



Rail Fleet Services Monthly Report December 2016

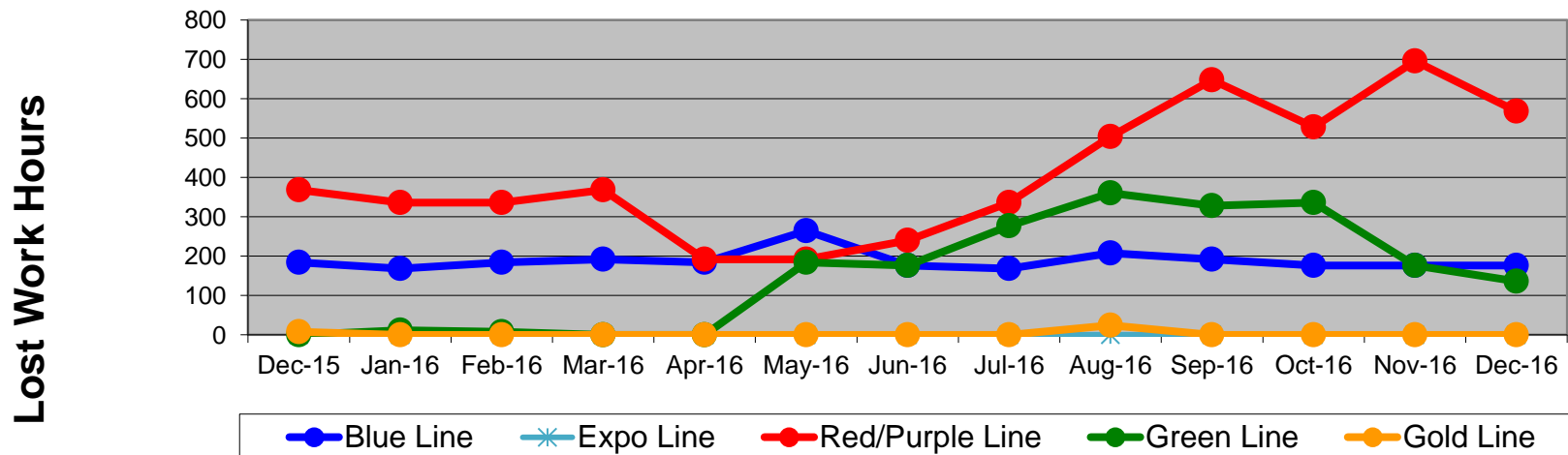
Table of Contents

•	Safety & Cleanliness		
	- Industrial Injuries	Page	3
	- Rail Vehicle Accidents & Major Incidents	Page	4
	- Car Cleanliness	Page	5
•	Customer Service		
	- Service Delivery – AM/PM Pull-Outs	Page	6
	- Vehicle Utilization – Red Line	Page	7
	- Vehicle Utilization – Blue Line & Expo Line	Page	8
	- Vehicle Utilization – Green Line & Gold Line	Page	9
	- All Train Delay Incidents	Page	10
	- Mean Miles Between Failures (Major)	Page	11
	- Mileage Between Data Range (by month)	Page	12
•	Business Processes		
	- Top Incident Categories	Page	13
	- Major Incidents	Page	14
	- Preventive Maintenance Compliance	Page	15
	- RFS Leader Wrench Turning	Page	16
•	Finance		
	- Vandalism & Graffiti Costs	Page	17
	- Vandalism & Graffiti Pictures	Page	18
	- Labor & Material Costs	Page	19
	- Cost per mile	Page	20
	- Absence vs. Overtime	Page	21
•	Growth		
	- RFS Instruction Department Activities	Page	22-23

Industrial Injuries – Lost Work Hours December 2015-2016

	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	13-Month Period
Blue Line	184	168	184	192	184	264	176	168	208	192	176	176	176	2,448
Expo Line	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Red/Purple Line	368	336	336	368	192	192	240	336	504	648	528	696	568	5,312
Green Line	0	12	8	0	0	184	176	277	360	328	336	176	136	1,993
Gold Line	8	0	0	0	0	0	0	0	24	0	0	0	0	32
Totals	560	516	528	560	376	640	592	781	1,096	1,168	1,040	1,048	880	9,785

Industrial Injuries (lost work hours)



Rail Vehicle Accidents & Major Incidents

December 2015-2016

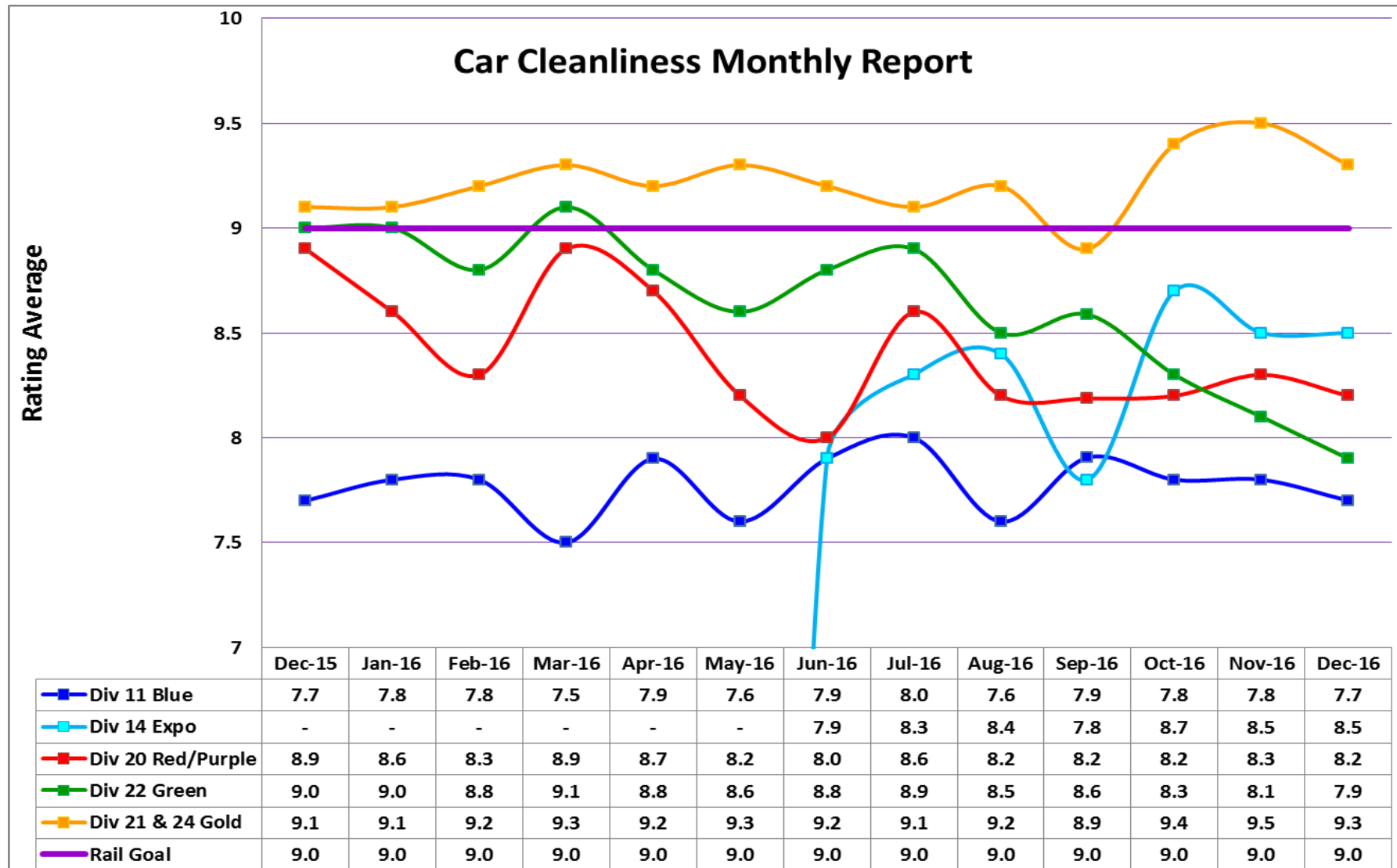
Repair Costs	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	13-Month Period
Blue Line	\$17,160	\$4,570	\$7,379	\$2,037	\$1,232	\$513	\$0	\$0	\$3,211	\$665	\$28,089	\$0	\$2,352	\$67,208
Expo Line	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$576	\$0	\$12,921	\$9,468	\$0	\$381	\$23,346
Red/Purple Line	\$0	\$0	\$0	\$0	\$1,284	\$0	\$1,932	\$840	\$552	\$0	\$0	\$0	\$0	\$4,608
Green Line	\$23	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$51,535	\$0	\$0	\$0	\$0	\$51,558
Gold Line	\$1,547	\$0	\$53	\$1,487	\$4,646	\$0	\$19,451	\$564	\$0	\$0	\$5,694	\$0	\$0	\$33,442
Totals	\$18,730	\$4,570	\$7,432	\$3,524	\$7,162	\$513	\$21,383	\$1,980	\$55,298	\$13,586	\$43,251	\$0	\$2,733	\$180,162

Rail Vehicle Accident Costs - December 2016				
Date	Incident #	Problem Code	Incident Description	Repair Cost
Metro Blue Line				
12/1/16	2807038	10-73	A 10-73 was reported at Transit Mall, Track 2, SB.	\$ 494
12/2/16	2807772	10-71	A 10-71 was reported at 55th Grade Crossing, Track 2, SB.	\$ 469
12/19/16	2814327	10-73	A 10-73 was reported (Pedestrian on Bike) at Nadeu Crossing, Track 2, SB.	\$ 513
12/29/16	2817538	10-72	A 10-72 was reported at Alondra Grade Crossing, Track 2, SB.	\$ 876
Metro Blue Line Total				\$ 2,352
Metro Expo Line				
12/21/16	2815126	10-73	A 10-73 was reported at Flower & 23rd St., Track 4, SB.	\$ 381
Metro Expo Line Total				\$ 381
Grand Total				\$ 2,733
10-71 = Train vs. Object/ 10-72 = Train vs. Pedestrian/ 10-73 = Train vs. Vehicle/ 10-74 = Train vs. MTA Vehicle/ 10-75 = Derailment				

Note: Repair costs are only the expenses captured during the time period of the report. Actual costs may be significantly higher, if repairs are spread out over several months.

Rail Vehicle – Car Cleanliness

December 2015-2016



Service Delivery December 2016

December 2016 - Service Delivery

Blue Line Fleet Size: 65

Pull Out	Vehicles Required	Average Available	% Up (Down)
Weekday:	57	58	102%
Weekend:	26	45	173%

Monthly Mileage: 388,754

Expo Line Fleet Size: 63

Pull Out	Vehicles Required	Average Available	% Up (Down)
Weekday:	47	48	102%
Weekend:	30	41	137%

Monthly Mileage: 364,647

Red/Purple Line Fleet Size: 104

Pull Out	Vehicles Required	Average Available	% Up (Down)
Weekday:	64	80	125%
Weekend:	40	68	170%

Monthly Mileage: 605,740

Green Line Fleet Size: 29

Pull Out	Vehicles Required	Average Available	% Up (Down)
Weekday:	22	22	100%
Weekend:	14	17	121%

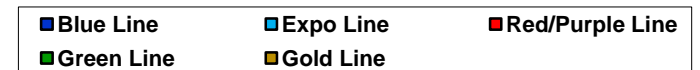
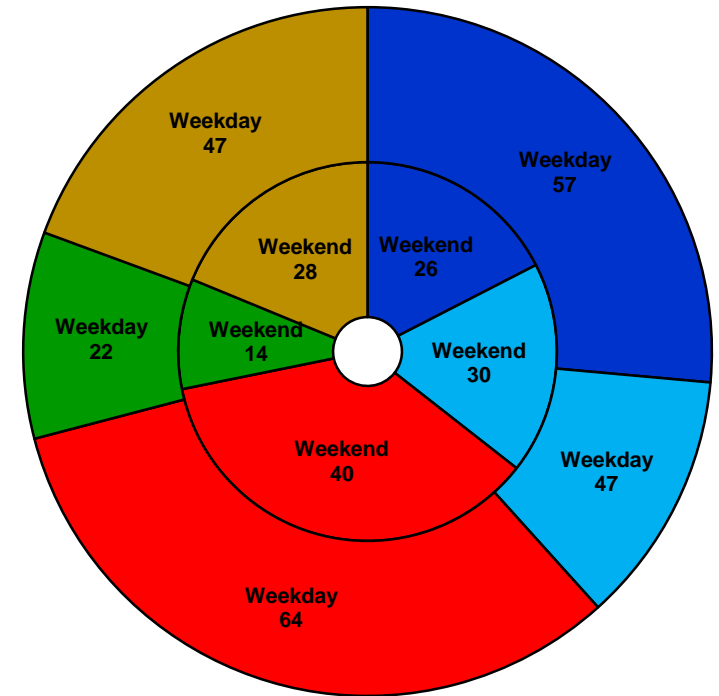
Monthly Mileage: 235,905

Gold Line Fleet Size: 62

Pull Out	Vehicles Required	Average Available	% Up (Down)
Weekday (Div 21):	10	10	100%
Weekday (Div 24):	37	40	108%
Weekend (Div 24):	28	40	143%

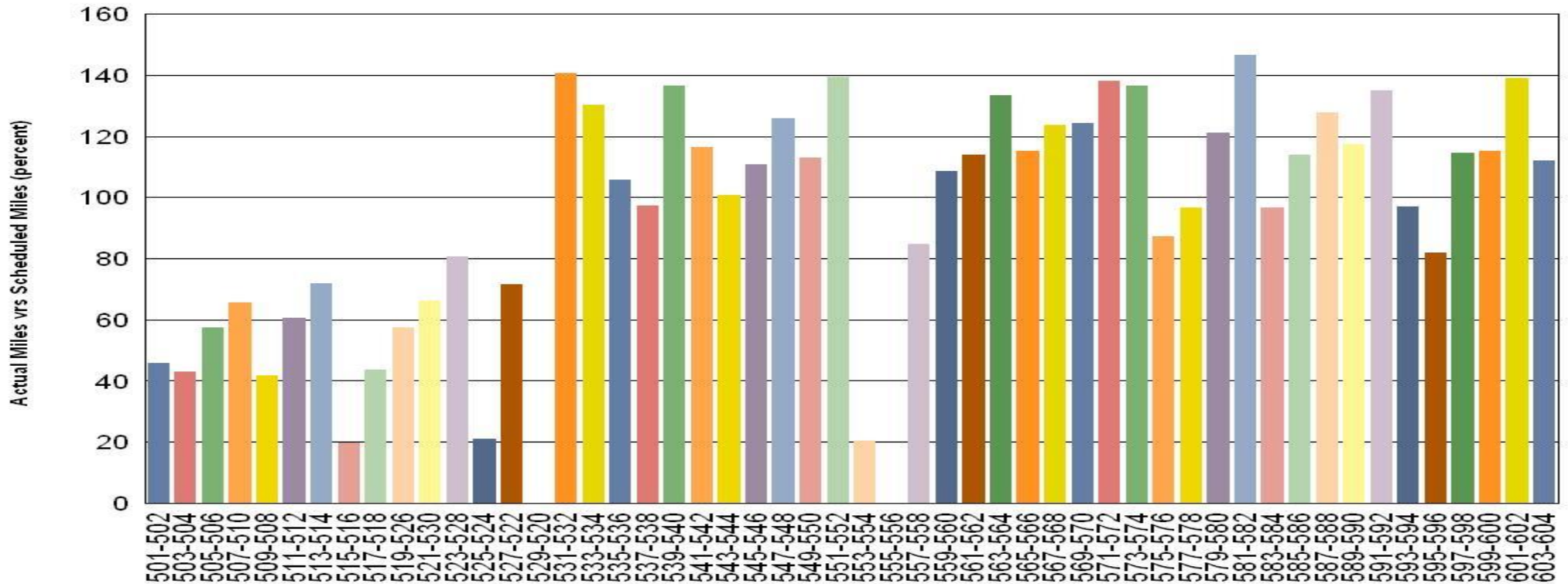
***Monthly Mileage: 486,164**

* Gold Line monthly mileage includes Division 21 and 24.



Vehicle Utilization December 2016

Metro Red/Purple Line (104 Cars)



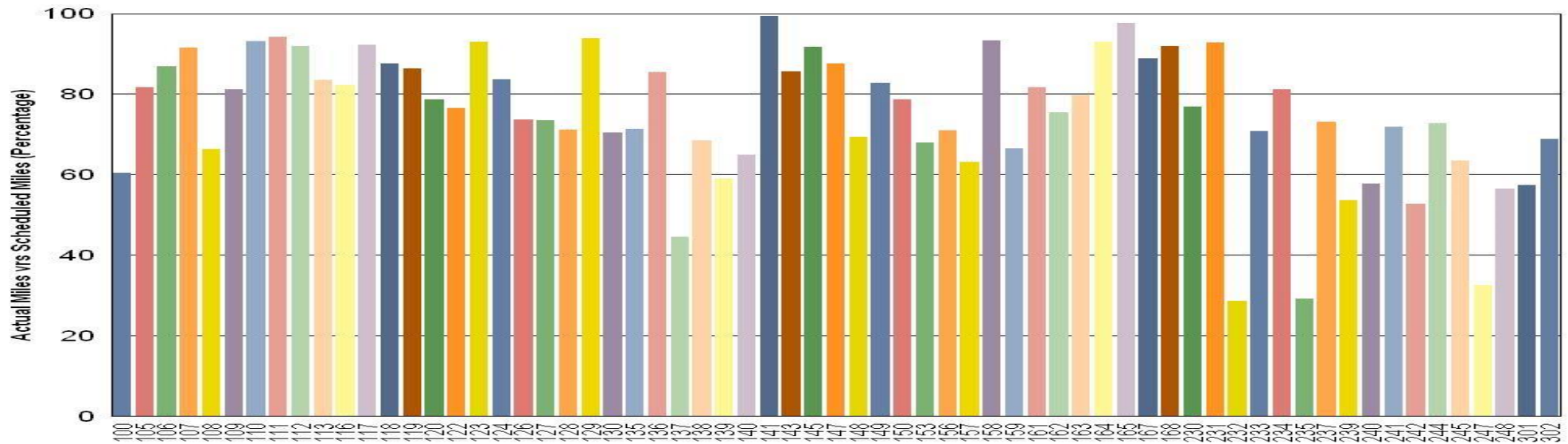
Red/Purple Line:

The following cars were out of service due to:

- Car # 515-516 – CB1 Trip - Propulsion Fault
- Car # 525-524 – AC Blower Motor Prototype Installation
- Car # 529-520 – Waiting for DC Traction Motors
- Car # 553-554 – Propulsion Fault
- Car # 555-556 – Campaign Floor Replacement

Vehicle Utilization December 2016

Metro Blue Line (65 Cars)



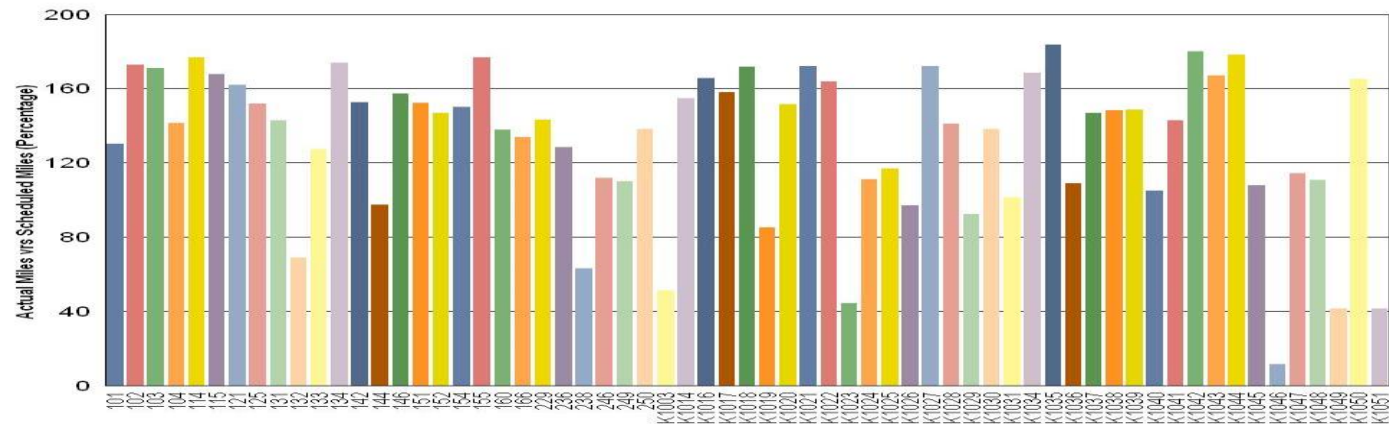
Blue Line: The following cars were out of service due to:

Car # 232 – Air Hose Campaign / PM Inspection

Car # 235 – Exterior Paint/Body Campaign

Car # 247 – Information not available

Metro Expo Line (63 Cars)



Expo Line: The following car was out of service due to:

Car # K1046 – New Accepted 12/21/2016



Note: Percentage includes an average 4% mileage deduction for yard mileage and vehicle testing.

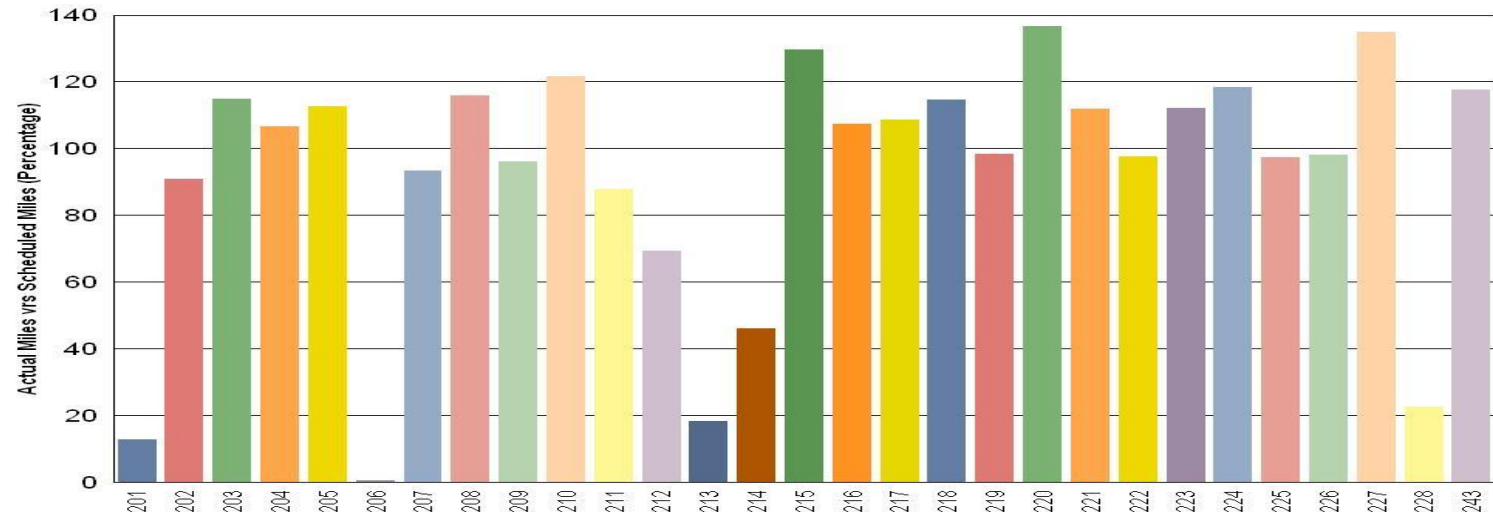
Vehicle Utilization December 2016

Metro Green Line (29 Cars)

Green Line:

The following cars were out of service due to:

- Car # 201** – External Paint Body
- Car # 206** – Engineering Hold (EMI)
- Car # 213** – Propulsion Faults
- Car # 228** – Propulsion Faults

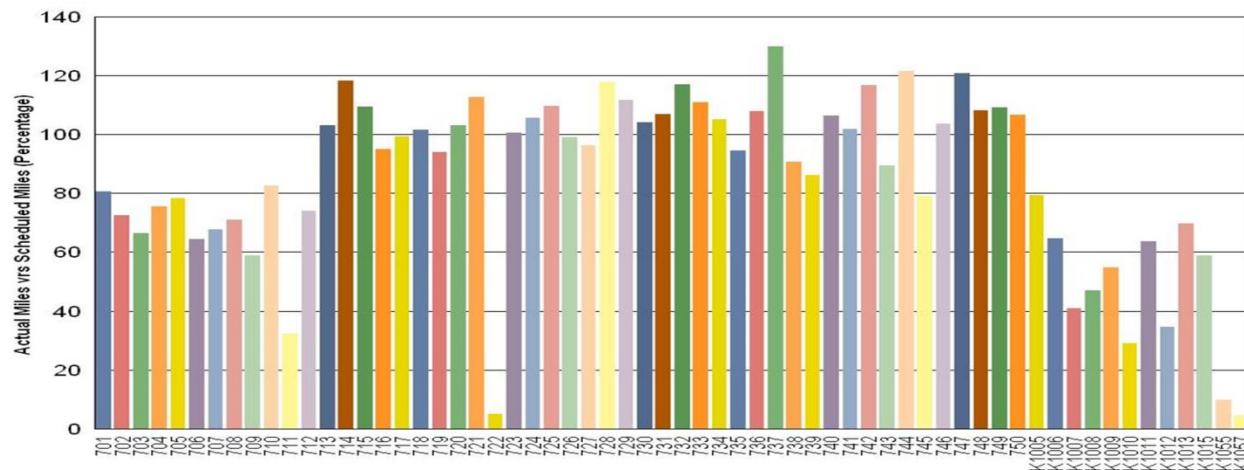


Metro Gold Line (62 Cars)

Gold Line:

The following cars were out of service due to:

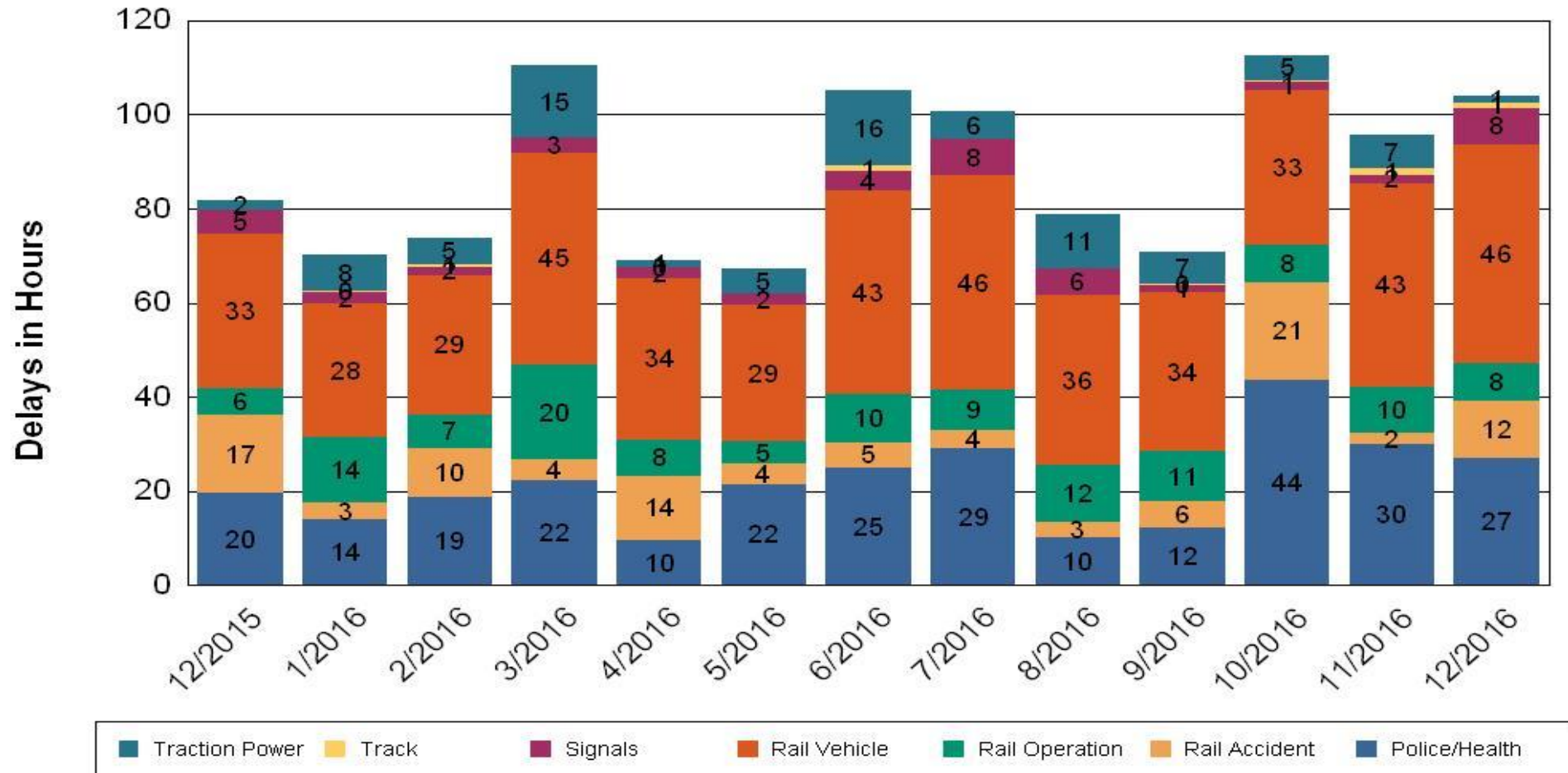
- Car # 711** – Water in connector causing Door Loop fault
- Car # 722** – Burnt HVAC connector
- Car # K1010** – Warranty repair (Propulsion fault)
- Car # K1012** – Warranty repair (Prop fault & Coupler Electrical head no extending)
- Car # K1055** – New Accepted at the end of December
- Car # K1057** – New Accepted at the end of December



All Train Delays (Hours) December 2015-2016

All Train Delays

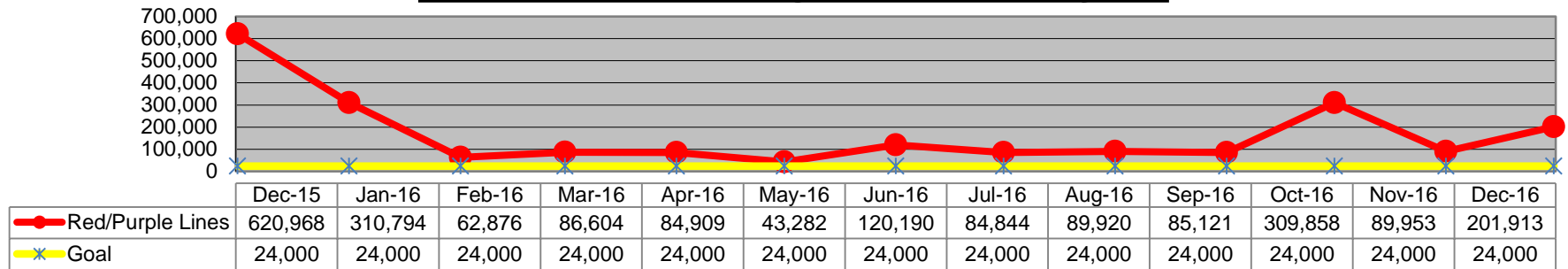
Totals Include the delay to all trains involved (not just the primary incident)



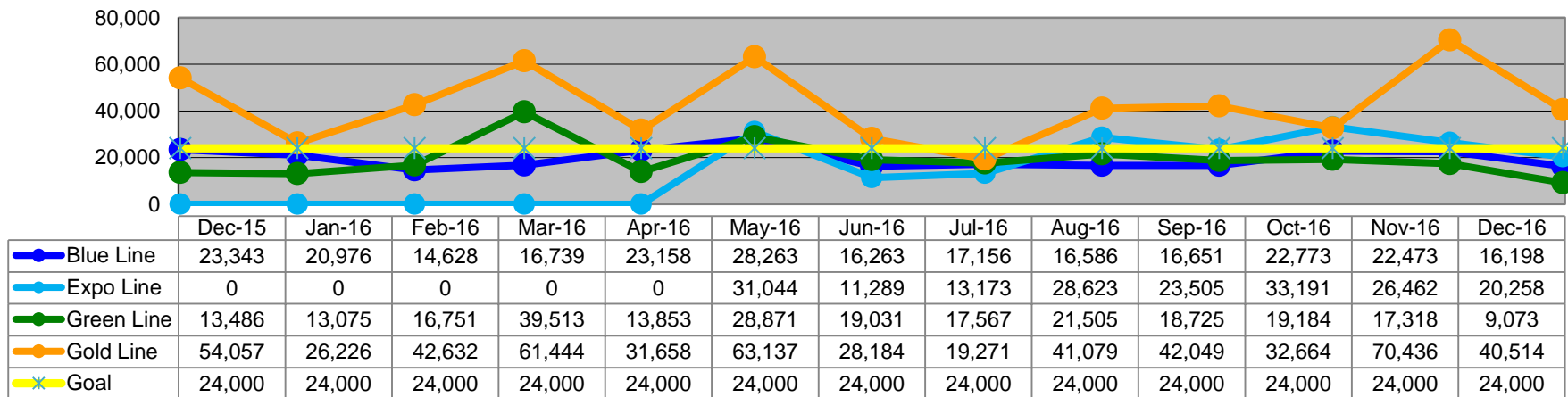
Mean Miles Between Major Failures (MMBF)

December 2015-2016

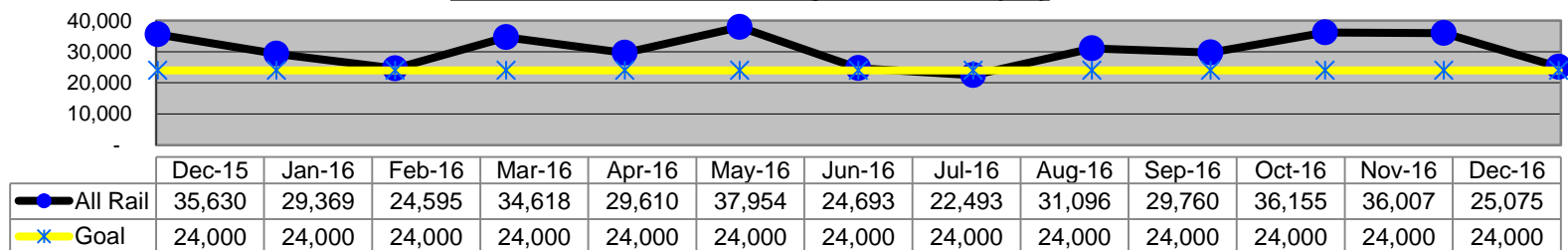
Mean Miles Between Major Failures - Heavy Rail



Mean Miles Between Major Failures - Light Rail



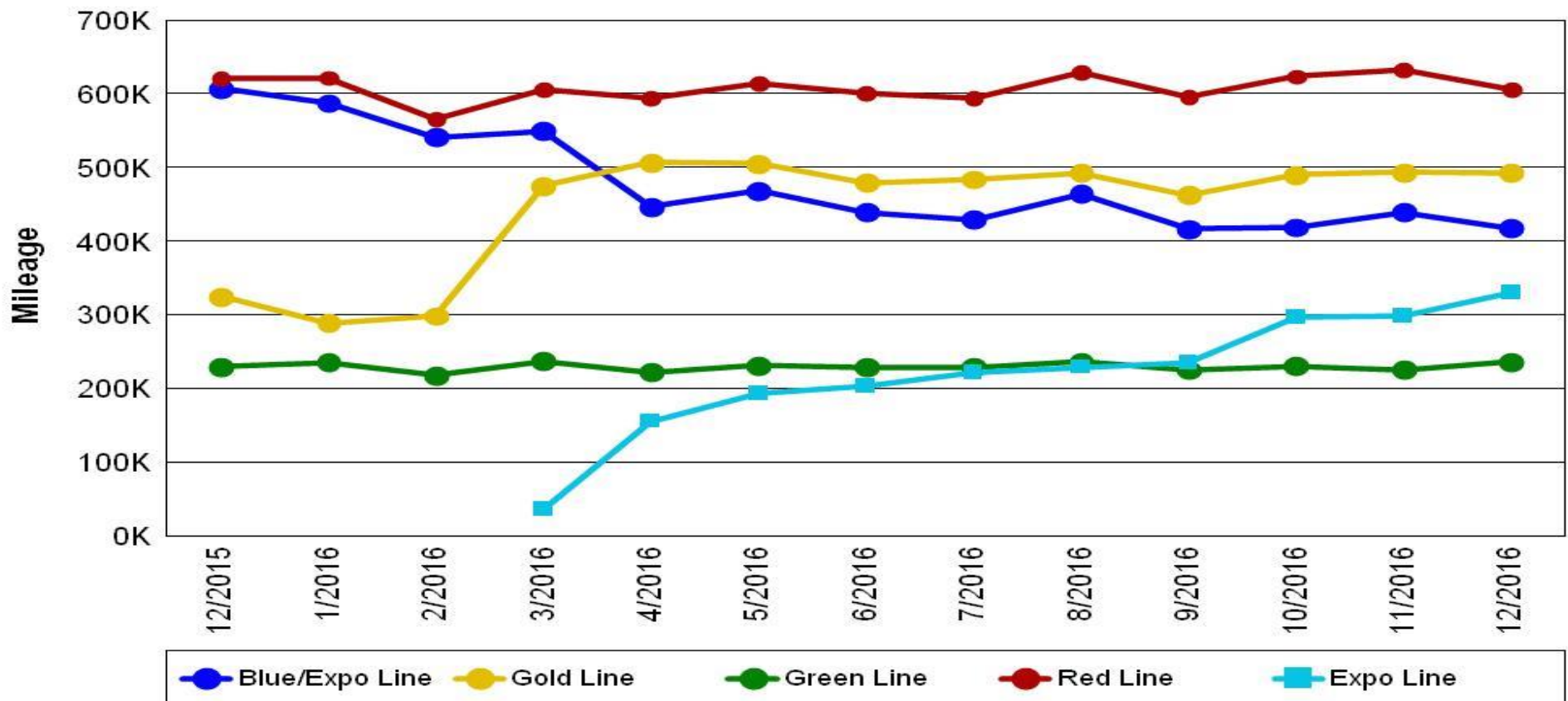
Mean Miles Between Major Failures (all)



Mileage Between Data Range (by month)

December 2015-2016

Rail Division Monthly Mileage



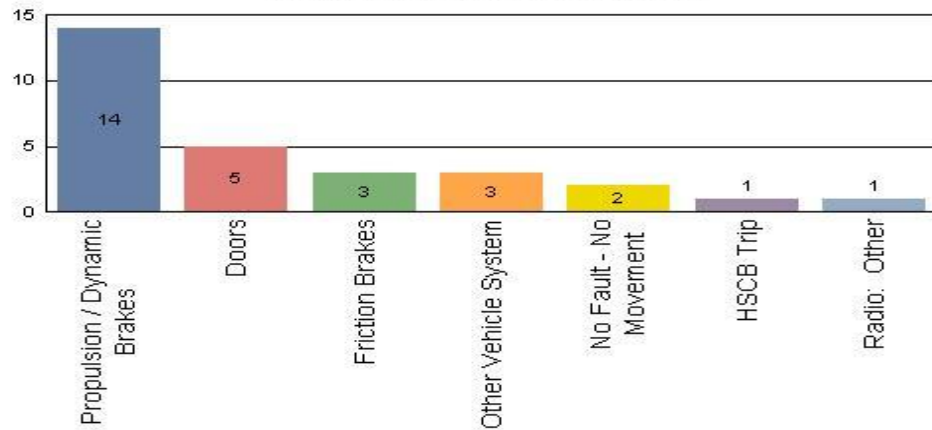
Notes:

- ♦ Gold Line increase in mileage is due to the open of the Foothill extension, which includes stations further apart and faster average running speeds.
- ♦ With the opening of Division 14 in Santa Monica, the Expo Line mileage is now being reported separately from the Blue Line.

Top Incident Categories December 2016

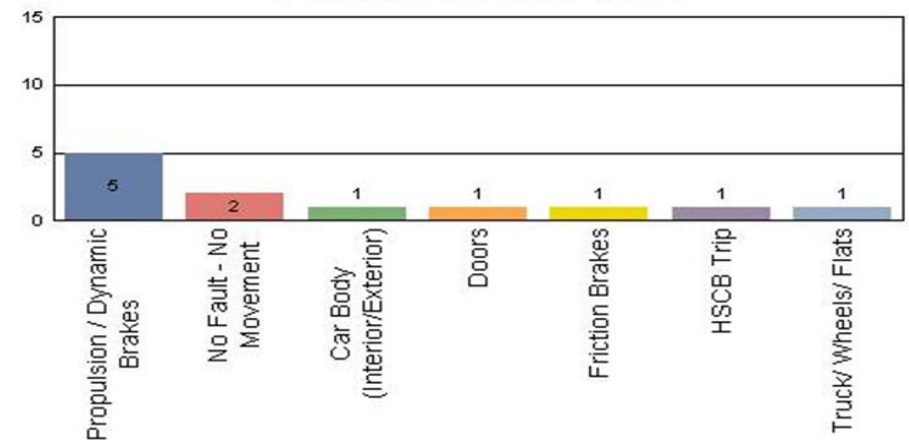
Metro Blue Line (Div 11)

Top Incident Categories



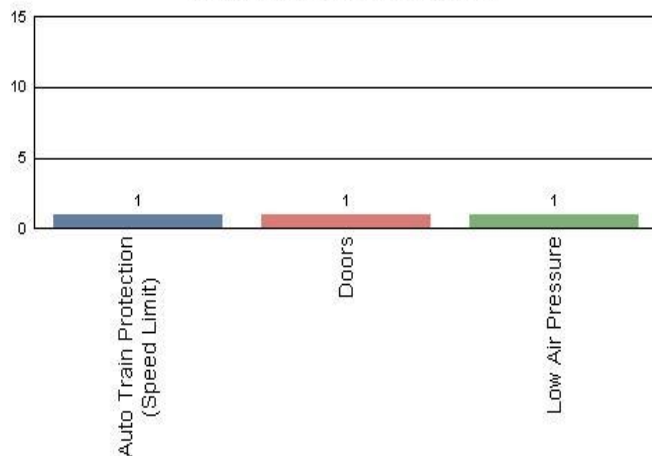
Metro Expo Line (Div 14)

Top Incident Categories



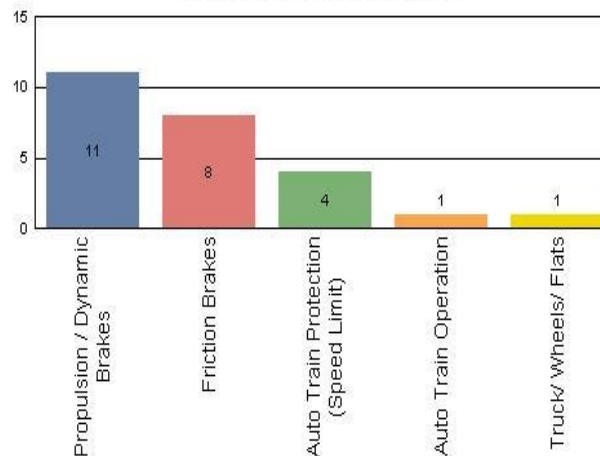
Metro Red/Purple Line (Div 20)

Top Incident Categories



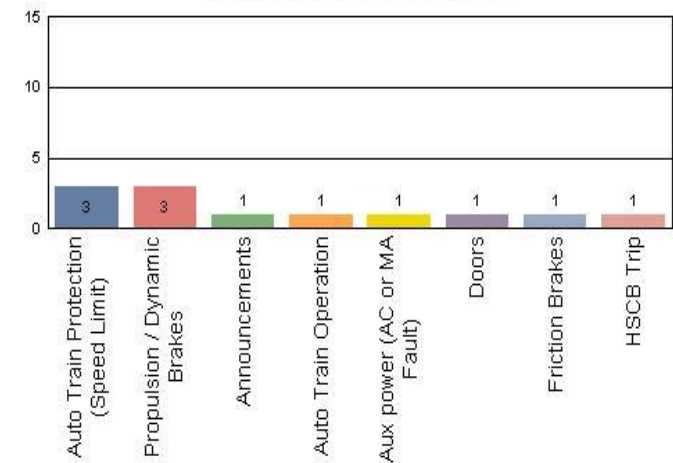
Metro Green Line (Div 22)

Top Incident Categories



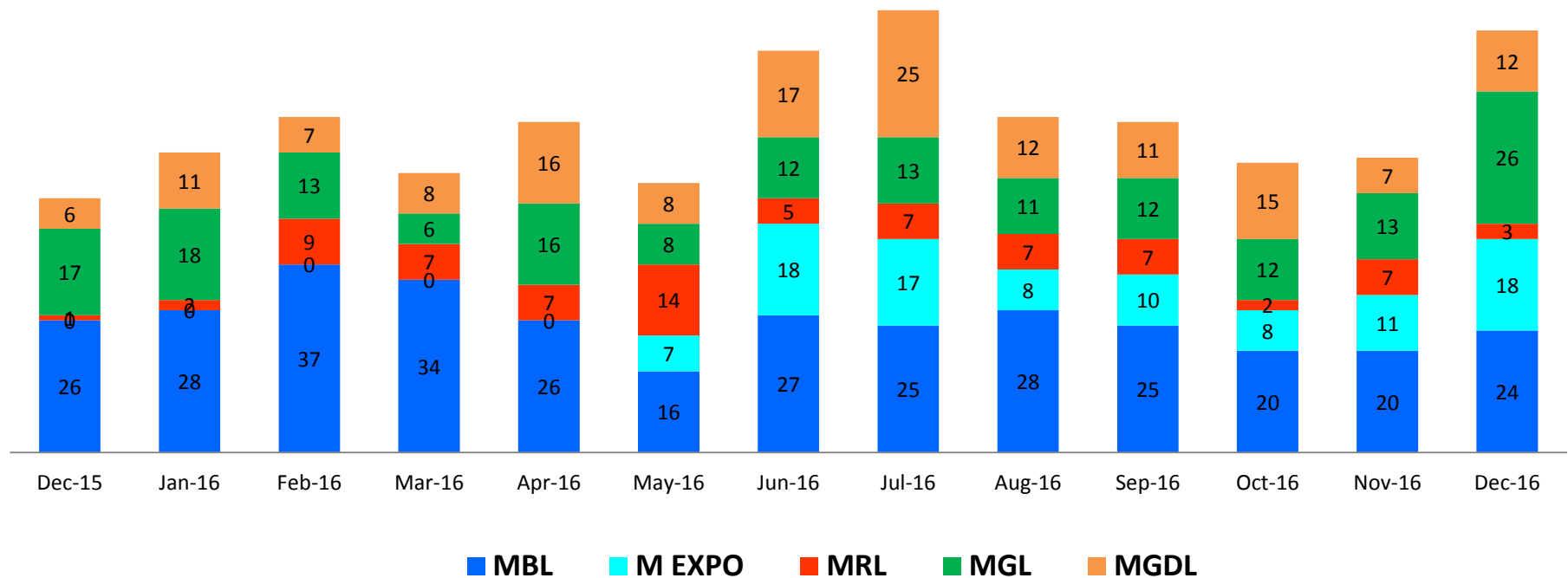
Metro Gold Line (Div 21 & Div 24)

Top Incident Categories



Major Incidents December 2015-2016

Numbers of Major System Failures (by Line)

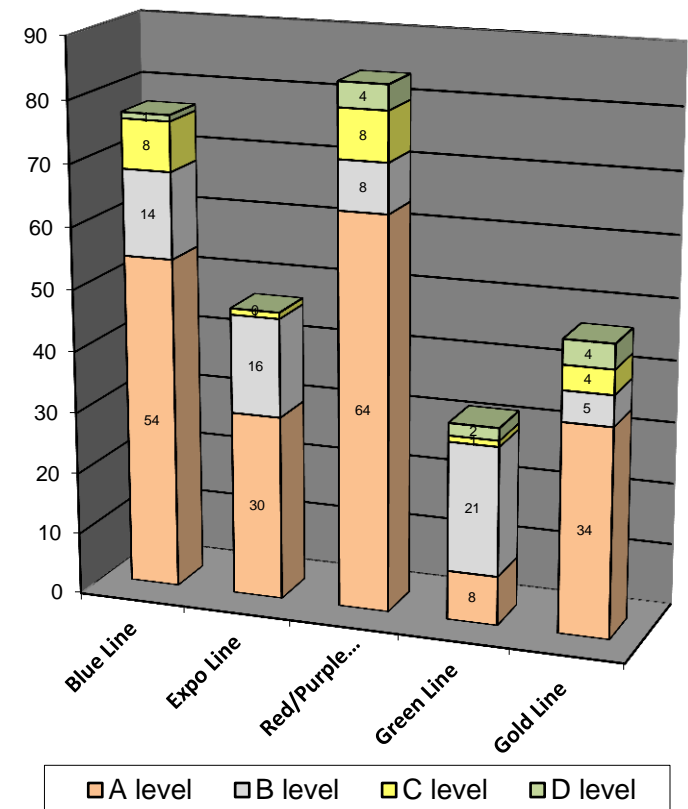


Preventive Maintenance Compliance December 2015-2016

PM Compliance	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16
Blue Line	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Expo Line	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	100%
Red/Purple Lines	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Green Line	97%	97%	100%	100%	100%	93%	100%	100%	100%	97%	100%	100%	100%
Gold Line	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

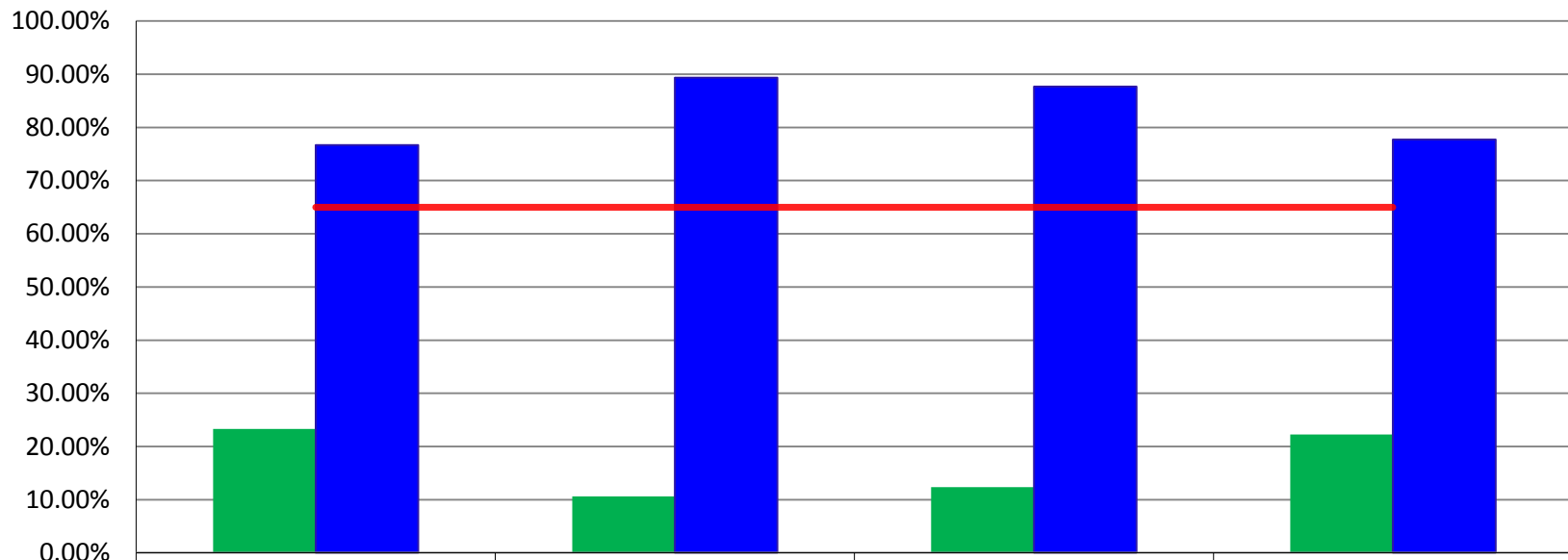
Number of Preventive Maintenance Inspections - December 2016					
Line	A level	B level	C level	D level	Totals
Blue Line	54	14	8	1	77
Expo Line	30	16	1	0	47
Red/Purple Lines	64	8	8	4	84
Green Line	8	21	1	2	32
Gold Line	34	5	4	4	47
Totals:	190	64	22	11	287

Explanation of PM Inspection levels		Miles			
Line	Type	A level	B level	C level	D level
Blue/Expo Lines	P865/P2020	5,000	15,000	30,000	60,000
Blue/Expo Lines	P2000	7,500	22,500	45,000	90,000
Red/Purple Lines	A650	7,500	22,500	45,000	90,000
Green Line	P2000	7,500	22,500	45,000	90,000
Gold Line	P2550	10,000	30,000	60,000	120,000
Gold/Expo Lines	P3010	10,000	30,000	60,000	120,000



RFS Leader Wrench Turning December 2016

RFS - Leader Wrench Turning December 2016



	Blue Line	Red Line	Green Line	Gold Line
Non-Wrench Turning	23.31%	10.61%	12.34%	22.26%
Wrench Turning	76.69%	89.39%	87.66%	77.74%
Goal	65%	65%	65%	65%

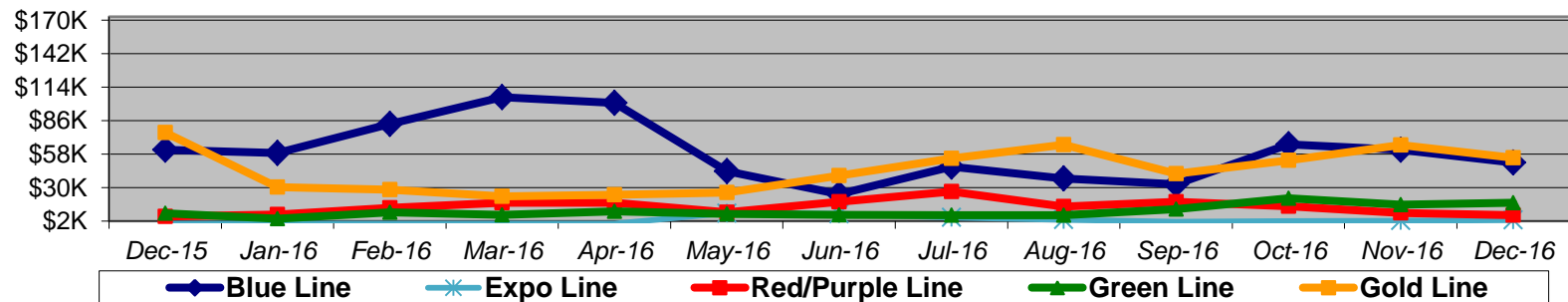
Notes: Labor hours contributed by Maint Specialist Leader, Rail Body/Paint Repair Leader, and Maint Specialist Temporary Leader

Vandalism & Graffiti Report

December 2015-2016

Graffiti Costs

	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	13-Month Period
Blue Line	\$62K	\$59K	\$83K	\$106K	\$101K	\$44K	\$24K	\$48K	\$38K	\$33K	\$66K	\$62K	\$51K	\$776K
Expo Line	\$K	\$K	\$K	\$K	\$K	\$9K	\$8K	\$5K	\$3K	\$2K	\$2K	\$2K	\$3K	\$34K
Red/Purple Line	\$6K	\$7K	\$13K	\$17K	\$17K	\$9K	\$18K	\$27K	\$14K	\$18K	\$14K	\$9K	\$7K	\$178K
Green Line	\$9K	\$4K	\$9K	\$7K	\$10K	\$8K	\$7K	\$7K	\$7K	\$12K	\$21K	\$16K	\$17K	\$135K
Gold Line	\$76K	\$30K	\$28K	\$23K	\$24K	\$26K	\$40K	\$54K	\$66K	\$42K	\$53K	\$66K	\$55K	\$583K
Totals:	\$152K	\$101K	\$134K	\$153K	\$153K	\$96K	\$98K	\$141K	\$128K	\$106K	\$157K	\$154K	\$133K	\$1,706K



December 2016 Vandalism & Graffiti - All Rail				
	Qty	Labor	Materials	Totals
Windows Replaced	141	\$ 17,823	\$ 38,781	\$ 56,604
Vandal Shields Replaced	560	\$ 16,927	\$ 8,281	\$ 25,208
Seats Cleaned	181	\$ 933	\$ 40	\$ 973
Seats Inserts Replaced	122	\$ 4,133	\$ 3,731	\$ 7,864
Graffiti Removal - Other	1,270	\$ 26,746	\$ 6,396	\$ 33,142
Repainting Panels	211	\$ 6,833	\$ 2,765	\$ 9,598
Totals	2,485	\$ 73,395	\$ 59,994	\$ 133,389

Vandalism & Graffiti Pictures

December 2016

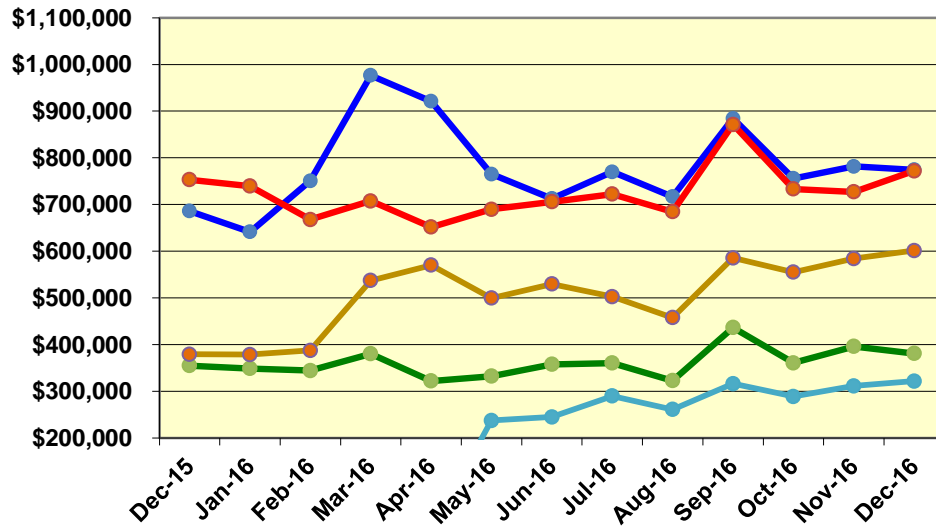
Blue Line



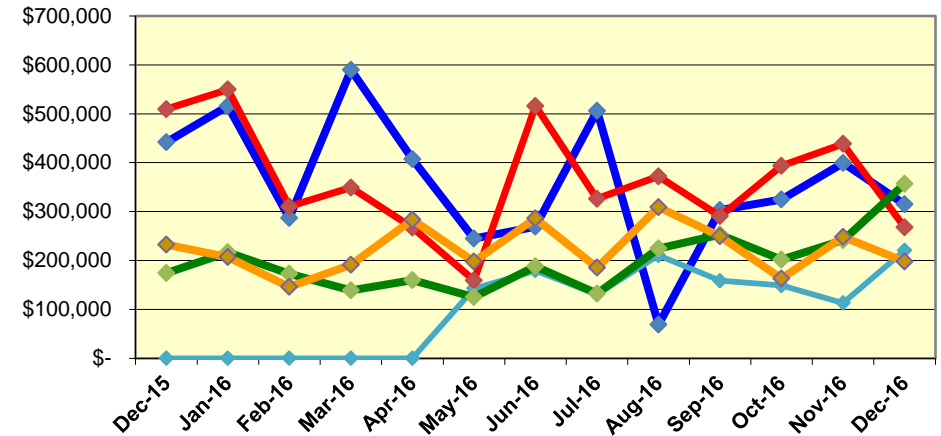
Labor and Material Costs

December 2015-2016

Labor Costs



Material Costs



	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16
Labor Costs													
Blue Line	\$ 686,227	\$ 641,613	\$ 750,961	\$ 976,568	\$ 920,945	\$ 765,108	\$ 712,774	\$ 770,143	\$ 716,923	\$ 884,555	\$ 755,958	\$ 781,662	\$ 774,386
Expo Line	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 237,630	\$ 245,339	\$ 290,199	\$ 261,217	\$ 316,395	\$ 289,213	\$ 311,627	\$ 322,070
Red/Purple Lines	\$ 753,216	\$ 739,336	\$ 667,772	\$ 707,560	\$ 651,771	\$ 689,764	\$ 705,772	\$ 722,363	\$ 684,555	\$ 871,431	\$ 733,202	\$ 727,093	\$ 772,214
Green Line	\$ 355,057	\$ 349,152	\$ 344,701	\$ 380,356	\$ 322,108	\$ 332,662	\$ 357,807	\$ 360,682	\$ 323,087	\$ 436,825	\$ 360,963	\$ 396,278	\$ 381,067
Gold Line	\$ 379,336	\$ 378,751	\$ 387,820	\$ 537,337	\$ 570,186	\$ 499,874	\$ 529,761	\$ 502,967	\$ 458,067	\$ 585,582	\$ 555,213	\$ 584,203	\$ 601,359
Totals	\$ 2,173,836	\$ 2,108,852	\$ 2,151,255	\$ 2,601,822	\$ 2,465,011	\$ 2,525,038	\$ 2,551,454	\$ 2,646,353	\$ 2,443,849	\$ 3,094,789	\$ 2,694,548	\$ 2,800,863	\$ 2,851,095

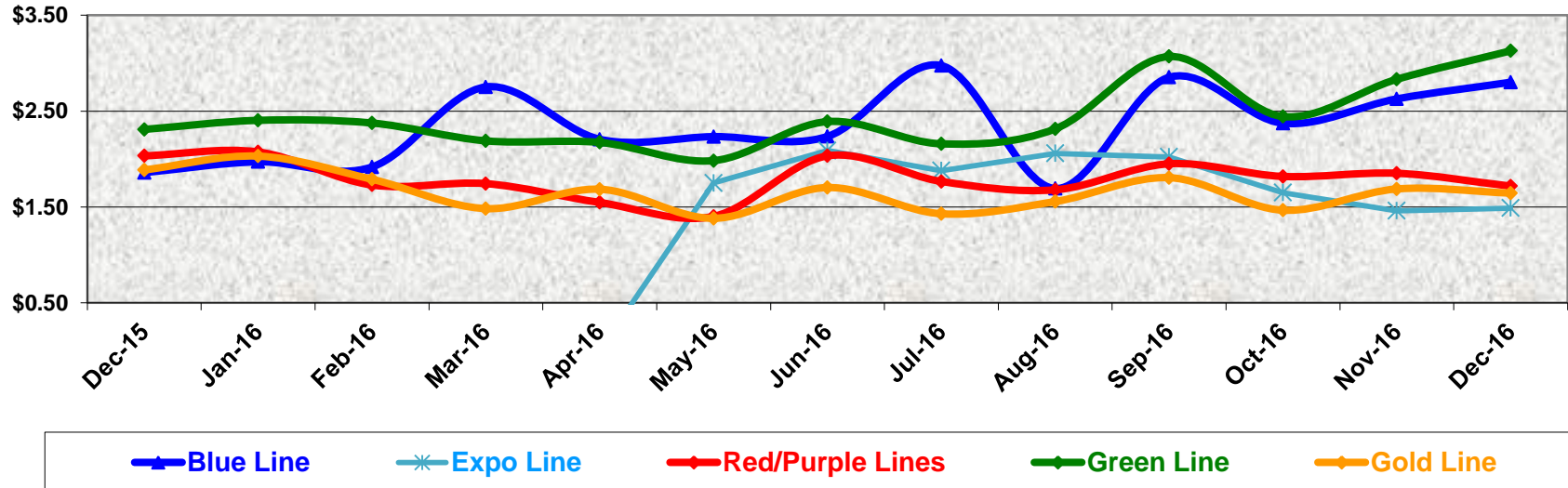
Material Costs													
Blue Line	\$ 441,523	\$ 515,933	\$ 286,531	\$ 589,879	\$ 407,085	\$ 245,001	\$ 268,750	\$ 505,721	\$ 68,670	\$ 303,202	\$ 324,999	\$ 399,427	\$ 314,545
Expo Line	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 142,495	\$ 179,099	\$ 130,419	\$ 210,312	\$ 158,666	\$ 148,670	\$ 113,229	\$ 220,296
Red/Purple Lines	\$ 509,448	\$ 549,576	\$ 310,489	\$ 349,093	\$ 267,284	\$ 159,258	\$ 515,978	\$ 326,251	\$ 371,920	\$ 290,597	\$ 393,507	\$ 438,480	\$ 267,857
Green Line	\$ 174,269	\$ 216,535	\$ 172,625	\$ 138,673	\$ 159,615	\$ 125,334	\$ 188,111	\$ 132,247	\$ 224,414	\$ 252,988	\$ 201,438	\$ 241,344	\$ 357,020
Gold Line	\$ 232,338	\$ 206,856	\$ 145,891	\$ 191,351	\$ 283,211	\$ 197,620	\$ 285,877	\$ 185,153	\$ 308,906	\$ 249,398	\$ 162,899	\$ 247,842	\$ 197,817
Totals	\$ 1,357,578	\$ 1,488,899	\$ 915,536	\$ 1,268,996	\$ 1,117,195	\$ 869,708	\$ 1,437,815	\$ 1,279,791	\$ 1,184,222	\$ 1,254,851	\$ 1,231,513	\$ 1,440,322	\$ 1,357,534

Cost Per Mile

December 2015-2016

Cost per mile:	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Average
Blue Line	\$1.86	\$1.97	\$1.92	\$2.75	\$2.21	\$2.23	\$2.24	\$2.97	\$1.69	\$2.85	\$2.37	\$2.63	\$2.80	\$2.35
Expo Line	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1.75	\$2.09	\$1.88	\$2.06	\$2.02	\$1.65	\$1.46	\$1.49	\$1.80
Red/Purple Lines	\$2.03	\$2.07	\$1.73	\$1.74	\$1.55	\$1.40	\$2.03	\$1.77	\$1.68	\$1.95	\$1.82	\$1.85	\$1.72	\$1.80
Green Line	\$2.31	\$2.40	\$2.38	\$2.19	\$2.17	\$1.98	\$2.39	\$2.16	\$2.31	\$3.07	\$2.44	\$2.83	\$3.13	\$2.44
Gold Line	\$1.89	\$2.03	\$1.79	\$1.48	\$1.68	\$1.38	\$1.70	\$1.43	\$1.56	\$1.81	\$1.47	\$1.69	\$1.64	\$1.66

Cost per Mile



ATU Absences vs. Overtime

December 2016

ABSENCE TYPE and HOURS	3941 Blue	3947 Expo	3942 Red	3943 Green	3944 Gold	3948 Monrovia	Total
AWP-ABSENT W/O PERMISSION	-	-	-	8	-	-	8
BER-BEREAVEMENT	48	-	-	24	-	-	72
CTO-COMPENSATORY TIME OFF	254	369	341	92	-	192	1,247
CUT-EMPLOYEE LEAVES EARLY	-	2	-	-	1	1	3
DSL-DISABILITY LEAVE/LONG	820	-	176	8	-	-	1,004
EFH-EMG. FLOAT HOL.	-	24	56	32	8	48	168
ETO-EXCUSED TIME OFF	77	71	48	11	2	26	235
FMI-FAM IND INJURY	112	-	320	144	176	-	752
FML-FAMILY CARE LEAVE	384	40	48	256	9	112	849
FMS-FAMILY LEAVE SICK	77	-	-	28	9	32	146
HLF-HOLIDAY FLOATING	296	128	288	144	40	351	1,247
HNP-HOLIDAY NOT PAID	-	8	-	8	-	-	16
HOL-HOLIDAY LEGAL	504	168	544	112	48	280	1,656
II-INDUSTRIAL INJURY	-	-	-	136	-	-	136
LC1-LABOR CODE 233	99	116	169	62	24	136	606
LTI-OCCPIL/LONGTRM INJ LEAVE	176	-	568	-	-	-	744
OWP-OFF WITH PERMISSION	-	-	3	-	-	-	3
RTO-REQUESTED TIME OFF-NO PAY	-	8	-	8	-	-	16
SCK-SICK PAY	296	16	234	125	96	352	1,119
SCW-SICK WITHOUT PAY	168	8	80	64	-	8	328
TAR-TARDY	2	0	1	1	0	1	6
VAC-VACATION	1,345	280	1,839	944	132	698	5,238
VAS-VACATION WHILE SICK	-	-	19	-	-	-	19
*TRAINING	144	400	-	-	80	16	640
Total Absence Hours	4,800	1,637	4,734	2,208	625	2,253	16,257
**ATU Number of Work Force (active)	105	42	102	43	17	61	370
Full Work Force hours/month	18,197	7,279	17,677	7,452	2,946	10,573	64,121
Absence as a % of Work Force	26%	22%	27%	30%	21%	21%	25%

OVERTIME TYPE and HOURS	3941 Blue	3947 Expo	3942 Red	3943 Green	3944 Gold	3948 Monrovia	Total
CTB-COMPENSATORY TIME TO BANK	220	67	106	36	32	96	557
OTP-PREM OVERTIME	3,921	1,254	3,726	1,811	80	1,080	11,872
WLO-Worked Lunch Overtime	150	166	219	85	24	83	726
Total Overtime Hours	4,291	1,486	4,052	1,932	135	1,259	13,155
Overtime as a % of Work Force	24%	20%	23%	26%	5%	12%	21%

*Training hours captured by Instruction Department are added to Absences Report.

**ATU Employee Numbers from ATU Manpower Status Report (last week of the month)



Metro

Note: Overtime also covers other required activities, including Training, Component Overhaul, and Special Events.

RFS Instruction Department Activities

December 2016

LRV Training classes completed during the month of December 2016

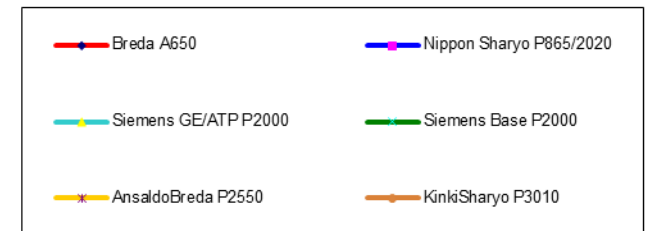
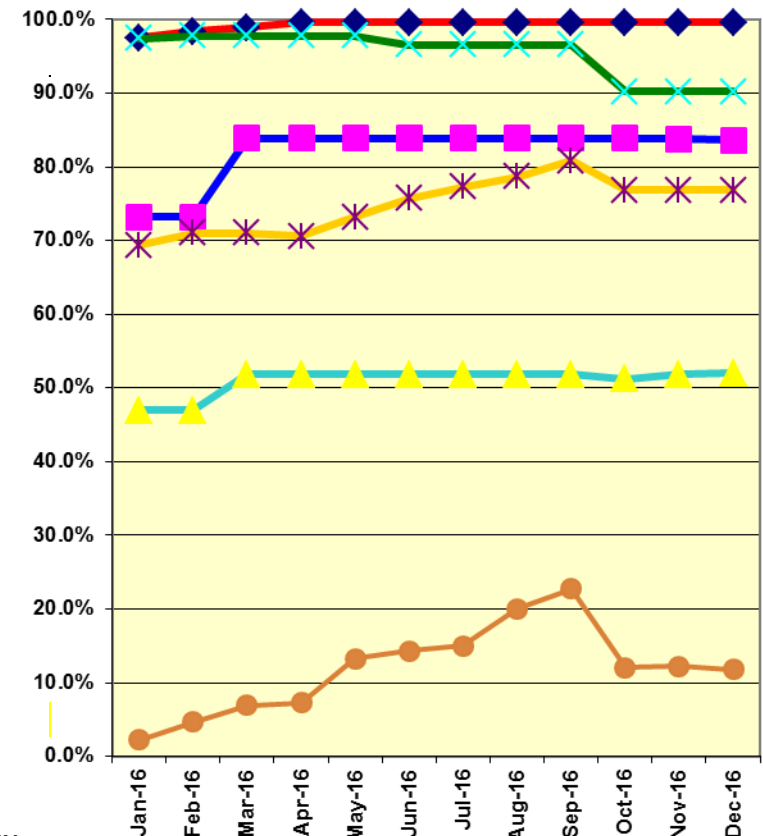
Description	Course Hours	Student Count	Training Hours
<u>Blue Line Training - (P865/2020 & P2000 LRVs):</u> RFS KINKISHARYO INTRO & MAINLINE RESPONSE	16	9	144
Total Blue Line Training (Hours):			144
<u>Light Rail Training (In Monrovia (P2550 LRVs) JAC):</u> RFS 2015-FRHT-BRANDT HIGH-RAIL TRUCK	8	2	16
Total Light Rail Training (Hours):			16
<u>Expo Line Training - (P865/2020, P2000, & P3010 LRVs):</u> RFS 2-WEEK RAIL INTRODUCTION	80	5	400
Total Expo Line Training (Hours):			400
<u>Gold Line Training (P2550 LRVs):</u> RFS 2-WEEK RAIL INTRODUCTION	80	1	80
Total Gold Line Training (Hours):			80
<u>Green Line Training (P2000 LRVs):</u> No vehicle training this month			0
Total Green Line Training (Hours):			0

Total RFS Instruction for the month of December 2016 (Hours): **640**

Core Vehicle Training Completed: **BLUE** **EXPO** **GOLD** **GREEN**

Percentage of core vehicle training complete:	83.6%	21.3%	76.9%	90.2%
Siemens P2000 training complete:	52.0%	39.8%	N/A	N/A
KinkiSharyo P3010 training complete:	0.5%	15.5%	23.9%	N/A
Average Specialist Rail Experience Level in Years:	15.2	3.3	7.1	10.3

Core Training Completed



Variations caused by new hires, employee transfers, & training completed

RFS Instruction Department Activities

December 2016

HRV & Other Training classes completed during the month of December 2016

<u>Description</u>	<u>Course Hours</u>	<u>Student Count</u>	<u>Training Hours</u>
Red Line Training - Breda A650 HRV:			
NO VEHICLE TRAINING THIS MONTH	0	0	0
Total Red Line Training Hours			0

<u>Other Instruction Activities</u>	<u>Curriculum</u>	<u>Administrative</u>	<u>Technical Support</u>	<u>Total</u>
A650 Curriculum, Administrative, and Technical Support	40	16	64	120
P865/P2020 Curriculum, Administrative, and Technical Support	16	8	16	40
P2000 Curriculum, Administrative, and Technical Support	32	8	24	64
P2550 Curriculum, Administrative, and Technical Support	80	16	40	136
P3010 Curriculum, Administrative, and Technical Support	240	24	0	264
Time Off (HOL, TOV, & SCK)				232
Total Other Instruction Activities				856

<u>Core Vehicle Training Completed:</u>	<u>RED</u>	JAC Core	<u>JAC</u>
Percentage of Core Vehicle Training Complete:	99.6%	(P2000)	30.3%
		(P2550)	22.6%
Average Specialist Rail Experience Level in Years:	12.9		0.4