual Qtr.		211.3	212.6	NA	NA

1980=100

Actual Qtr.	233.7	235.2	NA	NA
First Mo. next qtr.	233.7	235.5	NA	NA

0.904 =1980

RCAF - Other

Series ID : wpu03t15m05

Not Seasonally Adjusted

Group : Industrial Commodities less fuels

Item : Industrial commodities less fuels

		Forecast Year 2023			
		As reported at end of month 82=100			
		Nov.	Feb.	May	Aug.
For Forecast	→	23Q1	23Q2	23Q3	23Q4
For Actual	→	22Q3	22Q4	23Q1	23Q2
January	2022	249.8	249.8	249.8	249.8
February	2022	251.3	251.3	251.3	251.3
March	2022	254.6	254.6	254.6	254.6
April	2022	257.4	257.4	257.4	257.4
May	2022	260.1	260.1	260.1	260.1
June	2022	260.4	260.4	260.4	260.4
July	2022	259.5	259.5		
August	2022	258.6	258.7		
September	2022	257.2	257.1		
October	2022	255.9	255.8		
November	2022		255.7		
December	2022		255.4		
January	2023		256.7		
February	2023				
March	2023				
April	2023				
May	2023				
June	2023				
July	2023				
Actual Qtr.		258.4	255.6	NA	NA
1980=100					
Actual Qtr.		289.7	286.5	NA	NA
First Mo. next qtr.		286.9	287.8	NA	NA

0.892 =1980