WEST CHESTER METRO

FIVE YEAR FINANCIAL PLAN

July 25, 2024

Developed by the Committee to Reestablish Rail Service to West Chester

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1 INTRODUCTION

The Committee to Reestablish Rail Service to West Chester was created by the Borough of West Chester in 2014 with an express mission to "cause as soon as possible" the re-establishment of rail service to West Chester. This ***Five-Year Financial Plan*** supports active and ongoing discussions among local elected officials regarding the steps needed to enable immediate interim battery train shuttle service (West Chester Metro-WCM) on the West Chester Branch Line (WCBL) between West Chester Market Street Station and Wawa Station. This plan details the operating costs and revenues forecasted for the first five years of WCM operations on the WCBL (Table 1), as well as a sources and uses table (Table 2) detailing potential Federal, State, Local and Private funding sources to cover both the upfront capital investment in the WCBL as well as the annual operating subsidy. Based on this analysis, the committee forecasts an average farebox recovery ratio of 25% in the first five years of WCM service. Below is a chart summarizing the roughly $3,000,000 per year in operating costs, $700,000 in operating revenue, and $2,300,000 in operating subsidy.

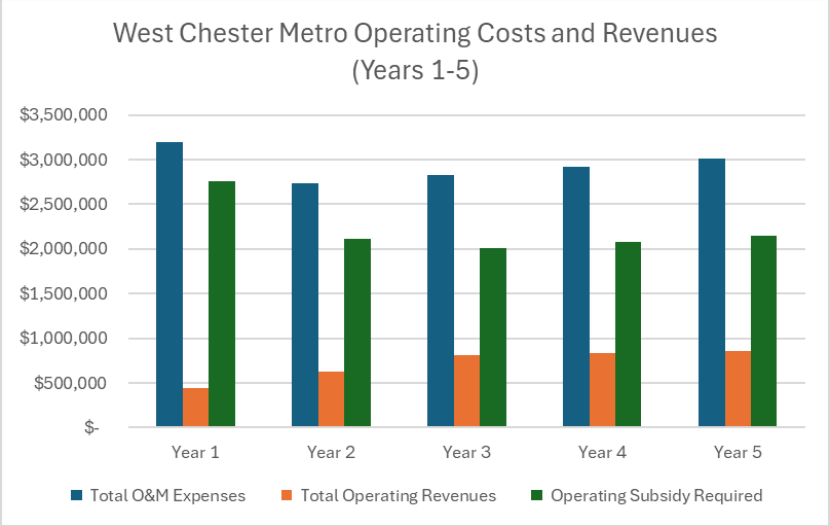

Figure 1: West Chester Metro Operating Costs and Revenues (Years 1-5)

2 OPERATING COST ANALYSIS

Key assumptions built into the WCM financial plan include ridership estimates, average fare, inflation rate, electricity cost and use and number of staff and salaries.

Ridership and Fares

The daily ridership in Year 1 is assumed to be 35% of the 1,370 trips (i.e., 480 trips) forecasted for WCM service in the 2011 DVRPC report.[1] Ridership is then assumed to escalate to 50% of DVRPC (685 trips) in Year 2, 65% of DVRPC (891 trips) in Year 3, and then grow by 3% per year thereafter. As of June 2024, SEPTA Regional Rail ridership had rebounded to 66% of pre-

[1] https://www.dvrpc.org/products/10036

pandemic levels, indicating that a 35-50% estimate is conservative for the initial years of WCM service. Fares are assumed to be $2.50 per trip.

Inflation

The rail cost adjustment factor (RCAF) is an index formulated to represent changes in railroad costs over time. The Surface Transportation Board (Board) is required by law to publish the RCAF on at least a quarterly basis. Each quarter, the Association of American Railroads (AAR) computes three types of RCAF figures and submits those figures to the Board for approval. The most recent RCAF figures are below.[2] Due to the fact that RCAF was reliably 4% prior to and during the pandemic, this report is assuming 4% as the value for inflation of all operating costs.

Electricity Cost and Use

The WCM level of service contemplated includes 18 daily roundtrips to coordinate with SEPTA Regional Rail and bus service at Wawa station. According to the Pop-Up Metro LLC (PUM), this level of service is estimated to require 2,500 kilowatt hours (kWh) of electricity per day.[3] The plan assumes an $0.18/kWh average rate, resulting in total Year 1 electricity costs of $164,250.

Staff and Salaries

The anticipated staffing for the WCM service assumes a supervisor and two train operators with an average fully burdened cost of $100,000 per year.

Below is a detailed operating costs and revenues table, demonstrating an average farebox recovery ratio of 25% over the first five years of service.

	Year 1	Year 2	Year 3	Year 4	Year 5
Operating Revenues					
Ridership	175,018	250,025	325,033	334,783	344,827
Fare Revenue	$ 437,544	$ 625,063	$ 812,581	$ 836,959	$ 862,067
Other Operating Revenue	$ -	$ -	$ -	$ -	$ -
Total Operating Revenues	**$ 437,544**	**$ 625,063**	**$ 812,581**	**$ 836,959**	**$ 862,067**
Annual % Change		43%	30%	3%	3%
Operating and Maintenance Costs					
Rolling Stock, Platforms, & Chargers Maintenance	$ 1,093,464	$ 1,137,203	$ 1,182,691	$ 1,229,998	$ 1,279,198
Mobilization	$ 500,000	$ -	$ -	$ -	$ -
Insurance*	$ 500,000	$ 515,000	$ 530,450	$ 546,364	$ 562,754
Salaries (Supervisor and Operators)	$ 300,000	$ 309,000	$ 318,270	$ 327,818	$ 337,653
Track Maintenance	$ 200,000	$ 206,000	$ 212,180	$ 218,545	$ 225,102
Electricity	$ 164,250	$ 169,178	$ 174,253	$ 179,480	$ 184,865
Marketing and Administrative	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000
Contingency (10%)	$ 290,771	$ 248,638	$ 256,784	$ 265,221	$ 273,957
Total O&M Expenses	**$ 3,198,485**	**$ 2,735,018**	**$ 2,824,628**	**$ 2,917,426**	**$ 3,013,529**
Balance from Existing Operations	$ (2,760,942)	$ (2,109,956)	$ (2,012,047)	$ (2,080,468)	$ (2,151,462)
Operating Subsidy Required	$ 2,760,942	$ 2,109,956	$ 2,012,047	$ 2,080,468	$ 2,151,462
Balance from Operations	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Farebox Recovery	**13.7%**	**22.9%**	**28.8%**	**28.7%**	**28.6%**

*Insurance estimate anticipates supplemental costs associated with use of umbrella policy of a public transportation agency

Table 1: West Chester Metro Operating Costs and Revenues

[2] https://www.stb.gov/reports-data/railroad-cost-recovery-factor/#Recent-RCAF

[3] See Appendix: Attachment 3: Pop-Up Metro Donation Term Sheet

3 FUNDING SOURCES AND USES

The overall WCM financial picture includes an estimated $30,000,000 in upfront capital investment for restoration of track to FRA Class 3 (Max 60 mph) service, station area improvements, construction of a West Chester Metro turnout and lead to the WCM platform at Wawa, and construction of a pedestrian bridge over the Baltimore Pike between the WCM Wawa platform and the SEPTA Wawa station. These costs are further elaborated in a memo provided by PUM and included in the Appendix.[4]

The combination of the upfront capital investment and annual operating subsidy for WCM service generates a required budget of approximately $41,000,000 over the first five years of operations. To fund these costs, a combination of Federal, State and Private sources of funding are proposed. Two key in-kind donations are assumed to maximize local match and enable WCM to be eligible for a large amount of Federal funding that depending on the scenario, could eliminate the need for any actual State or Local cash contributions. These in-kind donations are as follows:

1. SEPTA Donation of WCBL to WCM Rail Operating Entity (Value: $12,500,000)
2. PUM Donation of Battery Trainset, IP and Platforms (Value: $6,015,000)

Estimated Market Value of In-Kind Donations:

Entity	Description	Estimated Market Value
Pop-Up Metro, LLC	Two-car Battery Electric Multiple Unit (BEMU) passenger rolling stock (Unit ID 002)	$5 Million
Pop-Up Metro, LLC	Donation of two years of its IP @ $2.50 per train mile based on proforma service scheduled	$715,000
Pop-Up Metro, LLC	Donation of Four modular ADA compliant platforms	$300,000
SEPTA	Donation of 7.2 miles of the West Chester Branch Line	$10 to $15 Million
Total		**$16 - $20 Million**

Figure 2: Market Value Estimate of Proposed In-Kind Contributions

Table 2 below demonstrates how a combination of Federal grants from the U.S. Departments of Transportation (DOT) and Energy (DOE), Pennsylvania State Redevelopment Assistance Capital Program (RACP) funds for which WCM already has a line item in the state budget, and private foundation contributions that WCM would pursue could **fully fund both the establishment and the operation of WCM for the first five years without requiring any cash contribution from SEPTA, Chester County or the Borough of West Chester.**

[4] See Appendix: Attachment 5: Pop-Up Metro WCBL Refurbishment Capital Costs

	Year 1	Year 2	Year 3	Year 4	Year 5
Funding Uses					
Capital Cost for West Chester Branch Line (WCBL) Upgrade	$ 30,000,000	$ -	$ -	$ -	$ -
Operating Subsidy Required (from Table 1)	$ 2,760,942	$ 2,109,956	$ 2,012,047	$ 2,080,468	$ 2,151,462
Total Funding Uses	**$ 32,760,942**	**$ 2,109,956**	**$ 2,012,047**	**$ 2,080,468**	**$ 2,151,462**
Funding Source					
Federal					
OST RAISE	$ 7,000,000	$ -	$ -	$ -	$ -
FRA Congressionally Directed Spending	$ 15,000,000	$ -	$ -	$ -	$ -
FTA Mobility	$ -	$ -	$ -	$ -	$ -
FHWA CMAQ	$ -	$ 500,000	$ 500,000	$ 500,000	$ 500,000
DOE	$ 2,000,000	$ -	$ -	$ -	$ -
State					
Redevelopment Assistance Capital Program (RACP)	$ 4,000,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000
SEPTA In-Kind Donation of WCBL**	$ 12,500,000	$ -	$ -	$ -	$ -
Local					
Chester County	$ -	$ -	$ -	$ -	$ -
Borough of West Chester	$ -	$ -	$ -	$ -	$ -
Private					
Pop-Up Metro In-Kind Donation of Trainset, IP and Platforms**	$ 6,015,000	$ -	$ -	$ -	$ -
Foundation Support	$ 6,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 500,000
Total Funding Sources	**$ 52,515,000**	**$ 2,000,000**	**$ 2,000,000**	**$ 2,000,000**	**$ 1,500,000**
Total Non-Federal Funding Sources	$ 28,515,000	$ 1,500,000	$ 1,500,000	$ 1,500,000	$ 1,000,000
% Non-Federal Funding Sources	54.30%				
Net Annual Funding Available	**$ 1,239,058**	**$ (109,956)**	**$ (12,047)**	**$ (80,468)**	**$ (651,462)**
Cumulative Funding Available	**$ 1,239,058**	**$ 1,129,103**	**$ 1,117,056**	**$ 1,036,589**	**$ 385,127**

**In-kind contributions noted only for local match purposes. Not counted as an actual source of funding.

Table 2: West Chester Metro Sources and Uses of Funds

4 CONCLUSION

The WCM Financial Plan details the financial requirements for establishing regular rail service on the WCBL, however the most critical requirement has no cost associated with it. This requirement is the need for SEPTA's permission and political support to begin pursuing the Federal and State grants outlined in Table 2, and as an in-kind effort that will be supportive of the conditions of PUM's equipment donation offer. To be clear, WCM does not contemplate requiring financial support of any kind from SEPTA, but rather requires SEPTA's blessing to pursue this mutually beneficial rail service initiative that will bring new riders into the Regional Rail system at no additional cost to SEPTA. The Committee remains hopeful that this detailed analysis will open a conversation about how we can move forward together to make WCM a reality as soon as possible.

5 APPENDIX

APPENDIX 1 – WEST CHESTER METRO FINANCIAL PLAN EXCEL BACKUP

APPENDIX 2 – WEST CHESTER METRO OPERATING PLAN

APPENDIX 3 – POP-UP METRO DONATION TERM SHEET

APPENDIX 4 - RAIL COST ADJUSTMENT FACTOR (RCAF) INFLATION REFERENCE

APPENDIX 5 - POP-UP METRO WCBL REFURBISHMENT CAPITAL COSTS

APPENDIX 1

ASSUMPTIONS

Daily Ridership Year 1	480	[35% of DVRPC Ridership Study]
Daily Ridership Year 2	685	[50% of DVRPC Ridership Study]
Daily Ridership Year 3	891	[65% of DVRPC Ridership Study]
Daily Ridership Growth Years 4-12	3%	
Inflation Rate	4%	[per RCAF, see Attachment]
Average Fare	$2.50	
kWH/day for 18 round trips	2500	
Cost/kWh	$0.18	
Fully Burdened Annual Staff Salary	$100,000	
Number of Staff	3	

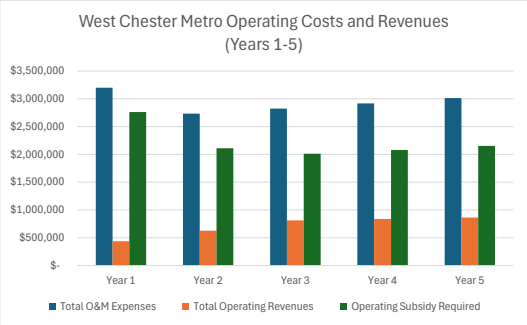

Table 1 - Operating Costs

	Year 1	Year 2	Year 3	Year 4	Year 5
Operating Revenues					
Ridership	175,018	250,025	325,033	334,783	344,827
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Other Operating Revenue	$ -	$ -	$ -	$ -	$ -
Total Operating Revenues	**$ 437,544**	**$ 625,063**	**$ 812,581**	**$ 836,959**	**$ 862,067**
Annual % Change		43%	30%	3%	3%
Operating and Maintenance Costs					
Rolling Stock, Platforms, & Chargers Maintenance	$ 1,093,464	$ 1,137,203	$ 1,182,691	$ 1,229,998	$ 1,279,198
Mobilization	$ 500,000	$ -	$ -	$ -	$ -
Insurance*	$ 500,000	$ 515,000	$ 530,450	$ 546,364	$ 562,754
Salaries (Supervisor and Operators)	$ 300,000	$ 309,000	$ 318,270	$ 327,818	$ 337,653
Track Maintenance	$ 200,000	$ 206,000	$ 212,180	$ 218,545	$ 225,102
Electricity	$ 164,250	$ 169,178	$ 174,253	$ 179,480	$ 184,865
Marketing and Administrative	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000
Contingency (10%)	$ 290,771	$ 248,638	$ 256,784	$ 265,221	$ 273,957
Total O&M Expenses	**$ 3,198,485**	**$ 2,735,018**	**$ 2,824,628**	**$ 2,917,426**	**$ 3,013,529**
Balance from Existing Operations	$ (2,760,942)	$ (2,109,956)	$ (2,012,047)	$ (2,080,468)	$ (2,151,462)
Operating Subsidy Required	$ 2,760,942	$ 2,109,956	$ 2,012,047	$ 2,080,468	$ 2,151,462
Balance from Operations	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Farebox Recovery	**13.7%**	**22.9%**	**28.8%**	**28.7%**	**28.6%**

*Insurance estimate anticipates supplemental costs associated with use of umbrella policy of a public transportation agency

Table 1 - Operating Costs

	Year 6	Year 7	Year 8	Year 9	Year 10
Operating Revenues					
Ridership	175,018	250,025	325,033	334,783	344,827
Fare Revenue	$ 437,544	$ 625,063	$ 812,581	$ 836,959	$ 862,067
Other Operatin	$ -	$ -	$ -	$ -	$ -
Total Operatin	**$ 437,544**	**$ 625,063**	**$ 812,581**	**$ 836,959**	**$ 862,067**
Annual % Char		43%	30%	3%	3%
Operating and Maintenance Costs					
Rolling Stock, F	$ 1,093,464	$ 1,137,203	$ 1,182,691	$ 1,229,998	$ 1,279,198
Mobilization	$ (200,000)	$ (300,000)	$ (400,000)	$ (500,000)	$ (600,000)
Insurance*	$ 500,000	$ 515,000	$ 530,450	$ 546,364	$ 562,754
Salaries (Super	$ 300,000	$ 309,000	$ 318,270	$ 327,818	$ 337,653
Track Maintena	$ 200,001	$ 206,001	$ 212,181	$ 218,546	$ 225,103
Electricity	$ 164,250	$ 169,178	$ 174,253	$ 179,480	$ 184,865
Marketing and	$ 150,000	$ 150,000	$ 150,000	$ 150,000	$ 150,000
Contingency (1	$ 220,772	$ 218,638	$ 216,784	$ 215,221	$ 213,957
Total O&M Exp	**$ 2,428,487**	**$ 2,405,019**	**$ 2,384,629**	**$ 2,367,427**	**$ 2,353,530**
Balance from E	$ (1,990,943)	$ (1,779,957)	$ (1,572,048)	$ (1,530,469)	$ (1,491,463)
Operating Subs	$ 1,990,943	$ 1,779,957	$ 1,572,048	$ 1,530,469	$ 1,491,463
Balance from (	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Farebox Recov	**18.0%**	**26.0%**	**34.1%**	**35.4%**	**36.6%**

*Insurance estimate anticipates supplemental costs associated with use of umbrella policy of a public transportation agency

Table 2 - Funding Sources and Uses

	Year 1	Year 2	Year 3	Year 4	Year 5
Funding Uses					
Capital Cost for West Chester Branch Line (WCBL) Upgrade	$ 30,000,000	$ -	$ -	$ -	$ -
Operating Subsidy Required (from Table 1)	$ 2,760,942	$ 2,109,956	$ 2,012,047	$ 2,080,468	$ 2,151,462
Total Funding Uses	**$ 32,760,942**	**$ 2,109,956**	**$ 2,012,047**	**$ 2,080,468**	**$ 2,151,462**
Funding Source					
Federal					
OST RAISE	$ 7,000,000	$ -	$ -	$ -	$ -
FRA Congressionally Directed Spending	$ 15,000,000	$ -	$ -	$ -	$ -

Table 2 - Funding Sources and Uses

	Year 6	Year 7	Year 8	Year 9	Year 10
Funding Uses					
Capital Cost fo	$(12,000,000)	$(18,000,000)	$(24,000,000)	$(30,000,000)	$(36,000,000)
Operating Subs	$ 1,990,943	$ 1,779,957	$ 1,572,048	$ 1,530,469	$ 1,491,463
Total Funding	**$(10,009,057)**	**$(16,220,043)**	**$(22,427,952)**	**$(28,469,531)**	**$(34,508,537)**
Funding Source					
Federal					
OST RAISE FRA	$ (2,800,000)	$ (4,200,000)	$ (5,600,000)	$ (7,000,000)	$ (8,400,000)
Congressionally Directed Spending	$ (6,000,000)	$ (9,000,000)	$(12,000,000)	$(15,000,000)	$(18,000,000)

FTA Mobility	$ -	$ -	$ -	$ -	$ -
FHWA CMAQ	$ -	$ 500,000	$ 500,000	$ 500,000	$ 500,000
DOE	$ 2,000,000	$ -	$ -	$ -	$ -
State					
Redevelopment Assistance Capital Program (RACP)	$ 4,000,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000
SEPTA In-Kind Donation of WCBL**	$ 12,500,000	$ -	$ -	$ -	$ -
Local					
Chester County	$ -	$ -	$ -	$ -	$ -
Borough of West Chester	$ -	$ -	$ -	$ -	$ -
Private					
Pop-Up Metro In-Kind Donation of Trainset, IP and Platforms**	$ 6,015,000	$ -	$ -	$ -	$ -
Foundation Support	$ 6,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 500,000
Total Funding Sources	**$ 52,515,000**	**$ 2,000,000**	**$ 2,000,000**	**$ 2,000,000**	**$ 1,500,000**
Total Non-Federal Funding Sources	$ 28,515,000	$ 1,500,000	$ 1,500,000	$ 1,500,000	$ 1,000,000
% Non-Federal Funding Sources	54.30%				
Net Annual Funding Available	**$ 1,239,058**	**$ (109,956)**	**$ (12,047)**	**$ (80,468)**	**$ (651,462)**
Cumulative Funding Available	**$ 1,239,058**	**$ 1,129,103**	**$ 1,117,056**	**$ 1,036,589**	**$ 385,127**

**In-kind contributions noted only for local match purposes. Not counted as an actual source of funding.

FTA Mobility	$ -	$ -	$ -	$ -	$ -
FHWA CMAQ	$ 700,000	$ 800,000	$ 900,000	$ 1,000,000	$ 1,100,000
DOE	$ (800,000)	$ (1,200,000)	$ (1,600,000)	$ (2,000,000)	$ (2,400,000)
State					
Redevelopment Assistance Capital Program (RACP)	$ (900,000)	$ (1,600,000)	$ (2,300,000)	$ (3,000,000)	$ (3,700,000)
SEPTA In-Kind Donation of WCBL**	$ (5,000,000)	$ (7,500,000)	$(10,000,000)	$(12,500,000)	$(15,000,000)
Local					
Chester County	$ -	$ -	$ -	$ -	$ -
Borough of West Chester	$ -	$ -	$ -	$ -	$ -
Private					
Pop-Up Metro In-Kind Donation of Trainset, IP and Platforms**	$ (2,406,000)	$ (3,609,000)	$ (4,812,000)	$ (6,015,000)	$ (7,218,000)
Foundation	$ (1,400,000)	$ (2,500,000)	$ (3,600,000)	$ (4,700,000)	$ (5,800,000)
Total Funding	**$(18,606,000)**	**$(28,809,000)**	**$(39,012,000)**	**$(49,215,000)**	**$(59,418,000)**
Total Non-Fede	$ (9,706,000)	$(15,209,000)	$(20,712,000)	$(26,215,000)	$(31,718,000)
% Non-Federal	52.17%				
Net Annual Fu	**$ (1,190,943)**	**$(12,588,957)**	**$(16,584,048)**	**$(20,745,469)**	**$(24,909,463)**
Cumulative Fu	**$ (1,190,943)**	**$(13,779,899)**	**$(30,363,947)**	**$(51,109,416)**	**$(76,018,879)**

**In-kind contributions noted only for local match purposes. Not counted as an actual source of f

APPENDIX 2

POP-UP METRO

Pop-Up Metro, LLC

PRELIMINARY OPERATING PLAN SUMMARY

WEST CHESTER POP-UP METRO TRANSIT

20 March 2023

Preliminary Operating Plan Summary | Table of Contents

1. OBJECTIVES OF THIS PLAN

This **in process** document summarizes a **preliminary operating plan** written for purposes of describing an operating demonstration of Pop-Up Metro (rail transit system) on a 9.2-mile segment of railway that extends from Wawa, PA to West Chester, PA. This railway constitutes the only remaining route that is reasonably available for restoring light metro rail service to West Chester, the county seat of Chester County that was formerly served by multiple rail transit/ commuter rail routes. West Chester's population has grown by more than 70% since its passenger rail service was suspended by SEPTA in 1986.

Installation of new and/or restoration of former rail transit lines has become prohibitively expensive. For example, in Seattle, Sound Transit's Light Rail Transit (LRT) Southward Extension is costing in excess of $250 million USD per mile; some of which is due to the cost of right-of-way acquisition. The estimated cost of the Northern Extension of the Hudson Bergen System in New Jersey is now estimated at $200 million USD per mile. This extension utilizes an existing double track freight line. Much of these costs are due to building to much higher engineering standards that are actually required for delivery of the intended service and which may well exceed reasonable standards for LRT design. Pop-Up Metro (PUM) offers a more cost effective and much more quickly deployed means of instituting LRT. PUM could be used as a "starter" service as a prelude to more conventional light rail, or as a permanent solution to installing affordable rail transit in smaller urban areas or those which have developed in a lighter density of land usage, for example Boise (ID), Riverside (CA), Oceanside to Escondido (CA), etc. It is also important to emphasize that the methods of deployment and the quickness of deployment are extremely pertinent to managing the investment costs of LRT.

This plan is being assembled by Pop-Up Metro, LLC, a Pennsylvania based company, in support of The West Chester Borough's Committee to Reestablish Rail Service to West Chester. The committee was established by Act of the Borough Council in 2014, with the charge "*to cause, as soon as possible, the reestablishment of rail service to West Chester, as soon as possible*". Through its subsidiaries, Pop-Up Metro's parent company Railroad Development Corporation has the largest privately owned fleet of sleeper cars in Europe that currently operate in Austria, Germany, the Netherlands, Sweden, and Switzerland.

This plan will serve as a prelude and basis for a final and more comprehensive Operating Plan that will be developed as the details of the proposed transit service demonstration are further refined. Because this demonstration of **Interurban Light Rail Transit** (**ILRT**) is proposed for a route that was formerly, and remains, part of the General Railroad System of the United

States (GRS), a waiver will be required as relief from certain Federal Railroad Administration (FRA) standards; and in order to obtain such a waiver, (of which there are currently over one dozen throughout the United States) a formal and detailed petition is required to be filed with FRA. This petition will include a comprehensive Operating Plan that addresses the organizational structure and how it will support service delivery/transportation, maintenance of equipment (rolling stock), maintenance of way, operations, system safety, and "equivalent safety". This Preliminary Plan will speak to every subject that shall be addressed in the Final Plan, albeit on a summarized basis. The preliminary summary document will ultimately be refined and evolve into a "**Final**" Plan which will serve as the basis for petition to the FRA after receiving input from key stakeholder such as SEPTA.

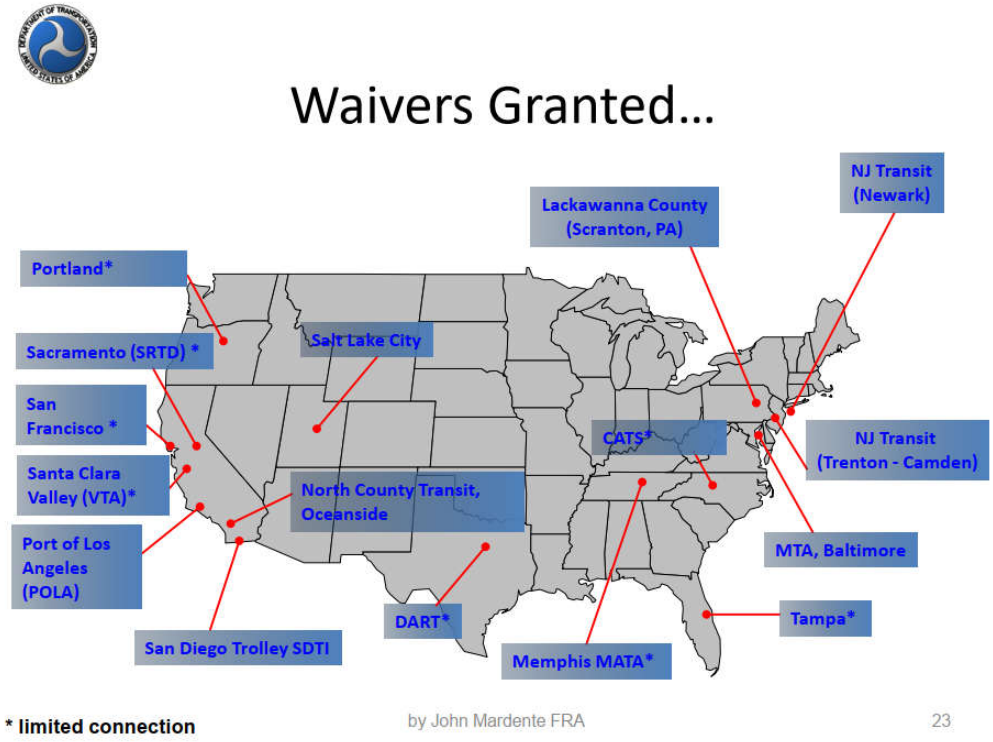


Figure 1 | Location of Temporal Separation Waivers Granted by the FRA

2. BACKGROUND ON RAILROAD DEVELOPMENT CORPORATION AND POP-UP METRO, LLC

Railroad Development Corporation

535 Smithfield Street, Suite 960 | Pittsburgh PA 15222 | 412-928-0777 | www.RRDC.com

- ***Family-Owned*** investment and management company based in Pittsburgh, PA
- ***"Partner of Choice"*** in railways and rail-related businesses
- ***Philosophy:*** Safety ⇨ Quality ⇨ Growth ⇨ Profitability
- *Goal of becoming* ***Most Respected*** *in our markets*

Iowa Interstate Railroad

Iowa & Illinois, USA

- **Class II freight railroad** operating between Chicago, IL and Council Bluffs, IA with branch to Peoria, IL: connects with all 7 Class 1 railroads
- ***Safety***: Delta Airlines reference peer
- ***Industrial development***: Elite Octane ethanol plant in Atlantic, IA, opened July 2018
- ***Partnership:*** *iCON Infrastructure* since December 2020
- ***Community Service:*** fire dept. benefit steam trips

Pop-UP Metro

USA

- Modular power: diesel, battery, hybrid, 3rd rail, hydrogen…
- Vendor's mainline product in the UK: West Midlands, Wales, Isle of Wight franchises
- For the USA: ***"Pop-Up Metro"***
  - Opportunity to test and evaluate potential rail transit operations…
  - …for less than the cost of a consultant study
  - Maximize the utility of **existing light density freight lines**
  - *Pop-Up Metro* **demonstration project launched August 2021** in Rockhill Furnace, PA: battery train, modular platforms, charging system, Temporal Separation…
  - Deployment projects under development in the USA and Mexico

RDC-Deutschland *Germany*

RDC Deutschland holds interests in:

- BahnTouristikExpress (BTE)
  - ***AutoReiseZug***—night auto train service between Hamburg and Lörrach (near Basel) — like Amtrak Auto Train
  - Provider of rolling stock for the European **night train** renaissance
  - Operator of **Thunderbird services** such as Ukrainian refugee trains

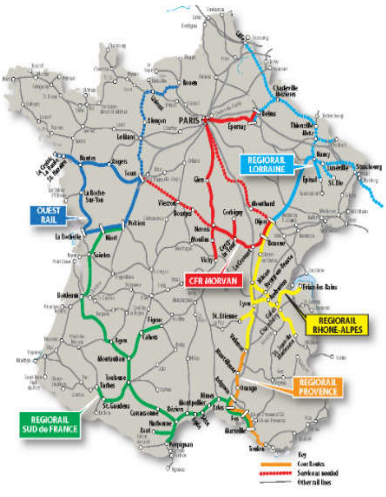
- ***AUTOZUG Sylt***
  - First privately-owned railway company to transport passengers in their vehicles to the ***island of Sylt.*** Trucks added in 2019.
  - Recent investments: new trainsets, locomotives
  - Terminal upgrades for an enhanced customer experience completed in 2019
  - Operator of ***NachtExpress*** seasonal night train between Sylt and points in Southern Germany and Western Austria

Ferrocarril Central Andino *Peru*

- ***Industry model for Safety***; no injuries 2018, 2021
- 489 km (305 mi) single-track standard gauge railroad from Port of Callao and Lima to Huancayo and Cerro de Pasco
- Completely rebuilt 286,000 GWOR corridor featuring CWR, concrete ties, strengthened bridges and central dispatch/control center
- Highest railway in the Americas, ***second highest in the world***, 4,818 meters (15,807 ft/3 mi) above sea level
- Railway Wonder of the World: 68 tunnels, 61 bridges, 9 switchbacks
- Major carrier of minerals and concentrates for mining industry

RegioRail / Eurorail *France & Belgium*

- **RegioRail**
  - First kilometer/last kilometer, ***wagonload*** traffic, ***national coverage*** in France
  - Clients include Danone (Evian), Nestlé (Perrier), Lafarge, Eiffage, Michelin
- **Eurorail**
  - ***Logistics*** specialist based in Belgium
  - 5 rail-served warehouses, connecting France, Italy and Spanish border with global networks



RDC RAILROAD DEVELOPMENT CORPORATION

www.rrdc.com

POP-UP METRO

Pop-Up Metro

Creating value for light density urban freight lines

Pop-Up Metro now offers its Class 230 battery-propelled light metro trains in the United States, which are an innovative, new build from the aluminum body shell and bogies from former London Underground equipment.

- ✓ Pop-Up Metro offers a reliable, low-cost, and sustainable option allowing communities considering rail options to both **prove the concept** and **prove the market** in an expedited, economic, low-risk manner.

- ✓ Pop-Up Metro **is a Turnkey "Kit"**[1] incorporating trains, ADA complaint modular platforms, charging equipment, maintenance infrastructure, training, technical support and an operating plan **under an annual lease,** eliminating the high up-front capital commitment typically associated with light Metro passenger start-ups.

Features of the Class 230 D-Train:

- 194 passenger capacity (88 seated, 106 standees)
- Battery propulsion offers swift acceleration and a quiet ride, providing passengers a fast and comfortable journey
- Speed/Range: Max 60 MPH / 50-60 mile range per charge
- Charge time: As fast as 8-10 minutes with our optional Fast Charge system
- Fully customized design: passenger friendly, flexible interior layouts with storage for bicycles and luggage, WiFi, USB charging ports, etc.
- By accommodating bikes, creating a comfortable working environment, and providing reliable service, Pop-Up Metro trains facilitate door-to-door use of transit.
- Modular "Future-Proof" design for easy reconfiguration of power source (diesel, electric, battery, hybrid, fuel cell)
- Minimal maintenance requirements, the majority of which can be performed on site thanks to modular design

The **battery powered D-Train** has been built with green and eco-friendly systems at heart and meets the highest standards for environmental performance, beginning even before the trains are put into service.

- The battery powered trains operate as zero tail-pipe-emission vehicles, reducing emissions that are harmful to the environment and public health.
- Regenerative braking captures energy and reuses it to power the train.
- Battery packs are able to charge from any available power source including solar, wind, and other renewable sources.
- The design greatly reduces the amount of raw materials and energy needed to manufacture new trainsets: nearly 8 tons of aluminum are diverted from being scrapped by using high quality donor parts.

In the USA, Pop-Up Metro trains can be used to maximize the utility of existing light density freight lines in communities interested in rail transit options. **For less than the cost of a full feasibility study, communities can test actual ridership and evaluate the operation while jump-starting the development of rail transit corridors**.

[1] The Pop-Up Metro Kit has a US Patent Pending

In most scenarios, Pop-Up Metro would operate under a shared-use waiver from the FRA based on **temporal separation, as currently practiced on freight-passenger operations in PA, NJ, TX, CA, etc**. This allows for passenger service to operate on limited and selected portions of the general railway system under the condition that the two modes (freight and passenger) are kept absolutely separate by assignment of specific blocks of time to each mode. The RDC team includes experience with the implementation of temporal separation. Together with our modular, ADA compliant high-level platforms, Pop-Up Metro provides the ability to **execute fast implementation of the service with minimal capital investment**.

Pop-Up Metro is operating two active train-sets in **demonstration operations** at Rockhill Furnace, PA on a 1.8 mile test track on the East Broad Top Railroad.

Pop-Up Metro is now expanding beyond the demonstration operation and we are looking for opportunities in communities that combine:

1. **Mobility challenges** such as traffic congestion or financial barriers to transit investment;
2. **Willing host railroads** interested in increasing their revenue from light density freight lines; and
3. **Local sponsors** in either the **public or private sectors**.

Potential applications include:

- First and last mile **connections to existing transit** corridors, increasing access to transit in suburban, ex-urban or rural areas;
- "Park and Ride" **shuttle service** connecting remote parking areas to dense urban centers, easing traffic congestion and reducing the amount of real estate dedicated to parking in cities;
- New, **independent rail transit** services in areas unserved areas; and
- Private employee shuttle services

Pop Up Metro will provide, under circumstances ranging from a **short-term lease to an outright sale**:

- **Trains and platforms** (including design and maintenance)
- Full driver and maintenance **training**
- Support for developing **an operating plan** in compliance with FRA regulations for use of Vivarail equipment on the common railroad system, including support to obtain any necessary regulatory approvals
- Support in obtaining **public financing** where appropriate
- Ongoing **operational and technical support**

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3. WEST CHESTER METRO PROJECT SUMMARY

A demonstration of an Interurban Light Rail Transit (ILRT) operation is proposed for an existing railway line that connects Wawa, PA with downtown West Chester, PA. The route is a former Pennsylvania Railroad electrified (but now without electrification) commuter line that is owned, but not operated, by SEPTA. The route, which is approximately 9.2 miles in length, is comprised of a single track (with the exception of a pocket track at West Chester) and is oriented in a (railroad) north/south direction, with West Chester being the (railroad) south terminal. West Chester is, in fact, geographically north of Wawa, however railroad timetable references are used throughout this document. A geographically correct map is included as Figures 1 below.

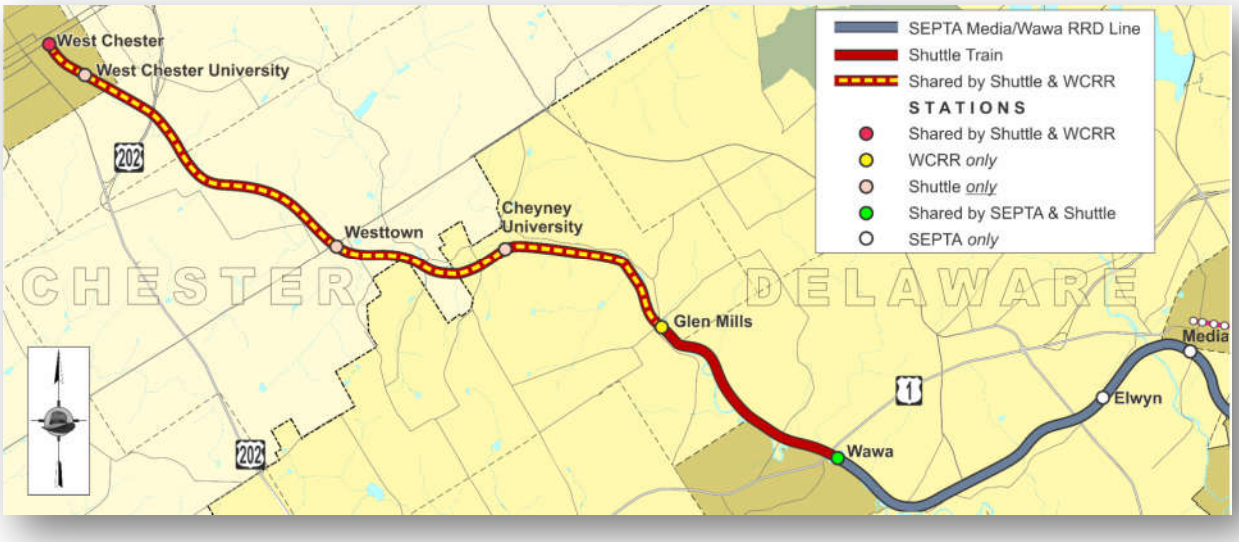

Figure 2: West Chester to Wawa Corridor Map

There is no active freight on this line, however at M.P. 20 there is a Quarry that previously shipped crushed stone by train; actions are now underway by SEPTA to restore freight rail service to this location. There is also an important Tourist Train service that operates on weekends and on certain Holidays (or weekday school charters) between Glen Mills (M.P. 20.5) and West Chester (M.P. 27.5). The segment of line between Glen Mills and SEPTA's Wawa Terminal is currently out of service but is in process of being restored. The line's only connection to the GRS is through the SEPTA Wawa connection; the West Chester portion of the line dead-ends adjacent to PA State Hwy. 3.

The rolling stock proposed for this operation is referred to as the Class 230 Battery Train. The Class 230 train (shown as Figure 3) consists of remanufactured London Underground multiple unit cars. These formally operated on what is referred to as London's "Surface" lines, not in the "Tubes"; as such they are larger and heavier than so-called "Tube Stock" and are similar to New York City BMT/IND Subway cars and are roughly equivalent to the Broad Street Subway vehicles. (Dimensions as indicated in Figure 3). These cars operate on mainlines in the UK with a maximum track speed of 60 MPH. They have been extensively rebuilt with strengthened structures, modern propulsion and braking systems, renewed and enhanced safety appliances, and interior refurbishments. A variety of propulsion modes are available with Class 230 equipment; for the West Chester ILRT Demonstration 100% battery-powered rail cars will be utilized. The Class 230 train represents product recycling and reuse of equipment that was at mid-life, as well as an opportunity to demonstrate (in full Revenue Service) a modern, safe, clean, and efficient mode of energy for transport purposes.

Pop-Up Metro would establish an operating joint venture with a qualified company to operate the service, which is referred to as **West Chester Metro Express** (**WCMX**) throughout this document.

Class 230

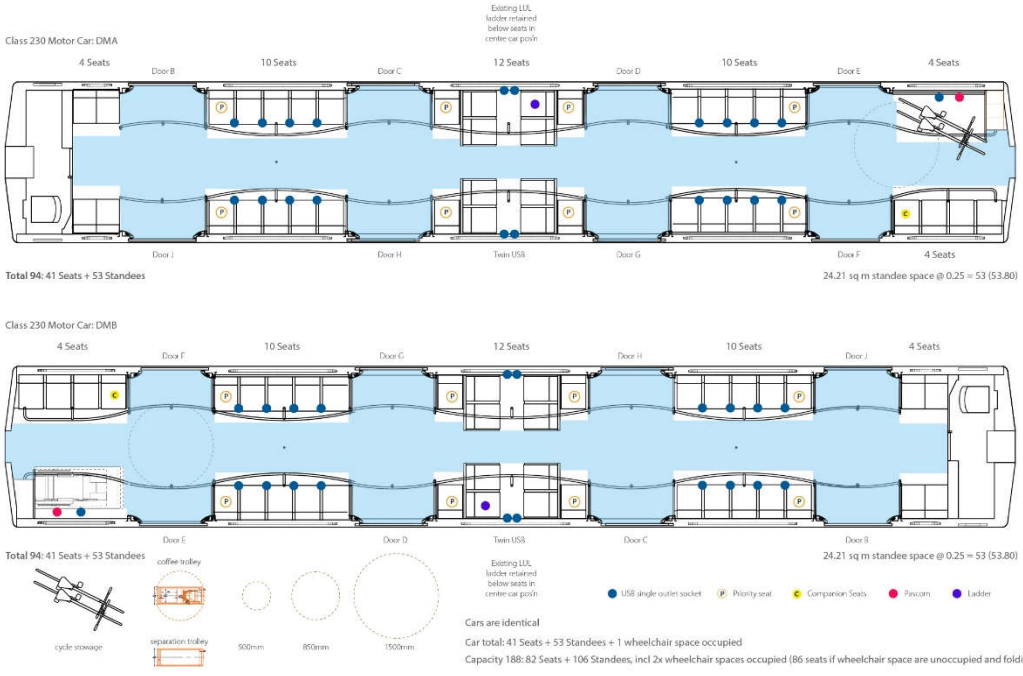
Class 230 Motor Car: DMA
Existing LUL ladder retained below seats in centre car posn
4 Seats
Door B
10 Seats
Door C
12 Seats
Door D
10 Seats
Door E
4 Seats
Door J
Door H
Twin USB
Door G
Door F
4 Seats
Total 94: 41 Seats + 53 Standees
24.21 sq m standee space @ 0.25 = 53 (53.80)
Class 230 Motor Car: DMB
4 Seats
Door F
10 Seats
Door G
12 Seats
Door H
10 Seats
Door J
4 Seats
Door E
Door D
Twin USB
Door C
Door B
Total 94: 41 Seats + 53 Standees
24.21 sq m standee space @ 0.25 = 53 (53.80)
coffee trolley
cycle stowage
separation trolley
500mm
850mm
1500mm
Existing LUL ladder retained below seats in centre car posn
USB single outlet socket
Priority seat
Companion Seats
Pavcom
Ladder
Cars are identical
Car total: 41 Seats + 53 Standees + 1 wheelchair space occupied
Capacity 188: 82 Seats + 106 Standees, incl 2x wheelchair spaces occupied (86 seats if wheelchair space are unoccupied and folding seats used)

Figure 3 | Visuals and Schematics of the Class 230 Pop-Up Metro Battery Trains

The Pop-Up Metro Kit includes sufficient portable and/or pre-engineered equipment able to support a medium-term revenue service for a period of 2 to 5 years. Included in the kit are modular station platforms (the car is high level boarding) with ADA access; shops and maintenance equipment; a charging system; operating rulebooks, etc. A series of U.S. patents are pending for the PUM Kit[1]. This Kit is provided by Pop-Up Metro as an integrated package for daily operations during the term of the demonstration service duration.

Pop-Up Metro proposes to provide the PUM Kit to be utilized during an initial two-year revenue service between Wawa and West Chester for the purposes of measuring and proving ridership in the region. This is an area which was once blessed with multiple rail transit options and now has none, and an area that has seen an order of magnitude increase in population and traffic congestion. While the Pop-Up Metro train equipment and operational practices conform to American and world-wide standards and "best practices" for Transit, it is recognized that the West Chester line once was, and remains part of, the GRS and consequently conformance is with FRA Standards, or a waiver of certain criteria, based upon demonstration of equivalent safety, is required, to allow this operational demonstration to proceed. A qualified expert, preferably SEPTA would provide crews for the WCMX service. Staffing will draw from locally based

[1] U.S. National Phase Patent Application Serial No. 17/800,358

employees and subcontractors to assure appropriate Southeast Pennsylvania representation of employees, local businesses, and subcontractors.

4. HISTORY, PRESENT STATUS AND OPPORTUNITIES

The final Operating Plan will provide a full description of the following components:

a. History of this Line
   - In 1928, PRR electrified the West Chester Branch to Media.
   - In 1983, SEPTA assumed operating responsibilities from the Railroad.
     - Began operating the Branch more like a light rail trolley.
     - Most direct trains to Center City were replaced with single-car shuttles running between Media and West Chester
       - Shuttle service proved more efficient
       - Fewer wasted empty "seat-miles"
   - In 1986, SEPTA cut the branch service back to Elwyn.
   - In 1997, the Borough of West Chester leased 7.2 miles of the Branch from SEPTA
     - The Borough assumed responsibility for right-of-way safety and preservation.
     - The Borough sublets the branch to 4 States Railway services to run a tourist train.

b. Route Description and its Environment (e.g. a mix of residential, commercial, industrial, colleges, with heavy density development at both end points)

c. This will be a Transit operation with a wide variety of ridership types (recreational/entertainment to West Chester core, college students, shopping, work trips for employees of local businesses, government centers, universities and hospitals, and general connectivity trips to provide access to important bus routes such as 104, 111, 119 and 120, paratransit, and SEPTA's passenger trains calling on the SEPTA Wawa station.

d. A description of Public Benefit including but not limited to environmental, mobility, reduction in traffic congestion, air quality, social justice, and direct and indirect economic impacts.

5. ORGANIZATIONAL APPROACH

The **Final** Operating Plan will describe in detail the organizational approach to the demonstration service, identifying key entities including but not limited to:

i. Federal Railroad Administration (FRA)

ii. SEPTA

iii. The Borough of West Chester

iv. Chester and Delaware Counties

v. The tourist train operator, West Chester Railroad

vi. WCMX, the operating entity for daily (Mon-Fri) train services

vii. Pop-Up Metro, LLC

viii. Defined and approved subcontractors

6. SERVICE AND SERVICE DELIVERY

The service and service delivery components of the Operating Plan detail the core element or product of the transit service to be delivered to the Public. This section of the Operating Plan includes two parts; 1, the SERVICE PLAN and 2, the METHODS by which the Service will be delivered.

A. Service

Service will be provided on a Monday – through Friday basis; service will span from a TBD early morning departure from West Chester to TBD late evening last train arrival at West Chester. WCMX track authority will commence 10 minutes before the first morning WCM train departure from West Chester and conclude 10 minutes after the last WCMX West Chester train arrival, Monday-Friday. Service levels will vary from 40-minute to 60-minute headways, reflecting bus and rail schedules in place at connection points such as Wawa, PA. End terminal locations will be established at Wawa and West Chester. At Wawa, effective and absolute modal boundaries will be installed (as described in this document) to separate modes during of WCMX service. These boundaries and designs will be at a location to be determined jointly with SEPTA and will not cause harm SEPTA's existing passenger operation. The proposed WCMX Wawa platform will be clear of

the model boundaries separating WCMX from SEPTA's commuter terminal although convenient and secure pedestrian transfers to SEPTA rail and bus will be provided. Three intermediate stations will be established at West Chester University, Westtown, and Cheyney University. With an MAS of 50 mph the one-way transit time will be approximately 20 minutes, including cycle and recovery time at each end for the purposes of train cleanout, brake tests, operator relief, etc. During non-operating WCMX hours, any and all WCMX equipment will be stored at West Chester.

One-Person operating crews will be used; fare medium will be a set price for the full length of trip; with ticket prices and promotional fares as defined. Transfer privileges to SEPTA buses will be based upon SEPTA approvals. Tickets will be sold through an-online system, an I-Phone/Android App, and at convenient ticket kiosks at each station on the West Chester line and a vending machine located on the car. On board fare inspection will occur on a "spot" basis by operating personnel.

While the base service will be weekdays it is recognized that the West Chester Railroad will continue to operate on selected weekdays, such as on Charter days. WCMX will coordinate with WCRR and at times when the Railroad operates WCMX will substitute bus service. The substitute bus(s) will stop at WCMX Stations only and will operate on the WCMX schedule.

B. Service Delivery

i. Coordination with, and Separation from Other Modes

In addition to the adjacent, but fully separate and distinct, SEPTA electrified commuter rail service at Wawa, there are two other operations which require consideration in service-planning and in the Safety Case. For the WCMX demonstration service these are:

- The West Chester Railroad Tourist Train (WCRR)
- The restoration of freight rail service to the Glen Mills Quarry.

Three line diagrams describe below in schematized form the envelope of these use scenarios to govern the application and enforcement of temporal separation as seen in Figures 4 to 8 below.

The Operating Plan will accommodate the WCRR Tourist Train Operations of the West Chester Railroad during a standard weekend window spanning from approximately 12:00 AM on Saturday

to 5:00 AM on Monday. During these hours, a derail-equipped turnout at the Railroad South end of the Pop-Up Metro terminal at West Chester will be locked reverse (preventing PUM to proceed outside of its terminal). Similar derail-equipped devices will also be located at the Quarry tracks to prevent freight movements outside of these leads. A turn-out and derail (derail placed on the PUM track) will isolate WCMX to allow through movement at SEPTA's discretion into the Wawa station platform. During WCRR operating hours, the PUM Wawa platform will not be occupied and will be completely secured from any access (this will also apply during Quarry operating hours). Please refer to operating plate Figure 4 below.

The Operating Plan will accommodate the resumption of freight (stone) to the Hanson Quarry. Quarry access be limited to between approximately 12:00 AM. And 5:00 AM; this window is well clear of the ILRT hours of operation. During these hours of Quarry Service, a derail-equipped turnout located at the Quarry entrance will be locked reverse (route to/from quarry only). Freight will not proceed (railroad) south of the Quarry site; this will allow positive modal separation between WCRR and freight operation. Please refer to operating plate Figure 5 below.

Following a similar proven/safe protocol that is now in place at over a dozen locations in the United States, the installation of positive barriers will be in place during the time of Pop-Up Metro operations Monday through Friday. Positive barriers will also be in place at the West Chester Railroad terminal and quarry site to prevent both WCRR and Quarry train equipment from entering the Pop-Up Metro operating location between the Pop-Up Metro terminal locations at West Chester and the Pop-Up Metro platform at Wawa. Please refer to operating plate figure 5 below.

As noted above, on days when the WCRR operates, WCMX will substitute busses and WCMX equipment will remain completely "in the clear" and locked (derail protected) into the Pop-Up Metro West Chester Service track.

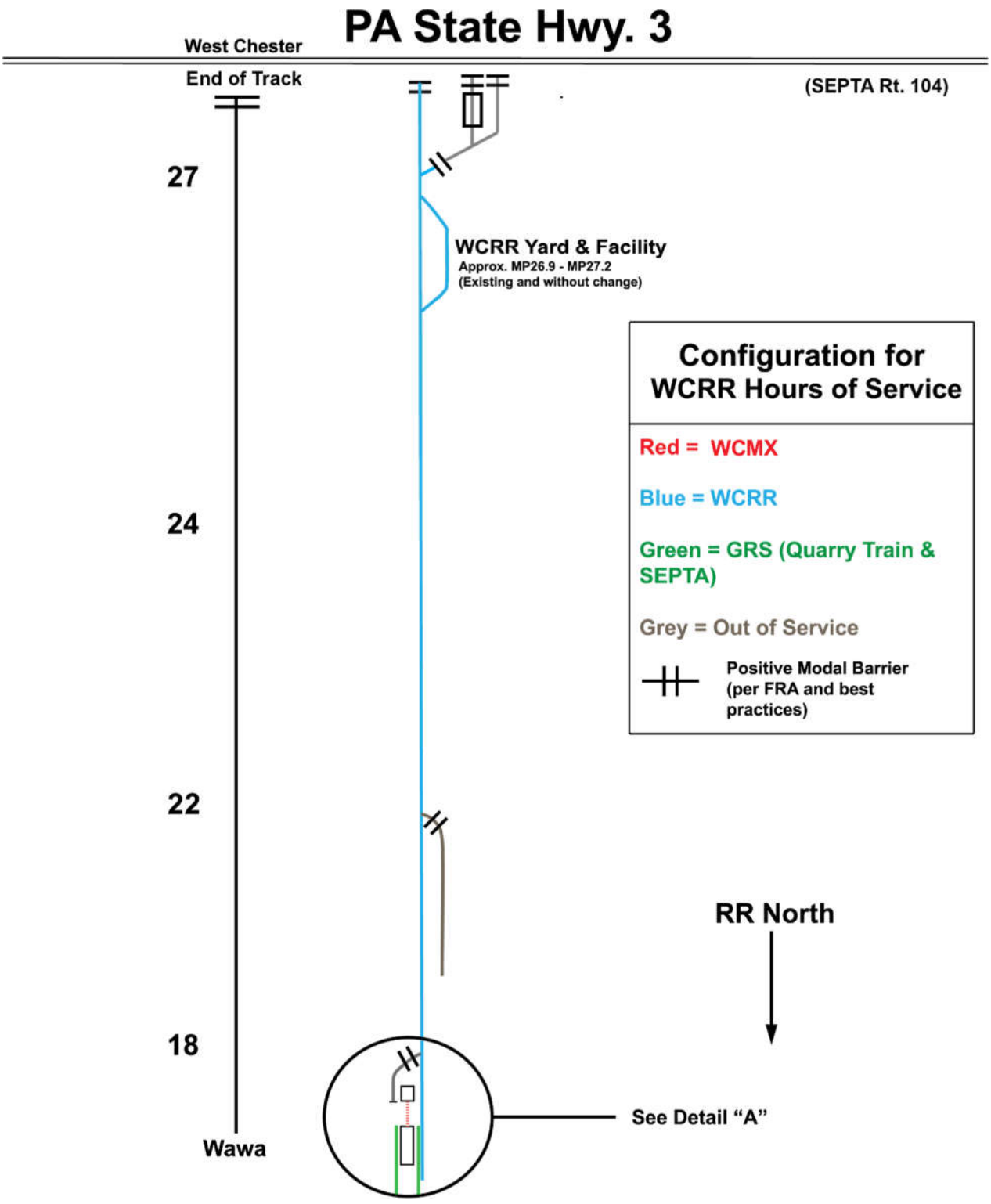

Figure 4 | Temporal Separation Plate / Protocol during Tourist Train Operations

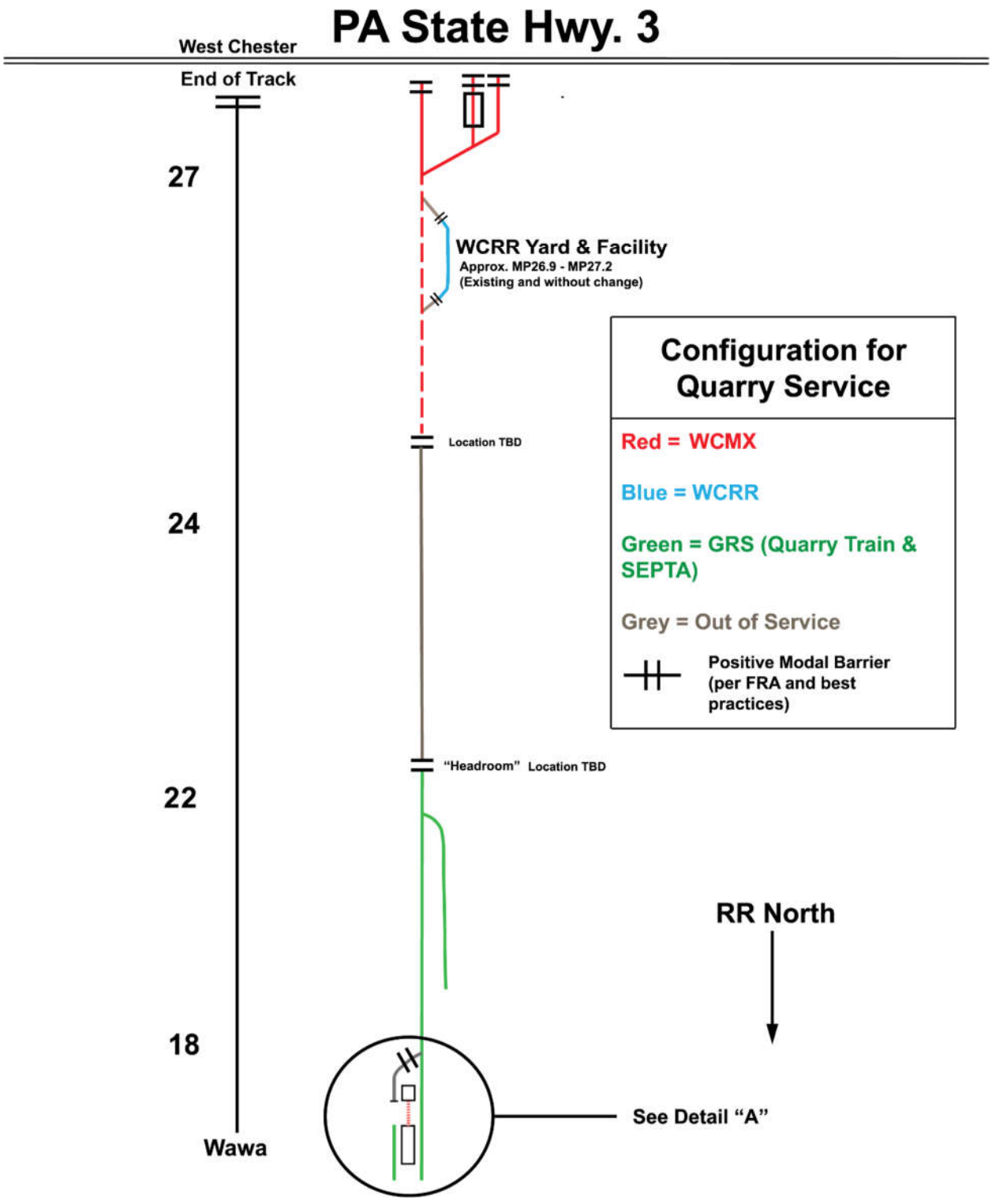

Figure 5 | Temporal Separation Plate / Protocol during Quarry Operations

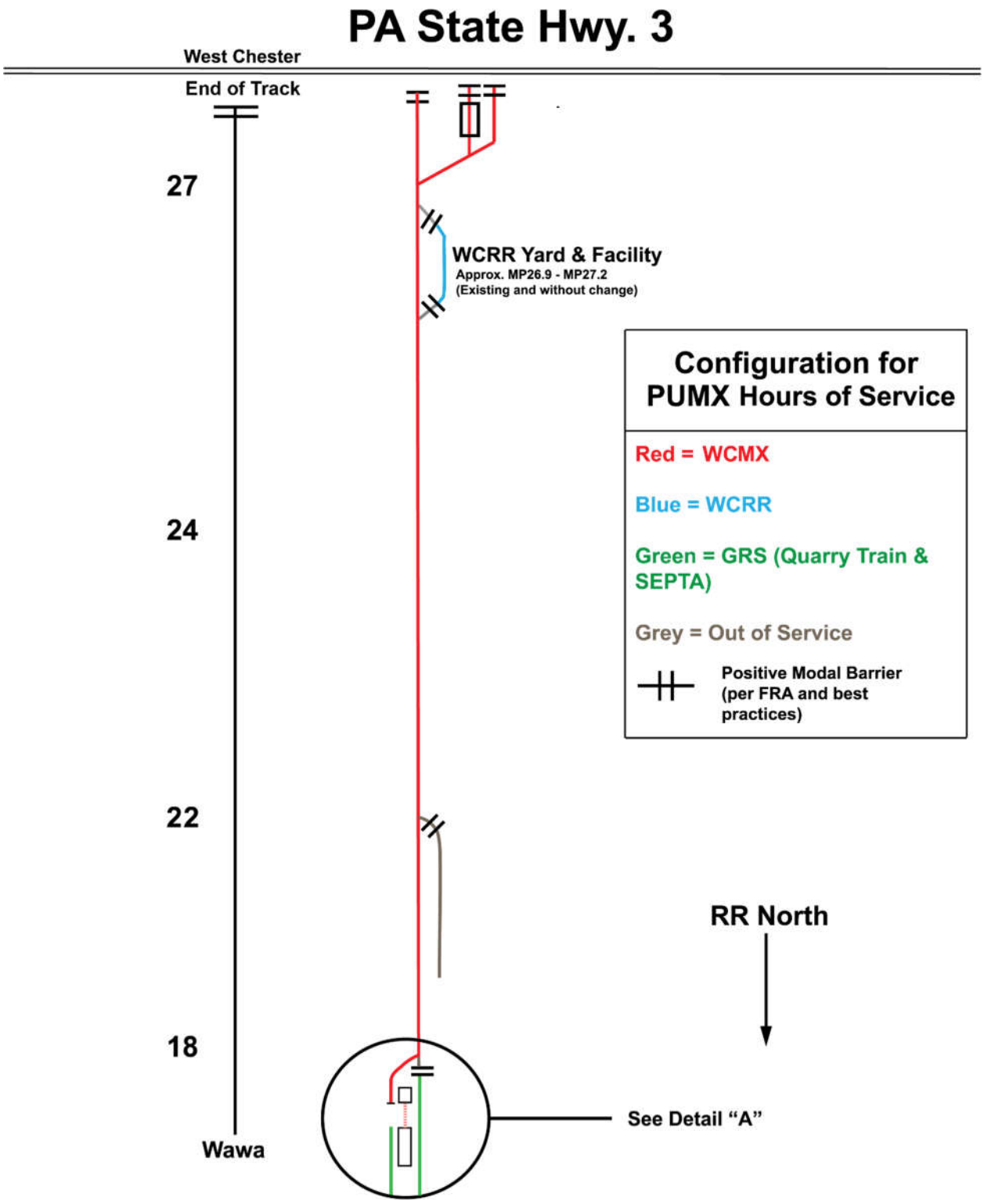

Figure 6 | Temporal Separation Plate / Protocol during Pop-Up Metro Operations

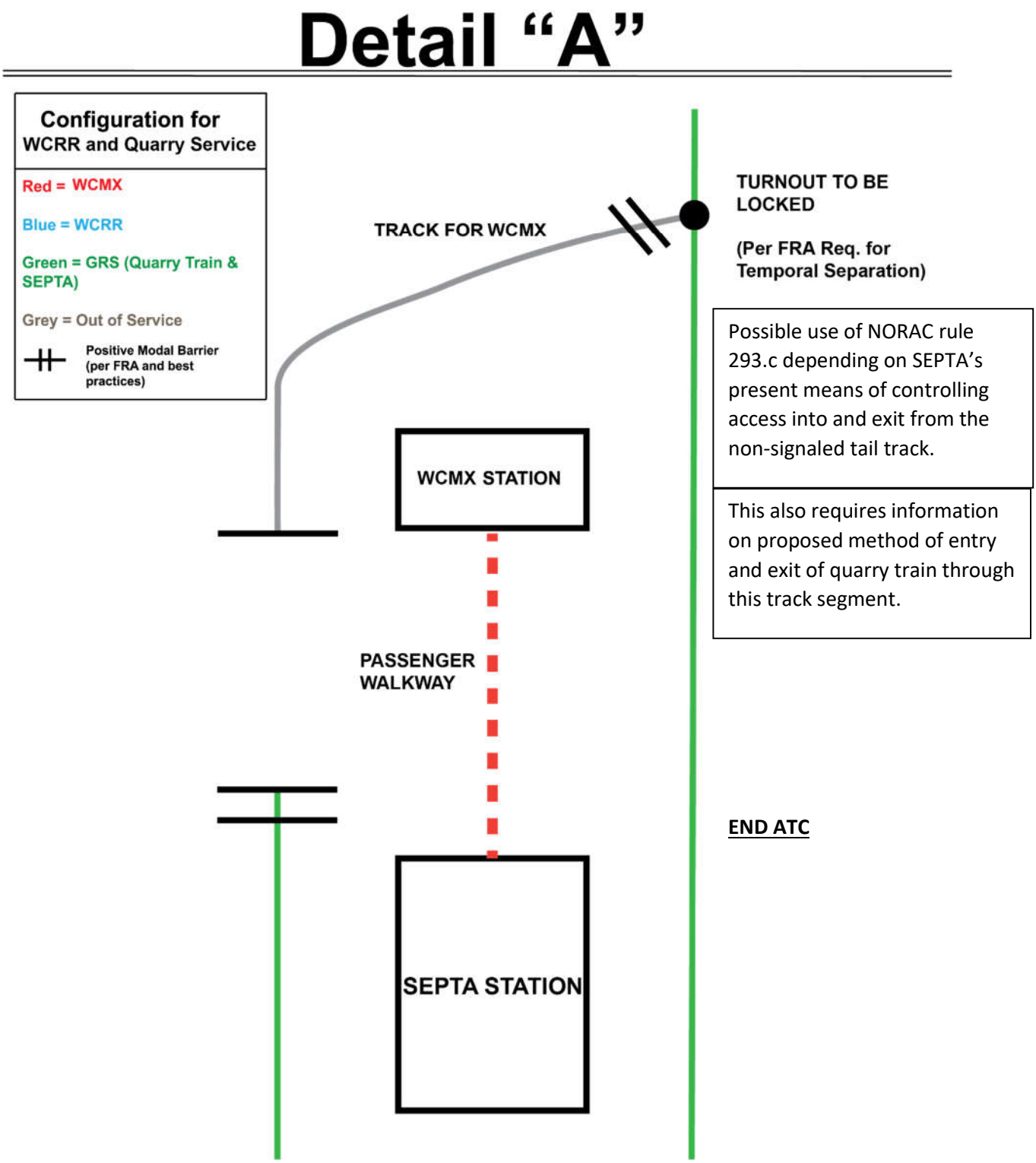

Figure 7 | Detail A Outline of Infrastructure, Temporal Separation, and Operating Windows between at Wawa

Detail "A" Visualization

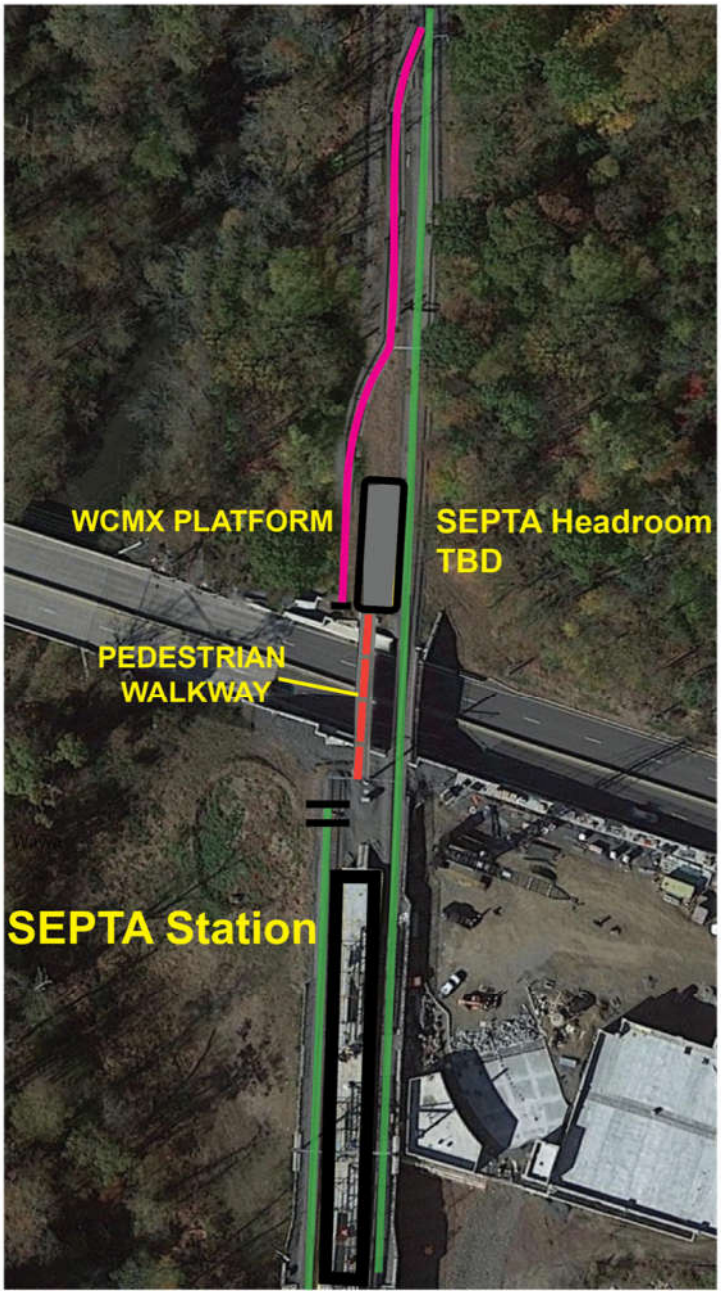

Figure 8 | Visual Overview of proposed WCMX platform location and pedestrian walkway connection to SEPTA's Wawa station.

As noted above, Modal boundaries will be defined and protected by:

- Block Limit or equivalent signage
- Locked turnouts and
- Locked derails

All requirements will be written in all relevant Rulebooks (SEPTA,WCRR,WCMX). This aspect of WCMX will be modelled based upon the FRA approved temporally separated operations such as Scranton /Delaware Lackawanna, NJT River Line, Oceanside Escondido, and San Diego Trolley. WCMX will arrange SEPTA site visits to any of these properties at SEPTA's request.

ii. Transportation/Train Management

Train Consist

During the WCMX hours of operation, a single train consist comprising two battery EMU's would be in operation. There would only be one train on the line at any time. The two-unit WCMX train would have a maximum capacity of 194 passengers (88 seated, 106 standees).

Train Crew and Qualifications

The WCMX consist would feature a one-person operator. Daily hours of operations would be covered by two-shifts. In addition, law-enforcement officers would periodically ride on the train.

Crews would be trained in accordance with NORAC rulebook as modified by the necessities of both transit operations and the ultimate conditions impose by FRA as part of the temporal approval process. All operational documents including rule books and training and qualification protocols would be provided in advance for SEPTA's review. Training would be executed first by core operations and rules classes, and equipment runs under temporal separation on New Jersey Transit's River line, located 58 miles from West Chester, and on the Lackawanna Country Trolly/Delaware Lackawanna Railroad in Scranton, PA located 132 miles from West Chester. Crews would then be orientated and qualified to operate the WCMX equipment on non-revenue runs on the West Chester line during WCMX temporal operations windows, under the supervision of a qualified training operator. Written exams and repeat check rides would be utilized to qualify crews. Once in active operational service, frequent check rides would occur between WCMX operators and WCMX training operators to ensure precise and safe operating practices in compliance with rulebooks and general order in place. Efficiency checks would also be performed by operations management including speeds, application of brakes at public crossings, and other train movement authority compliance. As a light rail transit operator over the GRS, additional efficiency testing, check rides, and oversight would be provided by Federal Railroad Administration officers who would

periodically visit the West Chester corridor on an un-announced basis. Pop-Up Metro would voluntarily implement and execute FRA drug and alcohol testing and enforcement for all operating personnel. Train operator qualifications would be recertified with written and test-ride examinations on an annual basis.

Dispatching

Pop-Up Metro would implement of a qualified, third-party neutral dispatching services company for all users of the 9.2 mile West Chester to Wawa corridor. Pop-Up Metro proposes utilizing Rio Grande Pacific Dispatch (RGP) that currently provides around-the-clock primary and backup rail dispatching for 11 short line and commuter railroads located throughout the United States. Each month, RGP Dispatch currently supports more than 1,100 crew starts and over 1,800 Track Warrants and 200 bulletins for its current suite of 11 supported freight and commuter railroad clients.

RGP dispatching would execute the dispatch of all train types on the corridor utilizing Dispatch via Radio (DCS) to provide a single dispatching authority to implement and confirm all temporal separation periods and positive modal barriers. The firm today is fully compliant with all applicable FRA requirements for dispatcher training, qualification, operations, drug and alcohol testing, and hours of service.

RGP dispatching authority on the line would commence at a holding (block limit) signal that would be set at approximately MP 19, near the end of SEPTA's installed catenary.

In cases of either WCRR or quarry train movements railroad north past the holding block signal, train crews would petition the SEPTA Control Center for track authority to advance beyond the holding block signal to SEPTA's home signal located immediately north of the SEPTA platform, with the MP 19 holding signal that would provide authority to proceed. Should SEPTA train be stored between MP 19 and the SEPTA platform, the same protocol would govern SEPTA's movement out of the location.

In cases of a movement of a WCMX train moving railroad north toward to proposed PUM platform at Wawa (refer to Figures 7 and 8 above), the switch into the WCMX platform will be a hand-throw electric lock switch controlled by SEPTA. WCMX employees will throw the switch under SEPTA authority. Appropriate modal separation barriers, such as derails will enforce the integrity of the modal barriers. As a brief additional note, WCMX will not store any equipment at the WCMX SEPTA platform. WCMX movements will occur to enter and exit the WCMX platform only.

iii. Engineering

Track Upgrades and Standards

The existing West Chester to Wawa track corridor is Class I track. Prior to initiating service, Pop-Up Metro would bring it up to Class 3 standards by implementing a corridor renewal program. A list of the improvements would include but not be limited to the following actions:

Ties

PUM would complete a tie inspection program as the basis for a tie renewal program for the corridor that would meet or exceed 45 good ties per 100', exceeding FRA Class 3 standards.

Bridges

WCMX would inspect bridges in accordance with SEPTA's currently approved FRA bridge management program in place.

Today, the West Chester Railroad WCRR operates historical passenger cars that are moved using one Alco C-420 or EMD GP-38 four axle locomotive, at maximum Class I track speed of 10 MPH. In the case of an Alco C-420 locomotive, its weight is approximately 125 tons.

Each car comprising the Class 230 Pop-Up equipment consist is a four-axle unit that will be traveling at MAS of 50 MPH. Each Class 230 car weighs approximately 36 tons.

At-Grade Crossings

The West Chester Corridor currently has the following crossing inventory.

IDENTIFIED PUBLIC AT -GRADE CROSSINGS

Street Name	MP
1. Union Street	27.35
2. Niels	27.05
3. Cheney Woods Road	23.05
4. Cheney Road	22.50
5. Station Road	22.15
6. Locksley Road	21.50
7. Glen Mills Road	20.40

For each public crossing, prior to the initiation of the WCMX service, crossing status signals would be re-established at crossing which are currently inactive; flashing lights would be repaired or installed, and uneven grade crossing surfaces would be refurbished. WCMX would also install lunar signals facing in the direction of the train to indicate crossing status as trains approach the crossing. All active grade separations would be installed and actively maintained in accordance with FRA regulations. While two of

the public signalized crossings appear to have been rebuilt in recent years, all but one appears to be out of service at this time.

IDENTIFIED PRIVATE AT-GRADE CROSSINGS

Location	MP
1. A Dui Pyle Terminal	28.70
2. Private resident crossing	26.65
3. TBD	21.90
4. TBD	21.80
5. TBD	21.15

For private crossings, the current condition of cross-bucks and roadway approach signage would be inspected and repaired/replaced as applicable. In addition, one private crossing (MP 26.70 A Dui Pyle), may require the installation of active-lighted gates and traffic signals due to heavy truck traffic, limited headway space between the highway and the facility, and railroad north visual obstructions.

Finally, during active PUM periods, the PUM operator would slow at all crossing by applying brakes before entering the crossing zone to reduce braking curve distances in the event of the need to apply emergency braking due to pedestrian or vehicle trespassing.

Ballast

An inspection would be conducted to estimate of ballast needed. A typical line refurbishment typically averages approximately 2 to 3 carloads (2-3 x 100 ton) per mile. This figure will vary by the condition of the ballast and drainage conditions on each side of the rail right-of-way.

Rail

A through rail inspection would also be completed to determine rail renewal/replacement requirements. Based on publicly available records, the 130 # PS rail may be serviceable for the planned 2-year demonstration period. PUM recommends that the majority of the 110# rail be replaced with suitable 115# rail joints.

Joint Bars

All joint bars would be inspected and tightened where applicable. Defective bolts would be replaced, with a thorough inspection of the underlining rail, if retained, at each joint.

Tie Plates

Records indicate that the line currently has 2 shoulder tie plates as well as former PRR 150# + plates. As part of the inspection, a review of plate conditions would be performed to determine which plates can remain in place, and which plates require replacement. Tie plates would also be reviewed for compatibility for replacement 115# rail for the project.

Geometry

As part of the ballast, rail, plate, and tie inspection program, segments of the corridor that need to be raised and reset for geometry, along with spike, joint bar and plate tightening would be completed. PUM's experience is that for the planned two-year demonstration period, liberal use of ballast is recommended to remedy current defects, and to support installing 115# rail replacement and retaining a robust jointed rail configuration.

Embankments / Fills

Based on a Google Earth review, it appears that two locations that vary between approximately 800 to 1,200 feet in length show significant exposed tie-ends and limited lateral distances. Based upon the results of an on-site inspection, a remediation program including the installation of new culverts, crib walls, and significant support material and sub-ballast may be required to hold the proper level of top ballast and to ensure track geometry integrity.

Former PRR Station Locations

Based upon an outside of ROW visual inspection, the line condition at all former stations appears to be heavily fowled with poor drainage and compromised ties. PUM would execute a remediation program at applicable locations by excavating the existing track, re-establish proper drainage angles, and follow up with the installation of panel track and ballasting/finishing.

Wooded Areas, Railroad South Segments

Based upon a Google Earth overview, it appears there are some heavily wooded areas on railroad south segment that require active tree cutting. This would be remedied to prevent significant leaf drop in the fall that could result in "Pesto" residue on the top of rail, which can affect train braking and gate activation at public crossings.

Brush / Removed Ties

Our Google Earth overview identified several locations that need the removal of adjacent brush from downed trees and the disposal of ties that were previously removed from service.

Track Speeds

The proposed WCMX service would operate with a MAS of 50 MPH, with slower speeds at crossings as noted above.

WCRR speeds could be maintained at their MAS of 10 MPH based upon WCRR's discretion. However, an additional advantage of this renewal program would be to allow WCRR to operate safely at higher speeds, if desired.

Track Inspection and Maintenance

Track inspection, record keeping, and reporting would be conducted in strict conformance with FRA regulations. This scope of work would include a periodic rail floor inspection and the institution of a formal heat countermeasures (HCM) inspection program.

Automated geometry inspection would occur annually. Ultrasound inspections would occur on a quarterly basis. In addition, a reduced-speed pilot run will be operated across the line at the commencement of each day.

All aspects of the track renewal program highlighted above would be executed by a qualified contractor with experience working on SEPTA or other local rail properties.

iv. Mechanical

General

The WCMX 230 equipment will be equipped in compliance AAPTA standards for transit vehicles and will conform with appropriate ordered FRA standards.

Mechanical Maintenance Procedures, Activity/Component Intervals

WCMX has published mechanical maintenance procedures for the proper maintenance and component change out periods for the Class 230 equipment. WCMX would also comply with FRA locomotive maintenance and inspection intervals, including the 92-day item checklist and associated maintenance actions requirements.

Emergency and Parking Brakes

The WCMX Class 230 2-car consist is comprised of one driving motor car (DM) and driving trailer car (DT). Each DM is fitted with 8 parking brake actuators, 2 per wheel set. On the DT cars one bogie is fitted with parking brake actuators i.e. 4 in total. Their operating protocol is air to release, and springs to apply.

AED/Defibrillators

WCMX would equip the Class 230 Battery EMU consist with an AED and all operating personnel would be trained in proper usage as well as First Aid by the Red Cross or equivalent medical training entity. Recertification would be required every 2 years.

At-Grade Crossing Risks

The Class 230 has been operating safely in mainline passenger service for several years in the United Kingdom. Starting with the original D-78 London Underground car, the Class 230 has been modified with

a strengthened steel casing around the cab and the operator's seat was moved further back from the window.

To validate the integrity of these modifications, a risk-based approach was taken by the UK Federal Government's Office of Road and Rail (ORR), which involved reviewing the Rail Accident Investigation Branch (RAIB) reports of incidents at level crossings over many years, since level crossings have represented the biggest area of risk for train collisions in the UK. Through this exercise, it was determined that the most likely scenario would be an impact with agricultural equipment (in the UK called a ploughshare). This formed the basis of an ORR directed crash test of running a Class 230 car into a 6,613 pound tank filled with water the Quinton Rail Technology Centre in Long Marston, England.

In addition to these enhanced modifications to the Class 230 car, as noted above WCMX would refurbish all public grade crossings on the West Chester line to feature active gates and install lunar signals facing in the direction of the train to indicate crossing status as trains approach the crossing. WCMX operators would also slow down at each crossing through an active brake activation, to reduce response times in the event of pedestrian or vehicular trespassing at a crossing location to reduce response times for emergency braking.

Grade crossing shunting issues would be remedied by:

- MOW patrols that inspect corridor prior to each morning's run to inspect and remedy any vegetation debris etc. over rail at track circuit locations.
- Installation of brushes on leading edge of each car's wheel set ends.
- Robust brush/vegetation control along ROW

v. Security

Protection of Rolling Stock

Near the railroad south end of track at West Chester, WCMX would erect a maintenance/car barn structure for the rolling stock equipment equipped with ample interior and exterior lighting and wi-fi enabled security cameras. The WCMX 230 Class cars would be stored inside during evening hours.

Dormant ROW, Trespassers, Bird Watchers

Prior to and after the commencement of service, WCMX would work with public stakeholders on a public information campaign (schools, scout troops, community groups, Operation Lifesaver).

WCMX and/or public stakeholders would install wayside signage "ACTIVE TRAINS, ETC'.

Selected fencing in potential locations may be installed would include high-trespassing locations in central West Chester (e.g. obvious paths pedestrians are currently using to cross ROW, schools, adjacent

convenience stores, park-lands, etc.). To avoid cutting of the fence, an installation would need to be configured to "Type H" designs.

Additionally, mobile configurable cameras could be placed at high-risk locations for recording.

Emergency Response

WCMX would ensure reasonable access exists throughout Plan the corridor for first responder access.

Prior to operation, a survey would be included working with municipal law enforcement personnel identify jurisdictions, emergency response call lists, and other key items.

In addition, WCMX would coordinate emergency response drills with all active responders. This would be accomplished first by a survey with first responders with jurisdiction along the West Chester corridor to develop first responder plan, call list, engagement, and training.

All the above risk mitigation actions would be part of WCMX' submittal to FRA for operating authority and temporal separation. WCMX would not commence operations until all FRA concerns are addressed, and FRA directed WCMX safety requirements are met.

7. SAFETY CASE

The **Final Operating Plan** will be accompanied by an associated and separate Safety Case and will be in full conformance with FRA and FTA requirements based on the methods delineated in safety system standard 882. A sampling of the items that will be addressed will include the following topics:

a. Positive Separation of modes
b. Emergency Response, Emergency Access
c. Public and private grade crossings
    - Active Gates and Flashers at Public Crossings
    - Speed restrictions at private crossings with passive protection
    - Site specific mitigations, for example the private crossing at M.P. 26.70 for the A. Duie Pyle facility
d. Crew training and qualification

8. CONCLUSIONS

The **Final Operating Plan** closes with a summary and conclusion of the proposed service. Key elements to highlight include:

- A safe and viable use of advanced Transit Technology (ILRT). This may be the SOLE REMAINING OPPORTUNITY for rail transit in West Chester

- Ample Precedent throughout U S and Canada, with over a dozen locations where FRA approved temporal separation is safely operating today. The Class 230 train is in revenue service in U K.

- Public Benefits from restoring rail transit to an area that needs alternatives to automobiles. Benefits of congestion relief, air quality improvements, mobility access to local employers including government, business, hospitals, and universities

- The service would fully comply with FRA specifications, except where specific items are formally waived by FRA.

- In accordance with the terms of the waiver of certain FRA standards, the achievement of equivalent safety would be accomplished by a combination of operating practices, maintenance practices and design, to provide an equal or superior levels of safety.

- Incorporates Transit Industry best practices (e.g. AAPTA recommendations and protocols)

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APPENDIX 3

Pop-Up Metro, LLC Donation to the West Chester Metro Cooperative

Term Sheet

July 19, 2024

The Donation:

Pop-Up Metro ("PUM') shall donate a two-car Pop-Up Metro Train Set (Unit ID 002) comprised of a Driving Trailer and Driving Motor to the West Chester Metro Project.

This donation is strictly subject to availability of existing PUM equipment only. PUM is not offering to reserve the equipment for the West Chester Metro Project and is actively working on deployments throughout the United States.

PUM shall license its IP to the West Chester Metro for an initial term of three years.

The donation is explicitly contingent on the items listed below.

Contingent Upon:

(A) The formation of a Multi-Jurisdictional Rail Cooperative ("Cooperative") whose functions include:

- Serve as the legal recipient of the donation.
- Acquire control and administration of the assets of the West Chester Branch Line (WCBL).
- Provide advocacy and serve as a grant applicant and recipient of funds to refurbish the West Chester Branch and to operate the West Chester Metro service.
- Provide funding for final regulatory approvals and implementation actions to commence the first phase of the West Chester Metro service.
- To provide the Cooperative with adequate resources to be successful, $1,000,000 in local seed funding is required.

(B) SEPTA contributions and goodwill:

- SEPTA shall make an in-kind donation of the WCBL rail corridor to the Cooperative from End-of-Line MP 27.4 at West Chester, PA to MP 20.2 at Glen Mills, PA (7.2 miles) that has been unused by SEPTA since 1987 and has been leased since July 1, 1996, to the Borough of West Chester for $1.00 per year.
- SEPTA shall provide the Cooperative trackage rights over the SEPTA owned trackage between MP 20.2 at Glenn Mills, PA to MP 18 at Wawa, PA.
- SEPTA shall permit the Cooperative to utilize its right of way to build, at the Cooperative's expense, a turnout and track lead along the SEPTA owned line from approximate MP 18.41 geographically south of Chester Creek to approximate MP 18.0 geographically north of Baltimore Pike. In addition, SEPTA will provide sufficient property to site a West Chester Metro modular platform at terminus of the West Chester Metro lead at Wawa, PA.

- SEPTA shall permit the Cooperative to install an ADA compliant pedestrian bridge and walkway between the West Chester Metro modular platform and the existing SEPTA platform at Wawa.

Estimated Market Value of In-Kind Donations:

Entity	Description	Estimated Market Value
Pop-Up Metro, LLC	Two-car Battery Electric Multiple Unit (BEMU) passenger rolling stock (Unit ID 002)	$5 Million
Pop-Up Metro, LLC	Donation of two years of its IP @ $2.50 per train mile based on proforma service scheduled	$715,000
Pop-Up Metro, LLC	Donation of Four modular ADA compliant platforms	$300,000
SEPTA	Donation of 7.2 miles of the West Chester Branch Line	$10 to $15 Million
Total		**$16 - $20 Million**

Funding Discussion:

- The above in-kind donations qualify as a component of a local match for the West Chester Metro Project.

- Funding for these types of projects is typically comprised of 80% Federal funds. **The magnitude of these in-kind donations makes initial federal funding possible up to $80M to $105M for the project.**

- Successful federal funding will be dependent upon the composition of the Cooperative's ownership and its resources and efforts for funding advocacy and implementation efforts.

- It should be noted that Cooperative's seed capital will be used "**To Make the Return of Rail Transit Service on the West Chester Branch an Immediate Reality**", not to fund yet another feasibility study.

- Funding parties can include Borough of West Chester, Cheyney University, West Chester University, Penn Health Chester County Hospital, Chester County, the Greater West Chester Chamber of Commerce and Real-Estate interests.

Pop-Up Metro Budgetary Costs – Option 1 – without Class-230 Trainset Donation

OPTION 1 PUM RETAINS OWNERSHIP - Budgetary Estimates - Pop-Up Metro Kit for WCBL Project - 1 Class 230 Trainset

	Year 1	Year 2	Year 3
Total PUM Charge to WCBL- 3 Year Term	$ 2,758,464	$ 2,668,464	$ 2,668,464
Total Charge to WCBL Project - Imp/Mob/Demob	$ 500,000		$ 160,000
1 Year Term - Lump Sum Addendum	$ 1,264,356		
2 Year Term - Lump Sum Addendum		$ 632,178	
3 Year Term - Lump Sum Addendum			$ -

Budgetary PUM Service Package Components Include:

- 1 Class 230 BEMU trainset @ 2 cars - LEASED
- 4 rafts per trainset totaling 240 Lithion Lithium Iron Phosphate battery modules - LEASED
- 5 PUM ADA compliant modular platforms - design, material, mobilization and installation - "WCBL Rail Authority" to provide footings at selected locations. Covering, seating, and lighting can be included at additional cost.
- High capacity chargers in the maintenance building. WCBL "Rail Authority" to provide utility connections. Also includes mobile charger powered by industrial generator.
- 50' by 140' Modular equipment barn with radiant heat floor including materials, mobilization and assembly. Budget subject to final design and bidding. Permitting, rail installation, and utility connections will be responsibility of "WCBL Rail Authority".
- Full service rolling stock maintenance (routine, preventative and corrective) to be provided by PUM. Budgetary assumptions are based on PUM's prevailing wage levels. Additional expense would apply if higher wage levels/work rules are compulsory.
- Mobilization/demobilization of the battery trains, platforms, maintenance facility and equipment.
- Service Implementation including Operating / Safety Plan, FRA Approval Process, Rolling Stock Commissioning (ex-operators).
- PUM will work wih "WCBL Rail Authority" to traintrain operating personnel.

Budgetary PUM Service Package Components Exclude:

- Utility connections to Chargers, platforms, and maintenance facility. Esimated utility connection required for chargers will be AC 3x (Three Phase) 400 volts.
- Electrical power for PUM charging and facilities. Trainset electricity usage per day (18 round trips) is estimated at Approximately 2,500 KwH per day.
- Train operations personnel.
- Transit and Fare integration will be 'WCBL Rail Authority" responsibility.
- State, Federal, and local taxes.
- Property, liability and 3rd party insurance coverage for PUM assets and rolling stock under revenue service.
- Cost of required rail infrastructure renewals or construction.

Subject to Equipment Availability at Time of Contract Award

Pop-Up Metro Budgetary Costs – Option 2 – with Class-230 Trainset Donation

OPTION 2 PUM DONATES ROLLING STOCK- Budgetary Estimates - Pop-Up Metro Kit for WCBL Project - 1 Class 230 Trainset

	Year 1	Year 2	Year 3
Total PUM Charge to WCBL- 3 Year Term	$ 1,093,464	$ 1,003,464	$ 1,003,464
Total Charge to WCBL Project - Imp/Mob/Demob	$ 500,000		$ 160,000
1 Year Term - Lump Sum Addendum	$ 429,333		
2 Year Term - Lump Sum Addendum		$ 214,667	
3 Year Term - Lump Sum Addendum			$ -

Budgetary PUM Service Package Components Include:

- 1 Class 230 BEMU trainset @ 2 cars - DONATE
- 4 rafts per trainset totaling 240 Lithion Lithium Iron Phosphate battery modules - DONATE
- 5 PUM ADA compliant modular platforms - design, material, mobilization and installation - "WCBL Rail Authority" to provide footings at selected locations. Covering, seating, and lighting can be included at additional cost.
- High capacity chargers in the maintenance building. WCBL "Rail Authority" to provide utility connections. Also includes mobile charger powered by industrial generator.
- 50' by 140' Modular equipment barn with radiant heat floor including materials, mobilization and assembly. Budget subject to final design and bidding. Permitting, rail installation, and utility connections will be responsibility of "WCBL Rail Authority"
- Full service rolling stock maintenance (routine, preventative and corrective) to be provided by PUM. Budgetary assumptions are based on PUM's prevailing wage levels. Additional expense would apply if higher wage levels/work rules are compulsory.
- Mobilization/demobilization of the battery trains, platforms, maintenance facility and equipment.
- Service Implementation including Operating / Safety Plan, FRA Approval Process, Rolling Stock Commissioning (ex-operators).
- PUM will work wih "WCBL Rail Authority" to train operating personnel.

Budgetary PUM Service Package Components Exclude:

- Utility connections to Chargers, platforms, and maintenance facility. Esimated utility connection required for chargers will be AC 3x (Three Phase) 400 volts.
- Electrical power for PUM charging and facilities. Trainset electricity usage per day (18 round trips) is estimated at Approximately 2,500 KwH per day.
- Train operations personnel.
- Transit and Fare integration will be 'WCBL Rail Authority" responsibility.
- State, Federal, and local taxes.
- Property, liability and 3rd party insurance coverage for PUM assets and rolling stock under revenue service.
- Cost of required rail infrastructure renewals or construction.

Subject to Equipment Availability at Time of Contract Award

For the West Chester Metro Project, Pop-Up Metro Will Retain:

- It's full intellectual property and patent pending Pop-Up Metro "Kit" and deployment methodology.

- The exclusive rights to provide the West Chester Metro Project modular platforms, maintenance equipment, tools, chargers, maintenance building infrastructure, training, and commissioning, which are included in PUM's budgetary figures.

- The exclusive rights to perform full maintenance (routine, preventative, and corrective) for the train set, platforms, and charging systems, which are included in PUM's budgetary figures.

- A first right of refusal to supply future passenger rolling stock as the project grows.

APPENDIX 4

Docket No. Ex Parte 290 (Sub No. 5) Quarterly Rail Cost Adjustment Factor

YEAR	RCAF (Unadjusted)	RCAF (Adjusted)	RCAF-5
2024			
1st qtr	0.974	0.383	0.367
2nd qtr	0.986	0.387	0.369
3rd qtr			
4th qtr			
2023			
1st qtr	1.010	0.408	0.390
2nd qtr	1.004	0.403	0.385
3rd qtr	0.975	0.389	0.372
4th qtr	1.012	0.401	0.384
2022			
1st qtr	1.154	0.478	0.451
2nd qtr	1.197	0.493	0.467
3rd qtr	1.250	0.512	0.487
4th qtr	1.295	0.527	0.503
2021			
1st qtr	1.040	0.434	0.410
2nd qtr	1.059	0.441	0.417
3rd qtr	1.134	0.472	0.445
4th qtr	1.139	0.473	0.446
2020			
1st qtr	1.043	0.440	0.414
2nd qtr	1.051	0.442	0.417
3rd qtr	0.989	0.415	0.392
4th qtr	0.941	0.394	0.372
2019			
1st qtr	1.058	0.448	0.419
2nd qtr	1.065	0.451	0.422
3rd qtr	1.057	0.447	0.420
4th qtr	1.075	0.454	0.427
2018			
1st qtr‡	1.027	0.434	0.405
2nd qtr	1.041	0.440	0.411
3rd qtr	1.061	0.449	0.419
4th qtr	1.079	0.457	0.427
2017			
1st qtr	0.888	0.373	0.353
2nd qtr‡	0.904	0.380	0.358
3rd qtr‡	0.903	0.380	0.357
4th qtr‡	0.889	0.375	0.350
2016			
1st qtr	0.864	0.368	0.347
2nd qtr	0.840	0.356	0.336
3rd qtr	0.842	0.356	0.337
4th qtr	0.881	0.371	0.352
2015			
1st qtr	0.946	0.405	0.383
2nd qtr	0.880	0.376	0.355
3rd qtr	0.829	0.354	0.334

4th qtr	0.862	0.367	0.346

2014			
1st qtr***	0.981	0.424	0.401
2nd qtr	0.975	0.421	0.397
3rd qtr	0.985	0.424	0.401
4th qtr	0.977	0.420	0.396

2013* **			
1st qtr	0.997	0.435	0.411
2nd qtr	1.006	0.438	0.414
3rd qtr	0.977	0.425	0.401
4th qtr	0.975	0.423	0.399

2012**			
1st qtr	1.170	0.515	0.488
2nd qtr	1.187	0.521	0.493
3rd qtr	1.172	0.514	0.485
4th qtr	1.210	0.529	0.499

2011			
1st qtr	1.093	0.488	0.462
2nd qtr	1.176	0.523	0.495
3rd qtr	1.206	0.534	0.506
4th qtr**	1.209	0.534	0.506

2010			
1st qtr	1.038	0.469*	0.444*
2nd qtr	1.060	0.477	0.452
3rd qtr	1.068	0.479	0.454
4th qtr	1.104	0.494	0.468

2009			
1st qtr	1.022	0.467	0.442
2nd qtr	0.850	0.387	0.367
3rd qtr	0.938	0.426	0.403
4th qtr	0.996	0.451*	0.427

2008			
1st qtr	1.050	0.486	0.461
2nd qtr	1.077	0.497	0.471
3rd qtr	1.147	0.527	0.500
4th qtr	1.199	0.550	0.520

2007			
1st qtr	1.208	0.568	0.540
2nd qtr	1.147	0.537	0.511
3rd qtr	1.197	0.558	0.531
4th qtr	1.280	0.595	0.565

2006			
1st qtr	1.177	0.564	0.541
2nd qtr	1.178	0.562	0.537
3rd qtr	1.192	0.566	0.540
4th qtr	1.250	0.591	0.562

2005			
1st qtr	1.107	0.546	0.521
2nd qtr	1.149	0.563	0.537
3rd qtr	1.136	0.552	0.528
4th qtr	1.185	0.572	0.548

2004			
1st qtr	1.025	0.517	0.492

2nd qtr	1.033	0.518	0.493
3rd qtr	1.071	0.534	0.509
4th qtr	1.097	0.544	0.519

2003			
1st qtr	0.996	0.512	0.495
2nd qtr	1.020	0.522	0.502
3rd qtr	1.020	0.519	0.497
4th qtr	1.017	0.515	0.490

2002			
1st qtr	1.076	0.576	0.551
2nd qtr	1.062	0.563	0.541
3rd qtr	1.062	0.557	0.537
4th qtr	1.108	0.575	0.556

2001			
1st qtr	1.085	0.597	0.574
2nd qtr	1.076	0.588	0.565
3rd qtr	1.079	0.585	0.562
4th qtr	1.078	0.581	0.556

2000			
1st qtr	1.043	0.594	0.581
2nd qtr	1.050	0.593	0.577
3rd qtr	1.050	0.588	0.569
4th qtr	1.062	0.589	0.567

ł RCAF (unadjusted), RCAF (adjusted), RCAF-5 recalculated values. See Docket No. EP290 (Sub No.5) (2018-2) served March 16, 2018
* RCAF (adjusted) and RCAF-5 restated values. See Docket No. EP 290 (Sub No. 5) (2010-2) served January 20, 2012
** RCAF (unadjusted), RCAF (adjusted), RCAF-5 restated values. See Docket No. EP290 (Sub No.5) (2014-1) served December 20, 2013
*** RCAF (unadjusted), RCAF (adjusted), RCAF-5 restated values. See Docket No. EP290 (Sub No.5) (2014-2) served March 20, 2014

APPENDIX 5

Pop-Up Metro

Memorandum

TO	Jason Levinn, Chairman – The Committee to Reestablish Rail Service to West Chester
FROM	Nate Asplund, President – Pop Up Metro, LLC
DATE	July 1, 2024
SUBJECT	West Chester Branch Line refurbishments for the West Chester Shuttle Project

Pop-Up Metro has repeatedly received requests to provide an estimate of costs to refurbish the West Chester Branch Line to host safe and on-time performance of the proposed West Chester Shuttle project for an initial demonstration period of approximately three years, and to install track, platform, and pedestrian connections along SEPTA's right of way at Wawa, PA, while ensuring excursion passenger train services remain in place.

Unfortunately, an independent track and corridor inspection remains to be completed. Pop-Up Metro has been refused right-of-entry to the line.

Due to this lack of vital information, it is not possible to provide a defined line item estimate of the costs of line refurbishments and associated scope of work.

However, we can offer some high-level observations and considerations based on industry practice, which are noted below.

West Chester Branch Line | MP 27.40 to 20.31 (West Chester to Glen Mills)

1. Ties

- A suggested standard is 10 good ties per 39 feet (curve or tangent). This converts to approximately 4.5 rail lengths @ 10 good ties per rail section or 45 good ties per 100' of track length.
- In addition, one should ensure that a tie replacement program avoids two bad ties in a row as to ensure sufficient tie holding capability under each joint bar.
- The cost of a (new) good wood tie installed is likely to be $150.00/each (at present).

2. Rail & Other Track Material (OTM)

- Our review of existing track charts for the WCBL indicate that approximately 90% of existing rail is 100 # Pennsylvania Standard (PS) jointed rail. This rail should all be replaced with 115# jointed relay and compatible tie plates / joint bars to accommodate sufficient rail performance for the demonstration period.

- It may be possible to retain approximately 1 track mile (10,000 ft.) of the existing 130# PS rail that is currently in place, subject to a qualified inspection and needed corrections to joint bars and tie plates. If this were to be the case, to be in position for a demonstration service, the WCBL would require 12.5 rail miles of Relay 115#.

- All joint bars for rail that would be retained for the demonstration period should be inspected and tightened. Defective bolts should be replaced, with a thorough inspection of the underlining rail, if retained, at each joint.

- Tie plates should also be thoroughly inspected. As noted above, a qualified inspector should validate the compatibility and condition of existing tie plates to accommodate 115# RE replacements. All tie plates supporting the existing segments of 130# PS rail should also be inspected with defects replacements as needed.

3. Ballast

- For a typical rail corridor that has seen only light traffic in several years, a range of magnitude estimate of ballast needed is 2 to 3 carloads (2-3 x 100 ton) per mile average but will vary by location. A Google Earth view indicates ballast conditions are better near the West Chester Station with the possible need for heaver ballast application rates at the northern portions of the route.

4. Geometry/Surfacing

- In a typical ballast, rail, OTM and tie program, all segments of the rail are raised and reset for geometry, along with spike, joint bar and plate tightened as noted in these general comments. For the demonstration period, liberal use of ballast is recommended to offset any perceived deficiencies of keeping 130 # PS in place, installing 115# relay, and retaining a jointed rail configuration (as opposed to Continuously Welded Rail (CWR).

- Another advantage of choosing to apply liberal amounts of ballast is the potential local sourcing of stone available on-line at the Hanson facility near Glen Mills.

- Typically, in a ballast renewal program, two good passes with a ballast regulator are required.

5. Bridges

- Today, the West Chester Railroad (WCRR) operates historical passenger cars that are moved using one Alco C-420 or EMD GP-38 four axle locomotive, at a maximum Class I track speed of 15 MPH (passenger). In the case of an Alco C-420 locomotive, its weight is approximately 125 tons. Each car comprising the Class 230 Pop-Up equipment consist is a four-axle unit weighing approximately 36 tons.

- Provided the existing bridge management program of WCRR supports bridge conditions to accommodate 125-ton locomotives, they should also be sufficient for 36-ton Pop-Up Metro Class 230 passenger equipment.

- To validate, bridge inspection should be included as part of independent third-party inspection scope of work.

6. Embankments / Fills

- Based only on Google Earth overheads of the line, it appears there are multiple embankments/fill areas that show exposed tie-ends and limited lateral distances. Typically for an active rail right of way, exposed tie ends increase the risk of track losing its alignment over an elevated segment. These should be remedied before commencing the West Chester Metro Project.

- While associating Google Earth with track charts is an inexact science, these locations appear to be in the rough vicinity of MP 26.2, 26.6, 24.2, 23.7, and 21.0.

- As FRA track standards require a track profile to accommodate and hold ballast beyond end-of tie, the installation of crib walls may be required to hold the application of supplemental top ballast in some locations. From an overhead view, some of these embankment locations are at creek crossings. Culverts or masonry structures under the right of way should also be inspected and assessed.

7. At-Grade Crossings

- FRA's grade crossing inventory database identified the following crossings on the WCBL.

Identified Public At-Grade Crossings

Street Name	MP
1. Union Street	27.35
2. Nields	27.05
3. Cheney Woods Road	23.05
4. Cheney Road	22.5
5. Station Road	22.15
6. Locksley Road	21.5
7. Glen Mills Road	20.4

Identified Private At-Grade Crossings

Location	MP
1. A Dui Pyle Terminal	28.7
2. Private resident crossing	26.65
3. TBN	21.9
4. TBN	21.8
5. TBN	21.15

- We were able to view public crossings from roadways. While two of the public signalized crossings appear to have been rebuilt in recent years, all but one appear to be out of service. If this is the case, installation of new signal activation systems and track-shunting circuits will be required for all non-active public crossings.

- Signage, e.g. whistle boards and roadway painting to both public and private crossings are also recommended.

- In addition, one private crossing (MP 26.70 A Dui Pyle), may require the installation of lighted gates due to heavy truck traffic, limited headway space between the highway and the facility, and visual obstructions.

8. Former PRR Station Locations

We were able to make visual inspections at former PRR stations.

- The line condition at all former stations is heavily fowled with poor drainage.
- Typical remediation at these locations would be to excavate the existing track, re-establish proper drainage angles, followed up with the installation of panel track and ballasting/finishing.

9. Wooded Areas, Northern Segments

- Our Google Earth overview showed heavily wooded areas on the northern segment that may require active tree cutting.
- The biggest issue with excess tree-cover occurs in the fall where if there is significant leave drop that can result in what is sometimes refer to as "Pesto", or leaf residue on the Top of Rail (TOR) .

10. Brush / Removed Ties

- Using Google Earth, there appear to be segments which may require the removal of adjacent brush from downed trees and disposal of obsolete ties that were removed from service.

11. Ditching/Drainage

- We were unable to review the current condition of ditching and drainage along the line beyond using Google Earth. These should be part of the independent inspection scope of work.

West Chester Branch Line | MP 20.31 to 20.31 (Glen Mills to Wawa)

12. Construct a West Chester Metro Turnout and Lead to PUM Wawa Platform

- To access the Pop-Up Metro Platform at Wawa, our preliminary recommendation is to build a turnout and track lead along the SEPTA owned line from approximate MP 18.41 geographically south of Chester Creek to approximate MP 18.0 geographically north of Baltimore Pike.

- Due to PUM's exclusive use of this lead, a # 8 turnout should be sufficient, with an electric lock design (controlled by SEPTA)

- Between the turnout and the end of the PUM Wawa platform, a single-track lead ("Shuttle Running Track") would be constructed parallel to the SEPTA mainline at an approximate length of 2,100'.

- Pop-Up Metro would then install a modular platform at terminus of the West Chester Metro lead.

13. Construct a Pedestrian Connection between PUM Wawa Platform and SEPTA Wawa Platform

- An ADA compliant pedestrian bridge would span 70' across the Baltimore Pike utilizing a vacant rail track footing on each side of the roadway that SEPTA built as part of its Wawa extension and new station project. This structure is sometimes referred to as a Baily Bridge, with multiple designs and installations in place in the US and Canada.

- The Pedestrian crossing would be fenced longitudinally (to prevent incursion into the SEPTA operating envelope). Likewise, lockable, and secure gates and lighting will be included at each end of this walkway, so that this structure is not subject to unauthorized station access, or vandalism.

Preliminary Conclusions

As noted above, it is impossible to provide a defined cost estimate for the WCBL refurbishments without a completed independent track inspection.

Keeping this vital caveat in mind, based on our best judgement and experience, suggests a preliminary high-level cost estimate in the range of $20 million to $30 million for the listed WCBL project items 1-13 above.