



**Massachusetts Bay  
Transportation Authority**

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## **Integrated Vehicle Fleet and Facilities Plan**

**Fleet Plan Update**

**March 20, 2017**



## What we want

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- Strategic (versus tactical) approach
- Fully funded w/ maintenance commitment (smoothed? simplified)
- Achievable
- Consistent (strategic plan, future needs, procurement approaches)
- Backwards-engineered (staffing, maintenance facilities)



DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028		
Red Line	Targeted System Overhaul (OH) of RL #3 Cars													
	Develop RL/OL RCM Plan				Delivery (Del.) of 252 New RL Cars									
					Perform Reliability Centered Maintenance (RCM) on New RL Cars									
					Retire 218 Old RL Cars (#1, #2, #3)									
Orange Line	Develop RL/OL RCM Plan			Delivery of 152 New OL Cars (#14)						Perform RCM on New OL Cars				
				Retire 120 Old OL Cars (#12)										
Blue Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)													
Green Line	Ctd. Delivery of Type 7 OH													
	Targeted System Overhaul of Type 8 Cars													
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars				Perform RCM on New Type 9 Cars								
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)							Delivery of 220 (est.) New GL Cars		Perform RCM on New GL Cars			
									Retire 214 Old GL Cars (Type 7 and 8)					
60ft Bus & Trolley	Del. New 60ft Bus	Perform RCM on New 60ft Buses												
	Retire 44 CNG 60ft Buses													
	Ctd. Delivery of DMA OH													
	25 60ft Bus OH PP	Delivery of 25 Bus OH												
	60ft DMA & Hybrid and 40ft Trolley Replacement PP											Perform RCM on New 60ft and Trolley Replacement Buses		
	Lo-No Battery Bus PP	Del. of Lo-No Buses												
	NTP NF Hyb Option 1	Delivery of Option 1												
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		Retire 193 Old Neoplan Diesels												
40ft Bus	Targeted OH NF Base		Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)				Perform RCM on New 40ft Buses					
	NTP NF Option OH	Del. NF Option OH												
					Retire 310 Old New Flyer (NF) Diesel Buses									
	Implement RCM on 60 Existing Hybrid Buses											Develop Spec./RFP	Contract Award	Delivery of Replacement Buses
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid and CNG Buses												
	Retire Old NABI CNG													
Commuter Rail Locomotives and Coaches	F40/MP36 OH PP	Del. of F40/MP36 OH		40 (quantity) HSP OH PP				Delivery of HSP OH						
	New/Replacement Locomotive PP				Delivery of New Locomotives									
					Retire 19 Old GP40 Locos		Retire 29 F40 Locos							
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH													
	New/Replacement Control and Blind Coach PP				Delivery of New Control and Blind Coaches									
		Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH				Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH			
			Retire MBB CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs									
Ferry Boats	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats													
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M		
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028		

**What we know**

- Red & Orange Line

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	Ctd. Delivery of Type 7 OH												
Green Line	Targeted System Overhaul of Type 8 Cars												
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars		Perform RCM on New Type 9 Cars									
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)						Delivery of 220 (est.) New GL Cars		Perform RCM on New GL Cars			
								Retire 214 Old GL Cars (Type 7 and 8)					
60ft Bus & Trolley	Del. New 60ft Bus	Perform RCM on New 60ft Buses											
	Retire 44 CNG 60ft Buses												
	Ctd. Delivery of DMA OH												
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	60ft DMA & Hybrid and 40ft Trolley Replacement PP				Del. of New 60ft and Trolley R		Perform RCM on New 60ft and Trolley Replacement Buses						
	Lo-No Battery Bus PP	Del. of Lo-No Buses											
40ft Bus	NTP NF Hyb Option 1	Delivery of Option 1											
		NTP NF Hyb Option 2	Delivery of Option 2										
		Retire 193 Old Neoplan Diesels											
	Targeted OH NF Base		Develop Spec./RFP	Cont	Perform RCM on New 40ft Buses								
Commuter Rail Locomotives and Coaches	NTP NF Option OH	Del. NF Option OH											
	Ctd. Del. New 40ft												
	Retire Old NABI CNG												
	F40/MP36 OH PP	Del. of F40/MP36 OH	40 (quantity) HSP OH PP		Delivery of HSP OH								
	New/Replacement Locomotive PP			Delivery of New Locomotives									
				Retire 19 Old GP40 Locos		Retire 29 F40 Locos							
Ferry Boats	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH				Delivery of New Control and Blind Coaches								
	New/Replacement Control and Blind Coach PP		Delivery of Kawasaki BTC-4C OH				Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH				
	Kawasaki BTC-4C OH PP		Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs										
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**What is coming**

- Green Line

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60ft Bus & Trolley	Del. New 60ft Bus												
	Retire 44 CNG 60ft Buses												
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40ft Bus	60ft DMA & Hybrid and 40ft Trolley Replacement PP								Perform RCM on New 60ft and Trolley Replacement Buses				
	Lo-No Battery Bus PP	Del. of Lo-No Buses				Retire DMAs, CNG, and Trolleys							
	NTP NF Hyb Option 1	Delivery of Option 1											
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40ft Bus	Retire 193 Old Neoplan Diesels												
	Targeted OH NF Base								Perform RCM on New 40ft Buses				
	NTP NF Option OH	Del. NF Option OH	Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)								
					Retire 310 Old New (NF) Diesel Buses								
Commuter Rail Locomotives and Coaches	Implement RCM on 60 Existing Hybrid Buses												
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid Buses									Develop Spec./RFP	Contract Award	Delivery of Replacement Buses
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Commuter Rail Locomotives and Coaches	New/Replacement Locomotive PP				Delivery of New Locomotives								
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	New/Replacement Control and Blind Coach PP			Delivery of New Control and Blind Coaches									
Ferry Boats		Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH			Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH			
			Retire MBB CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs								
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What is coming

- Green Line
- Commuter Rail

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What is coming

- Green Line
- Commuter Rail
- Silver Line

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What is coming

- Green Line
- Commuter Rail
- Silver Line
- Bus



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What is coming

- Green Line
- Commuter Rail
- Bus
- Silver Line
- RCM, RCM, RCM

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**What we are working on**

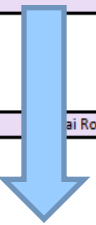
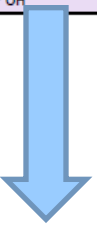
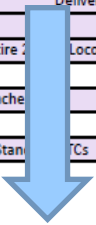
- Reconciliation with CIP

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	NTP NF Option OH	Del. NF Option OH			Retire 310 Old New Flyer (NF) Diesel Buses								
Commuter Rail Locomotives and Coaches	Implement RCM on 60 Existing Hybrid Buses												
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid and CNG Buses								Develop Spec./RFP	Contract Award	Delivery of Replacement Buses	
	Retire Old NABI CNG												
	F40/MP36 OH PP	Del. of F40/MP36 OH		40 (quantity) HSP OH PP				Delivery of HSP OH					
	New/Replacement Locomotive PP			Delivery of New Locomotives					Retire 19 Old GP40 Locos				
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH			Retire 19 Old GP40 Locos					Retire 19 Old GP40 Locos				
Ferry Boats	New/Replacement Control and Blind Coach PP			Delivery of New Control and Blind Coach									
	Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH					Kawasaki BTC-4C OH PP		Delivery of Hyundai Rotem CTC OH		
	Retire MBB CTC/BTCs			Retire Bombardier CTC/BTCs - Retire Pullman Standard CTCs									
	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats												
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M	
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	

What we are working on

- Reconciliation with CIP
- FY23-25 Funding Bulge

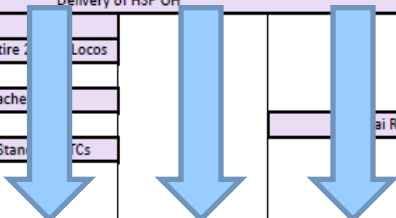


DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	
Red Line	Targeted System Overhaul (OH) of RL #3 Cars												
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars									
				Retire 218 Old RL Cars (#1, #2, #3)				Perform Reliability Centered Maintenance (RCM) on New RL Cars					
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)										
			Retire 120 Old OL Cars (#12)				Perform RCM on New OL Cars						
Blue Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)												
	Ctd. Delivery of Type 7 OH												
Green Line	Targeted System Overhaul of Type 8 Cars												
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars						Perform RCM on New Type 9 Cars					
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)						Delivery of 220 (est.) New GL Cars			Perform RCM on New GL Cars		
								Retire 214 Old GL Cars (Type 7 and 8)					
60ft Bus & Trolley	Del. New 60ft Bus	Perform RCM on New 60ft Buses											
	Retire 44 CNG 60ft Buses												
	Ctd. Delivery of DMA OH												
	25 60ft Bus OH PP	Delivery of 25 Bus OH											
	60ft DMA & Hybrid and 40ft Trolley Replacement Buses												
	Lo-No Battery Bus PP	Del. of Lo-No Buses											
40ft Bus	NTP NF Hyb Option 1	Delivery of Option 1											
		NTP NF Hyb Option 2	Delivery of Option 2										
		Retire 193 Old Neoplan Diesel											
	Targeted OH NF Base												
	NTP NF Option OH	Del. NF Option OH		Develop Spec.									
Commuter Rail Locomotives and Coaches	Retire 310 Old New Flyer (NF) Diesel Buses												
	Ctd. Del. New 40ft		Implement RCM on 60 Existing Hybrid Buses										
	Perform RCM on New 40ft Hybrid and CNG Buses												
	Retire Old NABI CNG												
	F40/MP36 OH PP	Del. of F40/MP36 OH		40 (quantity) HSP OH PP				Delivery of HSP OH					
	New/Replacement Locomotive PP												
	Delivery of New Locomotives												
Ferry Boats	Retire 19 Old GP40 Locos		Retire 2 Old GP40 Locos										
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH												
	New/Replacement Control and Blind Coach PP				Delivery of New Control and Blind Coaches								
	Kawasaki BTC-4C OH PP				Delivery of Kawasaki BTC-4C OH								
Estimated Capital Cost	Retire MBB CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Standard CTCs										
	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats												
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M	
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	

**What we are working on**

- Reconciliation with CIP
- FY23-25 Funding Bulge
- Vehicle Absorption Rates

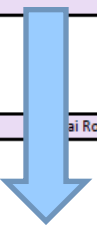
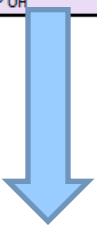
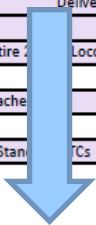


DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028			
Red Line	Targeted System Overhaul (OH) of RL #3 Cars														
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars											
				Retire 218 Old RL Cars (#1, #2, #3)				Perform Reliability Centered Maintenance (RCM) on New RL Cars							
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)												
			Retire 120 Old OL Cars (#12)				Perform RCM on New OL Cars								
Blue Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)														
	Ctd. Delivery of Type 7 OH														
Green Line	Targeted System Overhaul of Type 8 Cars														
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars							Perform RCM on New Type 9 Cars						
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)								Delivery of 220 (est.) New GL Cars			Perform RCM on New GL Cars		
								Retire 214 Old GL Cars (Type 7 and 8)							
60ft Bus & Trolley	Del. New 60ft Bus	Perform RCM on New													
	Retire 44 CNG 60ft Buses														
	Ctd. Delivery of DMA OH														
	25 60ft Bus OH PP	Delivery of 25 Bus OH													
	60ft DMA & Hybrid and 40ft Trolley Replace												on New 60ft and Trolley Replacement Buses		
	Lo-No Battery Bus PP	Del. of Lo-No Buses													
40ft Bus	NTP NF Hyb Option 1	Delivery of Option 1													
		NTP NF Hyb Option 2	Delivery of Opti												
	Retire 193 Old Neoplan Diesels														
	Targeted OH NF Base														
	NTP NF Option OH	Del. NF Option OH		Develop Spec./									Perform RCM on New 40ft Buses		
Commuter Rail Locomotives and Coaches	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid and CNG Buses										Develop Spec./RFP	Contract Award	Delivery of Replacement Buses	
	Retire Old NABI CNG														
	F40/MP36 OH PP	Del. of F40/MP36 OH		40 (quantity) HSP OH PP			Delivery of HSP OH								
	New/Replacement Locomotive PP														
			Delivery of New Locomotives				Retire 19 Old GP40 Locos		Retire 2 Locos						
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH														
	New/Replacement Control and Blind Coach PP														
	Kawasaki BTC-4C OH PP		Delivery of Kawasaki BTC-4C OH						Kawasaki Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH				
			Retire MBB CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Stan				Retire Pullman Stan						
Ferry Boats	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats														
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M			
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028			

What we are working on

- Reconciliation with CIP
- FY23-25 Funding Bulge
- Vehicle Absorption Rates
- Maintenance Facilities



DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	
Red Line	Targeted System Overhaul (OH) of RL #3 Cars												
	Develop RL/OL RCM Plan				Delivery (Del.) of 252 New RL Cars								
				Perform Reliability Centered Maintenance (RCM) on New RL Cars									
				Retire 218 Old RL Cars (#1, #2, #3)									
Orange Line	Develop RL/OL RCM Plan			Delivery of 152 New OL Cars (#14)									
				Perform RCM on New OL Cars									
Blue Line													
Green Line	Delivery of Type 7 OH												
	Targeted S												
	Develop	M Plan	Delive										
	New GL Study	New/Replacement GL Car Pre Procurement (PP)							Delivery of 220 (est.) New GL Cars		Perform RCM on New GL Cars		
									Retire 214 Old GL Cars (Type 7 and 8)				
60ft Bus & Trolley	Del. New 60ft Bus												
	Perform RCM on New 60ft Buses												
	Retire 44 CNG 60ft Buses												
	Ctd. Delivery of DMA OH												
	25 60ft Bus OH PP			Delivery of 25 Bus OH									
	60ft DMA & Hybrid and 40ft Trolley Replacement PP					Del. of New 60ft and Trolley Replacements		Perform RCM on New 60ft and Trolley Replacement Buses					
	Lo-No Battery Bus PP		Del. of Lo-No Buses			Retire DMAs, 25H, and Trolleys							
	NTP NF Hyb Option 1		Delivery of Option 1										
			NTP NF Hyb Option 2		Delivery of Option 2								
			Retire 193 Old Neoplan Diesels										
40ft Bus	Targeted OH NF Base		Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)				Perform RCM on New 40ft Buses				
	NTP NF Option OH				Del. NF Option OH								
					Retire 310 Old New Flyer (NF) Diesel Buses								
	Implement RCM on 60 Existing Hybrid Buses									Develop Spec./RFP	Contract Award	Delivery of Replacement Buses	
	Ctd. Del. New 40ft		Perform RCM on New 40ft Hybrid and CNG Buses										
	Retire Old NABI CNG												
Commuter Rail Locomotives and Coaches	F40/MP36 OH PP		Del. of F40/MP36 OH		40 (quantity) HSP OH PP			Delivery of HSP OH					
	New/Replacement Locomotive PP				Delivery of New Locomotives								
					Retire 19 Old GP40 Locos			Retire 29 F40 Locos					
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH												
	New/Replacement Control and Blind Coach PP				Delivery of New Control and Blind Coaches								
			Kawasaki BTC-4C OH PP		Delivery of Kawasaki BTC-4C OH			Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH			
			Retire MBB CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs								
Ferry Boats	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats												
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M	
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	

**What we need to know:**  
**Adding capacity on the existing system**

- Bus

DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	
Red Line	Targeted System Overhaul (OH) of RL #3 Cars												
	Develop RL/OL RCM Plan				Delivery (Del.) of 252 New RL Cars					Perform Reliability Centered Maintenance (RCM) on New RL Cars			
				Retire 218 Old RL Cars (#1, #2, #3)									
	Develop RL/OL RCM Plan												
Orange Line													
Blue Line													
Green Line	Ctd. Delivery of Type 7 OH												
	Targeted System Overhaul of 1												
	Develop GL RCM Plan	Deliv	24 New Type 1										
	New GL Fleet Study	N	placement GL									Perform RCM on New GL Cars	
									Retire 214 Old GL Cars (Type 7 and 8)				
60ft Bus & Trolley	Del. New 60ft Bus	Perform RCM on New 60ft Buses											
	Retire 44 CNG 60ft Buses												
	Ctd. Delivery of DMA OH												
	25 60ft Bus OH PP	Delivery of 25 Bus OH											
	60ft DMA & Hybrid and 40ft Trolley Replacement PP					Del. of New 60ft and Trolley Replacements		Perform RCM on New 60ft and Trolley Replacement Buses					
	Lo-No Battery Bus PP	Del. of Lo-No Buses					Retire DMAs, 25H, and Trolleys						
	NTP NF Hyb Option 1	Delivery of Option 1											
		NTP NF Hyb Option 2	Delivery of Option 2										
		Retire 193 Old Neoplan Diesels											
40ft Bus	Targeted OH NF Base		Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)				Perform RCM on New 40ft Buses				
	NTP NF Option OH	Del. NF Option OH				Retire 310 Old New Flyer (NF) Diesel Buses							
						Implement RCM on 60 Existing Hybrid Buses							
	Ctd. Del. New 40ft			Perform RCM on New 40ft Hybrid and CNG Buses						Develop Spec./RFP	Contract Award	Delivery of Replacement Buses	
	Retire Old NABI CNG												
	F40/MP36 OH PP	Del. of F40/MP36 OH		40 (quantity) HSP OH PP			Delivery of HSP OH						
Commuter Rail Locomotives and Coaches	New/Replacement Locomotive PP				Delivery of New Locomotives								
					Retire 19 Old GP40 Locos		Retire 29 F40 Locos						
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH												
	New/Replacement Control and Blind Coach PP				Delivery of New Control and Blind Coaches								
		Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH			Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH			
			Retire MBB CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs								
Ferry Boats	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats												
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M	
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	

**What we need to know:**  
**Adding capacity on the existing system**

- Bus
- Silver Line



DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028
Red Line		Targeted System Overhaul (OH) of RL #3 Cars										
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars								
				Perform Reliability Centered Maintenance (RCM) on New RL Cars								
				Retire 218 Old RL Cars (#1, #2, #3)								
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)									
				Perform RCM on New OL Cars								
Blue Line				Continued (Ctd.) RCM on Existing 94 BL Cars (#5)								
Green Line				Ctd. Delivery of Type 7 OH								
				Targeted System Overhaul of Type 8 Cars								
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars			Perform RCM on New Type 9 Cars							
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)						Delivery of 220 (est.) New GL Cars			Perform RCM on New GL Cars	
60ft Bus & Trolley								Retire 214 Old GL Cars (Type 7 and 8)				
	Del. New			Perform RCM on New 60ft Buses								
	R	4 CNG 60ft Buses										
40ft Bus	C	Delivery of DMA OH										
	25 60ft B	PP	Deliv									
	Lo-No Batt	PP	Del. of Lo-No B									
Commuter Rail Locomotives and Coaches	NTP NF Hyb Option 1	Delivery of Opt										
		NTP NF Hyb Opt										
			Retire 19									
	Targeted OH NF Base											
Ferry Boats	NTP NF Option OH	Del. NF Option										
Estimated Capital Cost		Implement RCM on 60 Existing Hybrid Buses										
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid and CNG Buses								Develop Spec./RFP	Contract Award	Delivery of Replacement Buses
	Retire Old NABI CNG											
	F40/MP36 OH PP	Del. of F40/MP36 OH		40 (quantity) HSP OH PP		Delivery of HSP OH						
Ferry Boats	New/Replacement Locomotive PP				Delivery of New Locomotives							
					Retire 19 Old GP40 Locos		Retire 29 F40 Locos					
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH											
	New/Replacement Control and Blind Coach PP				Delivery of New Control and Blind Coaches							
Estimated Capital Cost		Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH				Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH	
			Retire M8B CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs							
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028

**What we need to know:**  
**Adding capacity on the existing system**

- Bus
- Silver Line
- Green Line



DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028
Red Line		Targeted System Overhaul (OH) of RL #3 Cars										
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars								
				Perform Reliability Centered Maintenance (RCM) on New RL Cars								
				Retire 218 Old RL Cars (#1, #2, #3)								
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)									
				Perform RCM on New OL Cars								
Blue Line			Retire 120 Old OL Cars (#12)									
Green Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)											
	Ctd. Delivery of Type 7 OH											
	Targeted System Overhaul of Type 8 Cars											
	Develop GL RCM Plan	Delivery of 24 New Type 8 Cars										
60ft Bus & Trolley	New GL Fleet Study	New/Replacement										
	Del. New 60ft Bus											
	Retire 44 CNG 60ft Buses											
40ft Bus	Ctd. Delivery of DMA OH											
	25 60ft Bus OH PP	Delivery of 25 Bus OH										
	60ft DMA & Hybrid and 40ft Trolley Replacement PP				Del. of New 60ft and Trolley Replacements							
	Lo-No Battery Bus PP	Del. of Lo-No Buses				Retire DMAs, 25H, and Trolleys						
Commuter Rail Locomotives and Coaches	NTP NF Hyb Option 1	Delivery of Option 1										
	NTP NF Hyb Option 2	Delivery of Option 2										
		Retire 193 Old Neoplan Diesels										
	Targeted OH NF Base		Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)							
Ferry Boats	NTP NF Option OH	Del. NF Option OH				Retire 310 Old M-Series (NF) Diesel Buses						
	Ctd. Del. New 40ft											
	Retire Old NABI CNG											
Estimated Capital Cost												
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028

What we need to know: Expansion

- South Coast Rail

DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028
Red Line		Targeted System Overhaul (OH) of RL #3 Cars										
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars								
				Perform Reliability Centered Maintenance (RCM) on New RL Cars								
				Retire 218 Old RL Cars (#1, #2, #3)								
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)									
				Perform RCM on New OL Cars								
Blue Line			Retire 120 Old OL Cars (#12)									
Green Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)											
	Ctd. Delivery of Type 7 OH											
	Targeted System Overhaul of Type 8 Cars											
	Develop GL RCM Plan	Delivery of 24 New 1										
60ft Bus & Trolley	New GL Fleet Study	New/Replacemer										
	Del. New 60ft Bus											
	Retire 44 CNG 60ft Buses											
40ft Bus	Ctd. Delivery of DMA OH											
	25 60ft Bus OH PP	Delivery of 25 B										
	60ft DMA & Hybrid and 40ft Trolley Replacement PP											
	Lo-No Battery Bus PP	Del. of Lo-No Buses										
Commuter Rail Locomotives and Coaches												
	NTP NF Hyb Option 1	Delivery of Option 1										
	NTP NF Hyb Option 2	Delivery of Option 2										
		Retire 193 Old Neoplan Diesels										
Ferry Boats	Targeted OH NF Base											
	NTP NF Option OH	Del. NF Option OH										
Estimated Capital Cost												
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028

What we need to know: Expansion

- South Coast Rail
- Urban Rail

DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028
Red Line	Targeted System Overhaul (OH) of RL #3 Cars											
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars								
				Perform Reliability Centered Maintenance (RCM) on New RL Cars								
				Retire 218 Old RL Cars (#1, #2, #3)								
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)									
				Perform RCM on New OL Cars								
			Retire 120 Old OL Cars (#12)									
Blue Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)											
Green Line	Ctd. Delivery of Type 7 OH											
	Targeted System Overhaul (OH) of GL #3 Cars											
	Develop GL RCM Plan	Delivery of 24 New GL Cars										
	New GL Fleet Study	New/Replacement										Perform RCM on New GL Cars
60ft Bus & Trolley	Del. New 60ft Bus											
	Retire 44 CNG 60ft Buses											
	Ctd. Delivery of DMA OH											
	25 60ft Bus OH PP	Delivery of 25 Buses										
40ft Bus	60ft DMA & Hybrid and 40ft Trolley Replacement PP				Del. of New 60ft and Trolley Replacements		Perform RCM on New 60ft and Trolley Replacement Buses					
	Lo-No Battery Bus PP	Del. of Lo-No Buses				Retire DMAs, 25H, and Trolleys						
	NTP NF Hyb Option 1	Delivery of Option 1										
		NTP NF Hyb Option 2	Delivery of Option 2									
40ft Bus		Retire 193 Old Neoplan Diesels										
	Targeted OH NF Base		Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)	Perform RCM on New 40ft Buses						
	NTP NF Option OH	Del. NF Option OH				Retire 310 Old M-Series (NF) Diesel Buses						
Commuter Rail Locomotives and Coaches	Implement RCM on 60 Existing Hybrid Buses									Develop Spec./RFP	Contract Award	Delivery of Replacement Buses
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid and CNG Buses										
	Retire Old NABI CNG											
	F40/MP36 OH PP	Del. of F40/MP36 OH	40 (quantity) HSP OH PP			Delivery of HSP OH						
Commuter Rail Locomotives and Coaches	New/Replacement Locomotive PP				Delivery of New Locomotives							
					Retire 19 Old GP40 Locos	Retire 29 F40 Locos						
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH											
	New/Replacement Control and Blind Coach PP				Delivery of New Control and Blind Coaches							
Ferry Boats		Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH				Hyundai Rotem CTC OH PP	Delivery of Hyundai Rotem CTC OH		
			Retire MBB CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs							
	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats											
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028

### What we need to know: Expansion

- South Coast Rail
- Inner City Rail
- Go Boston 2030

DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

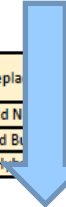
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	
Red Line	Targeted System Overhaul (OH) of RL #3 Cars												
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars									
				Perform Reliability Centered Maintenance (RCM) on New RL Cars									
				Retire 218 Old RL Cars (#1, #2, #3)									
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)										
				Perform RCM on New OL Cars									
			Retire 120 Old OL Cars (#12)										
Blue Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)												
	Ctd. Delivery of Type 7 OH												
Green Line	Targeted System Overhaul of Type 8 Cars												
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars		Perform RCM on New Type 9 Cars									
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)						Delivery of 220 (est.) New GL Cars			Perform RCM on New GL Cars		
								Retire 214 Old GL Cars (Type 7 and 8)					
60ft Bus & Trolley	Del. New 60ft Bus	Perform RCM on New 60ft Buses											
	Retire 44 CNG 60ft Buses												
	Ctd. Delivery of DMA OH												
	25 60ft Bus OH PP	Del.											
	60ft DMA & Hybrid												
	Lo-No Battery Bus PP	Del. of Lo-No											
40ft Bus	NTP NF Hyb Option 1	Delivery of Option 1											
		NTP NF Hyb Option 2		Delivery of Option 2									
		Retire 193 Old Neoplan Diesels											
	Targeted OH NF Base												
	NTP NF Option OH	Del. NF Option OH	Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)				Perform RCM on New 40ft Buses				
					Retire 310 Old New Flyer (NF) Diesel Buses								
	Implement RCM on 60 Existing Hybrid Buses												
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid and CNG Buses								Develop Spec./RFP	Contract Award	Delivery of Replacement Buses	
	Retire Old NABI CNG												
Commuter Rail Locomotives and Coaches	F40/MP36 OH PP	Del. of F40/MP36 OH		40 (quantity) HSP OH PP				Delivery of HSP OH					
	New/Replacement Locomotive PP				Delivery of New Locomotives								
					Retire 19 Old GP40 Locos		Retire 29 F40 Locos						
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH												
	New/Replacement Control and Blind Coach PP			Delivery of New Control and Blind Coaches									
	Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH				Hyundai Rotem CTC OH PP			Delivery of Hyundai Rotem CTC OH		
			Retire MBB CTC/BTCs	Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs									
Ferry Boats	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats												
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M	
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	

DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	
Red Line	Targeted System Overhaul (OH) of RL #3 Cars												
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars					Perform Reliability Centered Maintenance (RCM) on New RL Cars				
				Retire 218 Old RL Cars (#1, #2, #3)									
	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)					Perform RCM on New OL Cars					
Orange Line				Retire 120 Old OL Cars (#12)									
	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)												
Blue Line	Ctd. Delivery of Type 7 OH												
	Targeted System Overhaul of Type 8 Cars												
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars		Perform RCM on New Type 9 Cars									
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)							Delivery of 220 (est.) New GL Cars		Perform RCM on New GL Cars		
Green Line		Retire 314 Old GL Cars (Type 7 and 8)											
	Del. New 60ft Bus												
	Retire 44 CNG 60ft Buses												
	Ctd. Delivery of DMA OH												
60ft Bus & Trolley	25 60ft Bus OH PP	Delive											
	60ft DMA & Hybrid a												
	Lo-No Battery Bus PP	Del. of Lo-No Bu											
40ft Bus	NTP NF Hyb Option 1	Delivery of Option 1											
		NTP NF Hyb Option 2	Delivery of Option 2										
		Retire 193 Old Neoplan Diesels											
	Targeted OH NF Base												
40ft Bus	NTP NF Option OH	Del. NF Option OH	Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)				Perform RCM on New 40ft Buses				
					Retire 310 Old N (NF) Diesel Buses								
	Implement RCM on 60 Existing Hybrid Buses												
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid CNG Buses								Develop Spec./RFP	Contract Award	Delivery of Replacement Buses	
40ft Bus	Retire Old NABI CNG												
	F40/MP36 OH PP	Del. of F40/MP36 OH	40 (quantity) HSP OH PP			Delivery of HSP OH							
	New/Replacement Locomotive PP					Delivery of New Locomotives							
						Retire 19 Old GP40 Locos		Retire 29 F40 Locos					
Commuter Rail Locomotives and Coaches	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH												
	New/Replacement Control and Blind Coach PP				Delivery of New Control and Blind Coaches								
		Kawasaki BTC-4C OH PP				Delivery of Kawasaki BTC-4C OH				Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH	
			Retire MBB CTC/BTCs				Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs						
Ferry Boats	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats												
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M	
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	

**What we need to know: Procurement strategy**

- Alternative procurement models
- Vision for Commuter Rail



DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028
Red Line		Targeted System Overhaul (OH) of RL #3 Cars										
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars								
				Perform Reliability Centered Maintenance (RCM) on New RL Cars								
				Retire 218 Old RL Cars (#1, #2, #3)								
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)									
				Perform RCM on New OL Cars								
Blue Line				Retire 120 Old OL Cars (#12)								
Green Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)											
	Ctd. Delivery of Type 7 OH											
	Targeted System Overhaul of Type 8 Cars											
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars			Perform RCM on New Type 9 Cars							
60ft Bus & Trolley	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)						Delivery of 220 (est.) New GL Cars			Perform RCM on New GL Cars	
								Retire 214 Old GL Cars (Type 7 and 8)				
	Del. New 60ft Bus											
40ft Bus	Retire 44 CNG 60ft Buses											
	Ctd. Delivery of DMA OH											
	25 60ft Bus OH PP											
	60ft DMA & Hyb											
Commuter Rail Locomotives and Coaches	Lo-No Battery Bus PP	Del. of Lo-N										
	NTP NF Hyb Option 1	Delivery of										
	NTP NF Hyb											
	Retire											
Ferry Boats	Targeted OH NF Base		Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)			Perform RCM on New 40ft Buses				
	NTP NF Option OH	Del. NF Option OH			Retire 310 Old New Flyer (NF) Diesel Buses							
					Implement RCM on 60 Existing Hybrid Buses							
	Ctd. Del. New 40ft				Perform RCM on New 40ft Hybrid and CNG Buses					Develop Spec./RFP	Contract Award	Delivery of Replacement Buses
Estimated Capital Cost	Retire Old NABI CNG											
	F40/MP36 OH PP	Del. of F40/MP36 OH		40 (quantity) HSP OH PP		Delivery of HSP OH						
	New/Replacement Locomotive PP				Delivery of New Locomotives							
					Retire 19 Old GP40 Locos		Retire 29 F40 Locos					
Estimated Capital Cost	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH											
	New/Replacement Control and Blind Coach PP				Delivery of New Control and Blind Coaches							
		Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH			Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH		
			Retire M8B CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs							
Estimated Capital Cost	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats											
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028

What we need to know: Procurement strategy

- Alternative procurement models
- Vision for Commuter Rail
- RCM & Component Maintenance Contracts

DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	
Red Line	Targeted System Overhaul (OH) of RL #3 Cars												
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars									
				Perform Reliability Centered Maintenance (RCM) on New RL Cars									
				Retire 218 Old RL Cars (#1, #2, #3)									
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)										
				Perform RCM on New OL Cars									
Blue Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)												
	Ctd. Delivery of Type 7 OH												
Green Line	Targeted System Overhaul of Type 8 Cars												
	Develop GL RCM Plan	Delivery of 74 New Type 9 Cars					Perform RCM on New Type 9 Cars						
	New GL Fleet Study										Perform RCM on New GL Cars		
60ft Bus & Trolley	Del. New 60ft Bus												
	Retire 44 CNG 60ft B												
	Ctd. Delivery of DMA												
	25 60ft Bus OH PP												
	60ft DMA &											Buses	
	Lo-No Battery Bus PP	Del. of											
40ft Bus	NTP NF Hyb Option 1	Deliver											
	NTP NF												
	Retire 193 Old Neoplan Diesels												
	Targeted OH NF Base												
	NTP NF Option OH	Del. NF Option OH	Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)				Perform RCM on New 40ft Buses				
					Retire 310 Old New Flyer (NF) Diesel Buses								
	Implement RCM on 60 Existing Hybrid Buses												
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid and CNG Buses								Develop Spec./RFP	Contract Award	Delivery of Replacement Buses	
Commuter Rail Locomotives and Coaches	Retire Old NABI CNG												
	F40/MP36 OH PP	Del. of F40/MP36 OH	40 (quantity) HSP OH PP			Delivery of HSP OH							
	New/Replacement Locomotive PP			Delivery of New Locomotives									
				Retire 19 Old GP40 Locos		Retire 29 F40 Locos							
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH												
	New/Replacement Control and Blind Coach PP				Delivery of New Control and Blind Coaches								
		Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH			Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH			
			Retire MBB CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs								
Ferry Boats	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats												
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M	
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	

What we need to know: Procurement strategy

- Alternative procurement models
- Vision for Commuter Rail
- RCM & Component Maintenance Contracts
- Project Delivery Resources



DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	
Red Line	Targeted System Overhaul (OH) of RL #3 Cars												
	Develop RL/OL RCM Plan				Delivery (Del.) of 252 New RL Cars								
				Perform Reliability Centered Maintenance (RCM) on New RL Cars									
				Retire 218 Old RL Cars (#1, #2, #3)									
Orange Line	Develop RL/OL RCM Plan			Delivery of 152 New OL Cars (#14)									
				Perform RCM on New OL Cars									
				Retire 120 Old OL Cars (#12)									
Blue Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)												
	Ctd. Delivery of Type 7 OH												
Green Line	Targeted System Overhaul of Type 8 Cars												
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars			Perform RCM on New Type 9 Cars								
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)							Delivery of 220 (est.) New GL Cars			Perform RCM on New GL Cars	
								Retire 214 Old GL Cars (Type 7 and 8)					
60ft Bus & Trolley	Del. New 60ft Bus												
	Retire 44 CNG 60ft Buses												
	Ctd. Delivery of DMA OH												
	25 60ft Bus OH PP	Del. of 25 60ft Buses											
	60ft DMA & Hybrid at												
40ft Bus	Lo-No Battery Bus PP	Del. of Lo-No Buses				Retire DMAs, 25Ns, and Trolleys							
	NTP NF Hyb Option 1	Delivery of Option 1											
		NTP NF Hyb Option 2	Delivery of Option 2										
		Retire 193 Old Neoplan Diesels											
	Targeted OH NF Base		Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)				Perform RCM on New 40ft Buses				
Commuter Rail Locomotives and Coaches	NTP NF Option OH	Del. NF Option OH				Retire 310 Old New (NF) Diesel Buses							
	Implement RCM on 60 Existing Hybrid Buses												
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid Buses								Develop Spec./RFP	Contract Award	Delivery of Replacement Buses	
	Retire Old NABI CNG												
	F40/MP36 OH PP	Del. of F40/MP36 OH		40 (quantity) HSP OH PP				Delivery of HSP OH					
Ferry Boats	New/Replacement Locomotive PP				Delivery of New Locomotives								
					Retire 19 Old GP40 Locos		Retire 29 F40 Locos						
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH					Delivery of New Control and Blind Coaches							
	New/Replacement Control and Blind Coach PP				Delivery of Kawasaki BTC-4C OH				Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH		
		Kawasaki BTC-4C OH PP			Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs								
Estimated Capital Cost	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats												
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M	
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	

What we need to know: Technology Choices

- Electrification of Commuter Rail



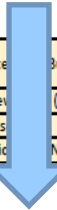


DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028
Red Line	Targeted System Overhaul (OH) of RL #3 Cars											
	Develop RL/OL RCM Plan				Delivery (Del.) of 252 New RL Cars				Perform Reliability Centered Maintenance (RCM) on New RL Cars			
				Retire 218 Old RL Cars (#1, #2, #3)								
	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)						Perform RCM on New OL Cars			
Orange Line				Retire 120 Old OL Cars (#12)								
	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)											
Blue Line	Ctd. Delivery of Type 7 OH											
	Targeted System Overhaul of Type 8 Cars											
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars		Perform RCM on New Type 9 Cars								
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)						Delivery of 220 (est.) New GL Cars		Perform RCM on New GL Cars		
Green Line								Retire 214 Old GL Cars (Type 7 and 8)				
	Del. New 60ft Bus											
	Retire 44 CNG 60ft Buses											
	Ctd. Delivery of DMA OH											
60ft Bus & Trolley	25 60ft Bus OH PP											
	60ft DMA & Hybr											
	Lo-No Battery Bus PP	Del. of Lo-No										
40ft Bus	NTP NF Hyb Option 1	Delivery of Option 1										
		NTP NF Hyb Option 2	Delivery of Option 2									
		Retire 193 Old Neoplan Diesels										
	Targeted OH NF Base		Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)				Perform RCM on New 40ft Buses			
	NTP NF Option OH	Del. NF Option OH				Retire 310 Old New (NF) Diesel Buses						
					Implement RCM on 60 Existing Hybrid Buses							
	Ctd. Del. New 40ft					Perform RCM on New 40ft Hybrid CNG Buses				Develop Spec./RFP	Contract Award	Delivery of Replacement Buses
	Retire Old NABI CNG											
Commuter Rail Locomotives and Coaches	F40/MP36 OH PP	Del. of F40/MP36 OH	40 (quantity) HSP OH PP			Delivery of HSP OH						
	New/Replacement Locomotive PP				Delivery of New Locomotives							
					Retire 19 Old GP40 Locos		Retire 29 F40 Locos					
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH											
	New/Replacement Control and Blind Coach PP				Delivery of New Control and Blind Coaches							
		Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH			Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH		
			Retire MBB CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs							
Ferry Boats	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats											
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028

What we need to know: Technology Choices

- Electrification of Commuter Rail
- Introduction of DMUs



DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028						
Red Line	Targeted System Overhaul (OH) of RL #3 Cars																	
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars														
	Perform Reliability Centered Maintenance (RCM) on New RL Cars																	
	Retire 218 Old RL Cars (#1, #2, #3)																	
Orange Line	Develop RL/OL RCM Plan																	
Blue Line																		
Green Line	Ctd. Delivery of Type 7 OH																	
	Targeted System Overhaul																	
	Develop GL RCM Plan			Delivery of 24 New Type 5 Cars			Perform RCM on New Type 5 Cars											
	New GL Fleet Study			New/Replacement GL Car Pre Procurement (PP)						Delivery of 220 (est.) New GL Cars			Perform RCM on New GL Cars					
										Retire 214 Old GL Cars (Type 7 and 8)								
60ft Bus & Trolley	Del. New 60ft Bus																	
	Perform RCM on New 60ft Buses																	
	Retire 44 CNG 60ft Buses																	
	Ctd. Delivery of DMA OH																	
	25 60ft Bus OH PP			Delivery of 25 Bus OH														
	60ft DMA & Hybrid and 40ft Trolley Replacement PP					Del. of New 60ft and Trolley Replacements		Perform RCM on New 60ft and Trolley Replacement Buses										
	Lo-No Battery Bus PP		Del. of Lo-No Buses					Retire DMAs, 25H, and Trolleys										
	NTP NF Hyb Option 1		Delivery of Option 1															
			NTP NF Hyb Option 2		Delivery of Option 2													
40ft Bus			Retire 193 Old Neoplan Diesels															
	Targeted OH NF Base				Develop Spec./RFP		Contract Award		Delivery of 310 (est.) Replacement Buses (approx. 100 per year)				Perform RCM on New 40ft Buses					
	NTP NF Option OH		Del. NF Option OH															
									Retire 310 Old New Flyer (NF) Diesel Buses									
	Implement RCM on 60 Existing Hybrid Buses																	
	Ctd. Del. New 40ft									Perform RCM on New 40ft Hybrid and CNG Buses			Develop Spec./RFP		Contract Award		Delivery of Replacement Buses	
Commuter Rail Locomotives and Coaches	Retire Old NABI CNG																	
	F40/MP36 OH PP		Del. of F40/MP36 OH		40 (quantity) HSP OH PP			Delivery of HSP OH										
	New/Replacement Locomotive PP								Delivery of New Locomotives									
									Retire 19 Old GP40 Locos				Retire 29 F40 Locos					
									Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH									
									Delivery of New Control and Blind Coaches									
Ferry Boats									Kawasaki BTC-4C OH PP				Delivery of Kawasaki BTC-4C OH		Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH	
									Retire MBB CTC/BTCs				Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs					
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M						
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028						

What we need to know: Technology Choices

- Electrification of Commuter Rail
- Introduction of DMUs
- Long-term Bus Technology

DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	
Red Line	Targeted System Overhaul (OH) of RL #3 Cars												
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars									
				Perform Reliability Centered Maintenance (RCM) on New RL Cars									
				Retire 218 Old RL Cars (#1, #2, #3)									
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)										
				Perform RCM on New OL Cars									
Blue Line				Retire 120 Old OL Cars (#12)									
	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)												
Green Line	Ctd. Delivery of Type 7 OH												
	Targeted System Overhaul of Type 8 Cars												
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars		Perform RCM on New Type 9 Cars									
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)							Delivery of 220 (est.) New GL Cars		Perform RCM on New GL Cars		
60ft Bus & Trolley									Retire 214 Old GL Cars (Type 7 and 8)				
	Del. New 60ft Bus												
	Retire 44 CNG 60ft Buses												
	Ctd. Delivery of DMA OH												
40ft Bus	25 60ft Bus OH PP	Del.											
	60ft DMA & Hybrid												
	Lo-No Battery Bus PP	Del. of Lo-No											
	NTP NF Hyb Option 1	Delivery of Op											
Commuter Rail Locomotives and Coaches		NTP NF Hyb Op											
		Retire 1											
	Targeted OH NF Base												
	NTP NF Option OH	Del. NF Option OH											
Ferry Boats	Retire 310 Old New Flyer (NF) Diesel Buses												
	Implement RCM on 60 Existing Hybrid Buses												
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid and CNG Buses								Develop Spec./RFP	Contract Award	Delivery of Replacement Buses	
	Retire Old NABI CNG												
Estimated Capital Cost													
Commuter Rail Locomotives and Coaches	F40/MP36 OH PP	Del. of F40/MP36 OH	40 (quantity) HSP OH PP			Delivery of HSP OH							
	New/Replacement Locomotive PP				Delivery of New Locomotives								
					Retire 19 Old GP40 Locos		Retire 29 F40 Locos						
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH												
Ferry Boats	New/Replacement Control and Blind Coach PP				Delivery of New Control and Blind Coaches								
		Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH			Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH			
			Retire MBB CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs								
Estimated Capital Cost	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats												
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M	
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	

What we need to know: Technology Choices

- Electrification of Commuter Rail
- Introduction of DMUs
- Long-term Bus Technology
- Vehicle Health Monitoring

DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	
Red Line	Targeted System Overhaul (OH) of RL #3 Cars												
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars									
				Perform Reliability Centered Maintenance (RCM) on New RL Cars									
				Retire 218 Old RL Cars (#1, #2, #3)									
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)										
				Perform RCM on New OL Cars									
Blue Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)												
	Ctd. Delivery of Type 7 OH												
Green Line	Targeted System Overhaul of Type 8 Cars												
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars		Perform RCM on New Type 9 Cars									
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)						Delivery of 220 (est.) New GL Cars		Perform RCM on New GL Cars			
								Retire 214 Old GL Cars (Type 7 and 8)					
60ft Bus & Trolley	Del. New 60ft Bus	Perform RCM on New 60ft Buses											
	Retire 44 CNG 60ft Buses												
	Ctd. Delivery of DMA OH												
	25 60ft Bus OH PP												
	60ft DMA & Hyb												
	Lo-No Battery Bus PP	Del. of Lo-N											
40ft Bus	NTP NF Hyb Option 1	Delivery of											
		NTP NF Hyb Option 2	Delivery of Option 2										
		Retire 193 Old Neoplan Diesels											
	Targeted OH NF Base		Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)			Perform RCM on New 40ft Buses					
	NTP NF Option OH	Del. NF Option OH											
					Retire 310 Old New Flyer (NF) Diesel Buses								
Commuter Rail Locomotives and Coaches	Implement RCM on 60 Existing Hybrid Buses									Develop Spec./RFP	Contract Award	Delivery of Replacement Buses	
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid and CNG Buses											
	Retire Old NABI CNG												
	F40/MP36 OH PP	Del. of F40/MP36 OH		40 (quantity) HSP OH PP			Delivery of HSP OH						
	New/Replacement Locomotive PP				Delivery of New Locomotives								
					Retire 19 Old GP40 Locos		Retire 29 F40 Locos						
Ferry Boats	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH												
	New/Replacement Control and Blind Coach PP			Delivery of New Control and Blind Coaches									
		Kawasaki BTC-4C OH PP		Delivery of Kawasaki BTC-4C OH			Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH				
			Retire MBB CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs								
Estimated Capital Cost	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats												
	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M	
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	

**What we need to know: Fiscal Issues**

- Funding for Vehicles and Facilities

**DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)**

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	
Red Line		Targeted System Overhaul (OH) of RL #3 Cars											
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars									
				Perform Reliability Centered Maintenance (RCM) on New RL Cars									
				Retire 218 Old RL Cars (#1, #2, #3)									
Orange Line	Develop RL/OL RCM Plan			Delivery of 152 New OL Cars (#14)									
				Perform RCM on New OL Cars									
				Retire 120 Old OL Cars (#12)									
Blue Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)												
	Ctd. Delivery of Type 7 OH												
Green Line	Targeted System Overhaul of Type 8 Cars												
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars		Perform RCM on New Type 9 Cars									
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)						Delivery of 220 (est.) New GL Cars		Perform RCM on New GL Cars			
								Retire 214 Old GL Cars (Type 7 and 8)					
60ft Bus & Trolley	Del. New 60ft Bus	Perform RCM on New 60ft Buses											
	Retire 44 CNG 60ft Buses												
	Ctd. Delivery of DMA OH												
	25 60ft Bus OH PP	Del.											
	60ft DMA & Hybrid												
	Lo-No Battery Bus PP	Del. of Lo-No											
	NTP NF Hyb Option 1	Delivery of Op											
40ft Bus		NTP NF Hyb Op											
	Retire 133 Old Neoplan Diesels												
	Targeted OH NF Base		Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)			Perform RCM on New 40ft Buses					
	NTP NF Option OH	Del. NF Option OH			Retire 310 Old New Flyer (NF) Diesel Buses								
					Implement RCM on 60 Existing Hybrid Buses								
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid and CNG Buses								Develop Spec./RFP	Contract Award	Delivery of Replacement Buses	
	Retire Old NABI CNG												
Commuter Rail Locomotives and Coaches	F40/MP36 OH PP	Del. of F40/MP36 OH	40 (quantity) HSP OH PP			Delivery of HSP OH							
	New/Replacement Locomotive PP			Delivery of New Locomotives									
				Retire 19 Old GP40 Locos			Retire 29 F40 Locos						
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH												
	New/Replacement Control and Blind Coach PP				Delivery of New Control and Blind Coaches								
		Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH				Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH		
			Retire MBB CTC/BTCs	Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs									
Ferry Boats	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats												
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M	
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	

DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028
Red Line	Targeted System Overhaul (OH) of RL #3 Cars											
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars								
				Perform Reliability Centered Maintenance (RCM) on New RL Cars								
				Retire 218 Old RL Cars (#1, #2, #3)								
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)									
				Perform RCM on New OL Cars								
Blue Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)											
	Ctd. Delivery of Type 7 OH											
Green Line	Targeted System Overhaul of Type 8 Cars											
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars		Perform RCM on New Type 9 Cars								
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)						Delivery of 220 (est.) New GL Cars		Perform RCM on New GL Cars		
								Retire 214 Old GL Cars (Type 7 and 8)				
60ft Bus & Trolley	Del. New 60ft Bus	Perform RCM on New 60ft Buses										
	Retire 44 CNG 60ft Buses											
	Ctd. Delivery of DMA OH											
	25 60ft Bus OH PP	Del. of 25 60ft Bus OH										
40ft Bus	60ft DMA & Hybrid											
	Lo-No Battery Bus PP	Del. of Lo-No Battery Bus										
	NTP NF Hyb Option 1	Delivery of Op										
		NTP NF Hyb Option 2										
Commuter Rail Locomotives and Coaches		Retire 1										
	Targeted OH NF Base											
	NTP NF Option OH	Del. NF Option OH	Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)				Perform RCM on New 40ft Buses			
					Retire 310 Old New Flyer (NF) Diesel Buses							
Ferry Boats	Implement RCM on 60 Existing Hybrid Buses											
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid and CNG Buses							Develop Spec./RFP	Contract Award	Delivery of Replacement Buses	
	Retire Old NABI CNG											
	F40/MP36 OH PP	Del. of F40/MP36 OH	40 (quantity) HSP OH PP			Delivery of HSP OH						
Estimated Capital Cost	New/Replacement Locomotive PP			Delivery of New Locomotives								
				Retire 19 Old GP40 Locos		Retire 29 F40 Locos						
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH											
	New/Replacement Control and Blind Coach PP			Delivery of New Control and Blind Coaches								
Estimated Capital Cost		Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH			Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH		
			Retire MBB CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs							
	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats											
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028

**What we need to know: Fiscal Issues**

- Funding for Vehicles and Facilities
- Fully funding asset life mgmt. approach
- Subsidy for electric technology?

DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	
Red Line	Targeted System Overhaul (OH) of RL #3 Cars												
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars									
				Perform Reliability Centered Maintenance (RCM) on New RL Cars									
				Retire 218 Old RL Cars (#1, #2, #3)									
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)										
			Perform RCM on New OL Cars										
Blue Line	Retire 120 Old OL Cars (#12)												
	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)												
Green Line	Ctd. Delivery of Type 7 OH												
	Targeted System Overhaul of Type 8 Cars												
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars		Perform RCM on New Type 9 Cars									
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)									Delivery of 220 (est.) New GL Cars		Perform RCM on New GL Cars
60ft Bus & Trolley									Retire 214 Old GL Cars (Type 7 and 8)				
	Del. New 60ft Bus	Perform RCM on New 60ft Buses											
	Retire 44 CNG 60ft Buses												
	Ctd. Delivery of 25 60ft OH PP												
	60ft Diesel Buses												
	Lo-No Battery Bus PP												
40ft Bus	NTP NF Hyb Option 1												
	NTP NF Hyb Option 2	Delivery of Option 2											
	Retire 193 Old Neoplan Diesels												
	Targeted OH NF Base		Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)				Perform RCM on New 40ft Buses				
Commuter Rail Locomotives and Coaches	NTP NF Option OH	Del. NF Option OH											
	Retire 310 Old New Flyer (NF) Diesel Buses												
	Implement RCM on 60 Existing Hybrid Buses												
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid and CNG Buses								Develop Spec./RFP		Contract Award	Delivery of Replacement Buses
	Retire Old NABI CNG												
	F40/MP36 OH PP	Del. of F40/MP36 OH	40 (quantity) HSP OH PP				Delivery of HSP OH						
Ferry Boats	New/Replacement Locomotive PP			Delivery of New Locomotives									
				Retire 19 Old GP40 Locos		Retire 29 F40 Locos							
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH												
	New/Replacement Control and Blind Coach PP			Delivery of New Control and Blind Coaches									
Estimated Capital Cost	Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH				Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH			
	Retire MBB CTC/BTCs			Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs									
	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats												
	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M	
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	

**What we need to know: Regulatory & Environmental**  
• Federal Emissions Regulations (Tier 4)



DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028
Red Line	Targeted System Overhaul (OH) of RL #3 Cars											
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars								
				Perform Reliability Centered Maintenance (RCM) on New RL Cars								
				Retire 218 Old RL Cars (#1, #2, #3)								
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)									
				Perform RCM on New OL Cars								
			Retire 120 Old OL Cars (#12)									
Blue Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)											
	Ctd. Delivery of Type 7 OH											
Green Line	Targeted System Overhaul of Type 8 Cars											
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars		Perform RCM on New Type 9 Cars								
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)						Delivery of 220 (est.) New GL Cars			Perform RCM on New GL Cars	
								Retire 214 Old GL Cars (Type 7 and 8)				
60ft Bus & Trolley	Del. New 60ft Bus	Perform RCM on New 60ft Buses										
	Retire 44 CNG 6											
	Ctd. Delivery of											
	25 60ft Bus OH PP											
	60ft Di											
	Lo-No Battery Bus PP											
40ft Bus	NTP NF Hyb Option 1											
	NT											
	Retire 193 Old Neoplan Diesels											
	Targeted OH NF Base											
	NTP NF Option OH	Del. NF Option OH	Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)				Perform RCM on New 40ft Buses			
					Retire 310 Old New Flyer (NF) Diesel Buses							
	Implement RCM on 60 Existing Hybrid Buses									Develop Spec./RFP	Contract Award	Delivery of Replacement Buses
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid and CNG Buses										
	Retire Old NABI CNG											
Commuter Rail Locomotives and Coaches	F40/MP36 OH PP	Del. of F40/MP36 OH	40 (quantity) HSP OH PP			Delivery of HSP OH						
	New/Replacement Locomotive PP			Delivery of New Locomotives								
				Retire 19 Old GP40 Locos		Retire 29 F40 Locos						
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH											
	New/Replacement Control and Blind Coach PP				Delivery of New Control and Blind Coaches							
		Kawasaki BTC-4C OH PP			Delivery of Kawasaki BTC-4C OH			Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH		
Ferry Boats			Retire M88 CTC/BTCs	Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs								
	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats											
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028

**What we need to know: Regulatory & Environmental**

- Federal Emissions Regulations (Tier 4)
- Buy America



DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028
Red Line		Targeted System Overhaul (OH) of RL #3 Cars										
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars								
				Perform Reliability Centered Maintenance (RCM) on New RL Cars								
				Retire 218 Old RL Cars (#1, #2, #3)								
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)									
				Perform RCM on New OL Cars								
Blue Line				Retire 120 Old OL Cars (#12)								
Green Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)											
	Ctd. Delivery of Type 7 OH											
	Targeted System Overhaul of Type 8 Cars											
	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars			Perform RCM on New Type 9 Cars							
60ft Bus & Trolley	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)						Delivery of 220 (est.) New GL Cars			Perform RCM on New GL Cars	
								Retire 214 Old GL Cars (Type 7 and 8)				
	Del. New 60ft Bus											
40ft Bus	Retire 44 CNG 6											
	Ctd. Delivery of											
	25 60ft Bus OH PP											
	60ft Di											
Commuter Rail Locomotives and Coaches	Lo-No Battery Bus PP											
	NTP NF Hyb Option 1											
Ferry Boats	Targeted OH NF Base		Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)				Perform RCM on New 40ft Buses			
	NTP NF Option OH	Del. NF Option OH				Retire 310 Old New Flyer (NF) Diesel Buses						
						Implement RCM on 60 Existing Hybrid Buses						
	Ctd. Del. New 40ft					Perform RCM on New 40ft Hybrid and CNG Buses				Develop Spec./RFP	Contract Award	Delivery of Replacement Buses
Estimated Capital Cost	Retire Old NABI CNG											
	F40/MP36 OH PP	Del. of F40/MP36 OH		40 (quantity) HSP OH PP			Delivery of HSP OH					
	New/Replacement Locomotive PP				Delivery of New Locomotives							
					Retire 19 Old GP40 Locos		Retire 29 F40 Locos					
Estimated Capital Cost	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH				Delivery of New Control and Blind Coaches							
	New/Replacement Control and Blind Coach PP				Delivery of Kawasaki BTC-4C OH PP				Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH	
					Retire M8B CTC/BTCs							
					Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs							
Estimated Capital Cost	Ctd. Procurement/Delivery of (2) New Catamaran Ferry Boats											
Estimated Capital Cost	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028

**What we need to know: Regulatory & Environmental**

- Federal Emissions Regulations (Tier 4)
- Buy America
- Climate Change/GHGs goals



## Project Schedule

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- Evaluate and define major Capital needs
  - Estimated completion early May 2017
- Progress updates to FMCB
  - Mid March 2017
  - Mid May 2017
- Development of Fleet and Facilities Plan
  - May through July 2017
- Presentation of Draft Plan to FMCB
  - July 2017



# Capital Framework – Fleets

## DRAFT Estimated Schedule and Annual Capital Costs for Revenue Vehicles (FY 2017-2028)

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	
Red Line		Targeted System Overhaul (OH) of RL #3 Cars											
	Develop RL/OL RCM Plan			Delivery (Del.) of 252 New RL Cars				Perform Reliability Centered Maintenance (RCM) on New RL Cars					
					Retire 218 Old RL Cars (#1, #2, #3)								
Orange Line	Develop RL/OL RCM Plan		Delivery of 152 New OL Cars (#14)										
			Perform RCM on New OL Cars										
			Retire 120 Old OL Cars (#12)										
Blue Line	Continued (Ctd.) RCM on Existing 94 BL Cars (#5)												
		Ctd. Delivery of Type 7 OH											
	Targeted System Overhaul of Type 8 Cars												
Green Line	Develop GL RCM Plan	Delivery of 24 New Type 9 Cars			Perform RCM on New Type 9 Cars								
	New GL Fleet Study	New/Replacement GL Car Pre Procurement (PP)						Delivery of 220 (est.) New GL Cars		Perform RCM on New GL Cars			
								Retire 214 Old GL Cars (Type 7 and 8)					
60ft Bus & Trolley	Del. New 60ft Bus	Perform RCM on New 60ft Buses											
	Retire 44 CNG 60ft Buses												
	Ctd. Delivery of DMA OH												
	25 60ft Bus OH PP	Delivery of 25 Bus OH											
	60ft DMA & Hybrid and 40ft Trolley Replacement PP				Del. of New 60ft and Trolley Replacements		Perform RCM on New 60ft and Trolley Replacement Buses						
40ft Bus	Lo-No Battery Bus PP	Del. of Lo-No Buses				Retire DMAs, 25H, and Trolleys							
	NTP NF Hyb Option 1	Delivery of Option 1											
	NTP NF Hyb Option 2	Delivery of Option 2											
	Retire 193 Old Neoplan Diesels												
	Targeted OH NF Base							Perform RCM on New 40ft Buses					
	NTP NF Option OH	Del. NF Option OH	Develop Spec./RFP	Contract Award	Delivery of 310 (est.) Replacement Buses (approx. 100 per year)								
Commuter Rail Locomotives and Coaches					Retire 310 Old New Flyer (NF) Diesel Buses								
	Implement RCM on 60 Existing Hybrid Buses											Delivery of Replacement Buses	
	Ctd. Del. New 40ft	Perform RCM on New 40ft Hybrid and CNG Buses											
	Retire Old NABI CNG												
	F40/MP36 OH PP	Del. of F40/MP36 OH		40 (quantity) HSP OH PP				Delivery of HSP OH					
Ferry Boats	New/Replacement Locomotive PP				Delivery of New Locomotives								
					Retire 19 Old GP40 Locos		Retire 29 F40 Locos						
	Delivery of Kawasaki Control (CTC) and Blind (BTC) Coach Base Targeted OH												
	New/Replacement Control and Blind Coach PP				Delivery of New Control and Blind Coaches								
		Kawasaki BTC-4C OH PP				Delivery of Kawasaki BTC-4C OH			Hyundai Rotem CTC OH PP		Delivery of Hyundai Rotem CTC OH		
Estimated Capital Cost			Retire MBB CTC/BTCs		Retire Bombardier CTC/BTCs - Retire Pullman Standard BTCs								
	Ctd. Procurement/Delivery of [2] New Catamaran Ferry Boats												
	\$387.M	\$383.3M	\$324.3M	\$222.9M	\$285.7M	\$299.6M	\$527.6M	\$718.2M	\$467.5M	\$269.M	\$118.4M	\$63.4M	
	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	2028	