



**SEPTA Norristown High Speed Line Extension
Alternatives Analysis/Draft Environmental
Impact Statement**

Operating & Maintenance Cost Model Results



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Prepared for: **AECOM**

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LTK Engineering Services

Operating & Maintenance Cost Model Results

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0 Revision History

Revision No.	Date	Description of Revision
0	07/10/2015	Initial release.
1	08/12/2015	Included source documents for actual Bus O&M costs for 2012 and 2014. Updated table titles, labels, and text to clarify when 2014 and 2012 data is being used.
2	08/26/2015	Removed extraneous appendix with earlier candidate operating plan.
3	09/04/2015	Incorporated SEPTA wording changes and correction of which bus routes do not operate on Sundays
4	07/14/2016	Corrected calculations of distance and operating hours for US 202 1 st Avenue Alternative

STUDY/REPORT REVIEW CHECKLIST

PROJECT SEPTA NHSLX AA/DEIS		JOB NO. LTK C4377	
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1 Executive Summary

This technical memorandum describes the evaluation of rail operating and maintenance (O&M) costs for alternative extensions of the Southeastern Pennsylvania Transportation Authority's (SEPTA) King of Prussia Rail Project (KOP Rail), an extension of the Norristown High Speed Line (NHSL) to King of Prussia, from the existing line in the vicinity of Hughes Park. This memorandum also describes the predicted changes in SEPTA bus operating costs that would result from service realignments associated with specific NHSL Extension alternatives.

The rail model, used to estimate annual operating and maintenance (O&M) expenses in 2014 dollars, is SEPTA's three-factor formula consisting of a unit rate multiplied by the number of units for each factor:

$$\text{Total O\&M} = (\$61.32 \times \text{Vehicle Hours}) + (\$3.45 \times \text{Vehicle Miles}) + (\$421,100 \times \text{Peak Vehicles})$$

Using the 2014 model with SEPTA's 2012 NHSL operating parameters of 42,871 revenue vehicle hours, 865,987 revenue vehicle miles and 17 peak vehicles (of a total fleet of 26 N5 cars) produces a predicted annual O&M cost of \$12,775,205. This predicted O&M cost is just 4.3% lower than the SEPTA Operating Budget Department's official NHSL figure of \$13,352,740. From this, it is concluded that the rail O&M model is sufficiently accurate for estimating the O&M costs of future alternatives in 2014 dollars.

SEPTA had also previously provided a 2012 cost model, but this would no longer be applicable to the extension operating plans going forward. Applying the 2012 model to the 2012 fleet size, miles, and hours gives a result that is slightly closer to the actual O&M costs, being 2.1% higher than the actual. This verifies that the three variable cost model is an accurate tool for cost evaluations. For the purposes of evaluation of alternatives, the O&M costs (predicted using the 2014 cost model) are compared to the actual 2012 costs for existing operations.

The rail O&M cost model operating parameters are applied in this technical memorandum for the five alignment alternatives' operating plans. The service included in the operating plan is comprised of:

- Service between 69th Street Transportation Center and Norristown Transportation Center as at present
- Peak period Bryn Mawr Locals as at present
- All-day service between 69th Street Transportation Center and King of Prussia via a new branch with main line junction north of Hughes Park, operating at ten minute headways during the peak and 20 minute headways during the off-peak. These trains replace existing Hughes Park express and local service during peak periods and represent a new service during off-peak periods.
- All-day service between Norristown and King of Prussia via a junction south of De Kalb Street station with constant service levels of three trains per hour.

During the development of the operating plans, it was found that a fourth track at 69th Street Transportation Center and a third track at the terminal at King of Prussia would be required to support the requested service levels. The service peak fleet requirement increases from 17 trains in the 2012 operating plan to 27 in each of the five alternatives' operating plans.

For a full discussion of the operating plan development, please see the separate Operations and Simulation Technical Memorandum.

The O&M cost model for connecting bus service is also presented in this technical memorandum. The fully allocated model for estimating bus operating and maintenance (O&M) costs uses a three-factor cost model consistent with recommended practice of the FTA. Because of internal cost structure differences between SEPTA Operating Divisions, the O&M cost model coefficients vary as follows depending on whether buses are operated by the SEPTA Victory or Frontier Divisions:

Victory: Total O&M = (\$61.32 x Vehicle Hours) + (\$2.29 x Vehicle Miles) + (\$124,300 x Peak Vehicle)

Frontier: Total O&M = (\$48.38 x Vehicle Hours) + (\$1.83 x Vehicle Miles) + (\$103,700 x Peak Vehicle)

For each of the alignment alternatives being considered for NHSLX, the rail and bus models were used to estimate 2014 O&M costs (and net increases in O&M costs versus the 2012 actual O&M costs.) The results of the model applications are summarized in Table 1. The significant savings in the costs of bus service offset the growth in rail operating costs due to operating service on the extension. Rail O&M increases by approximately \$10 million in each alternative, but the bus O&M analysis shows a savings of \$5 million, which results in an overall annual cost increase of approximately \$5 million.

Table 1 – Predicted Total O&M Costs By Alternative

	Baseline (2012 Dollars)	FY 2014 O&M Costs (For reference)	Alternatives				
			PECO - 1 st Ave.	PECO/TP - N. Gulph	PECO/TP - 1 st Ave.	U.S. 202 - N. Gulph	U.S. 202 - 1 st Ave.
Rail O&M	\$13,352,740	\$13,319,816	\$23,058,661	\$23,028,638	\$22,937,593	\$23,129,854	\$23,029,021
Bus O&M	\$17,600,851	\$17,088,833	\$12,981,408	\$12,861,709	\$12,861,709	\$12,976,735	\$12,833,063
Total O&M	\$30,953,591	\$30,408,649	\$36,040,070	\$35,890,346	\$35,799,301	\$36,106,589	\$35,862,084
O&M Growth¹	-	(\$544,922)	\$5,086,479	\$4,936,755	\$4,845,710	\$5,152,998	\$4,908,493

¹ Growth reflects difference between estimates in 2014 dollars and actual O&M costs in 2012 dollars and does not account for inflation during this 2-year time period.

2 Introduction

This technical memorandum describes the evaluation of rail and bus operating and maintenance (O&M) costs for alternative extensions of the Southeastern Pennsylvania Transportation Authority's (SEPTA) Norristown High Speed Line (NHSL) to King of Prussia. These extensions, which will have "one seat ride" service from 69th Street Transportation Center to King of Prussia, will use a new NHSL branch connection somewhere between Hughes Park Station and the Norristown Transportation Center.

Existing SEPTA bus service in the Norristown and King of Prussia areas will be realigned to better integrate with each of the NHSL Extension alternatives. Bus service delivery may increase or decrease; the associated bus O&M cost model is applicable to either type of change as detailed for each alternative. The bus O&M cost model is applicable to operation by either the Victory Division or Frontier Division; such determination was made specific to each alternative's individual bus routes in consultation with SEPTA.

3 O&M Cost Model Basis

Documentation received from SEPTA includes fiscal 2012 operating costs for the Norristown High Speed Line (NHSL). That tabulation² shows a total annual operating and maintenance (O&M) expense of \$13,352,740 for service on the existing 13.4-mile line.

**Table 2 – Norristown High Speed Line:
O&M Costs Fiscal 2012**

Operating Statistics		
Total Vehicle Miles	869,465	
Total Vehicle Hours	43,043	
Revenue Vehicle Miles	865,987	
Revenue Vehicle Hours	42,871	
Peak Vehicles	17	
1. Transportation		
Operator wages	\$ 1,581,000	
Operator benefits	\$ 1,152,700	
Other salaries	\$ 531,000	
Other - benefits	\$ 387,000	
Materials	\$ 2,000	
Traction Power	\$ 931,900	
Total Transportation		\$ 4,585,600
2. Vehicle Maintenance		
Salaries & wages	\$ 1,014,200	
Benefits	\$ 740,100	
Materials	\$ 340,300	
Utilities	\$ 85,700	
Total Vehicle Maintenance		\$ 2,180,300
3. Maintenance of Way		
Salaries & wages	\$ 2,502,300	
Benefits	\$ 1,824,400	
Materials	\$ 875,800	
Total Maintenance of Way		\$ 5,202,500
4. General and Administrative		
Salaries & wages	\$ 14,600	
Benefits	\$ 10,640	
Materials	\$ 24,100	
Injury & Damages	\$ 349,500	
Indirect Cost Allocation	\$ 985,500	
Total General & Administrative		\$ 1,384,340
Grand Total – NHSL O&M		\$ 13,352,740

² Norristown High Speed Line: Operating Costs Fiscal 2012. SEPTA Operating Budget Department, 10/25/2012.

A three-variable rail O&M cost model was developed by SEPTA for 2014, following a structure recommended by the Federal Transit Administration (FTA) for preparing fully allocated O&M cost estimates. The three variables are:

- Operator Cost per Vehicle Hour,
- Maintenance & Operating Cost per Vehicle Mile, and
- Cost per Peak Vehicle.

SEPTA’s Operating Budget Department annually configures their three-variable cost model to match the previous year’s cost. The document “SEPTA Unit Cost Model – Fiscal 2014 Edition” is contained in Appendix A. This document establishes a “fully allocated” model for estimating NHSL operating and maintenance (O&M) costs, and Victory and Frontier Division bus costs using a three-factor formula. The relevant bus and rail models are shown in Table 3.

Table 3 – SEPTA 2014 Three Variable Cost Models

Service	Operator Cost Per Hour	Cost Per Vehicle Mile	Cost Per Peak Vehicle
Frontier Bus	\$48.38	\$1.83	\$103,700
Victory Bus	\$61.32	\$2.29	\$124,300
NHSL	\$61.32	\$3.45	\$421,100

Elements of O&M expense included in each variable of the model are as follows:

- Operator \$ per Vehicle Hour: This includes the Operator wages (regular, overtime, split shift, etc.), payroll taxes and benefits,
- Maintenance & Operations \$ per Vehicle Mile: These costs include the cost for providing traction power, the cost of wayside maintenance material, supplies and equipment, the cost of vehicle maintenance material and supplies, maintenance labor & fringe benefits, and claims cost (including insurance premiums and damage payouts), and
- Cost per Peak Vehicle: This includes the SEPTA headquarters cost allocation, transportation (operations) supervisory labor, maintenance supervisory labor, related fringe benefits, facilities maintenance, utilities and depreciation.

The three variable cost model for evaluating the future alternatives has an additional sum for costs per peak vehicle above the 18 vehicles required in the 2014 plan. For 2014, the annual cost for one additional peak vehicle is \$211,100, according to SEPTA.

As part of the validation of the O&M Cost Model, LTK independently verified the FY 2012 SEPTA NHSL operating statistics. LTK reviewed the individual train equipment (consist) cycles, including the scheduling of one-car and two-car trains. The peak fleet requirement of 17 cars was confirmed. LTK also tabulated annual vehicle-hours based on the source weekday operating plan documents (including appropriate factors for, Sunday and holiday service) and found that this totals 43,060 vehicle-hours. The LTK tabulation was just 0.4 percent higher than the FY2012 vehicle-hours reported by SEPTA.

Table 4 and Table 5 document how the three variable cost models have varied over time. For the NHSL, the operator cost per hour has risen by \$1.91 since 2012, and the per mile cost has increased by \$0.08. At the same time, the per vehicle cost has decreased from \$480,800 in 2012 to \$421,100 in 2014. In comparison, the per vehicle cost in 2010 was \$291,800. The variation from year to year in individual components shows decreases as high as 15% and increases as high as 30% in individual cost model components. The volatility of the cost variables and the impacts that they may have on future budgets must be considered by SEPTA for evaluating proposed projects.

Table 4 – SEPTA Historical Three Variable Cost Models

I. Per Hour Cost -- Operators' Wage / Benefits

	Cost / Hour, by Fiscal Year						
	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
Victory	\$49.33	\$50.20	\$52.79	\$56.27	\$59.41	\$63.44	\$61.32
Frontier	\$35.12	\$37.79	\$42.26	\$47.38	\$50.92	\$48.88	\$48.38

II. Per Mile Cost -- Fuel/Power, Vehicle Maintenance, I&D

	Cost / Mile, by Fiscal Year						
	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
Victory - Bus	\$2.03	\$2.36	\$2.30	\$2.01	\$2.45	\$2.22	\$2.29
Victory - NHSL	\$2.96	\$3.45	\$3.92	\$3.45	\$3.37	\$2.98	\$3.45
Frontier	\$1.73	\$1.95	\$2.05	\$1.91	\$1.99	\$2.16	\$1.83

III. Per Peak Vehicle-year -- Fixed Plant & Overhead

	Cost / Peak Vehicle, by Fiscal Year						
	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>
Victory - Bus	\$98,800	\$96,300	\$102,100	\$100,100	\$103,900	\$95,800	\$124,300
Victory - NHSL	\$301,500	\$303,100	\$291,800	\$368,900	\$480,800	\$437,000	\$421,100
Frontier	\$67,100	\$63,500	\$79,800	\$81,700	\$84,900	\$83,200	\$103,700

**Table 5 – Year to Year Variation in
SEPTA Three Variable Cost Models**

I. Per Hour Cost -- Operators' Wage / Benefits

	Unit Cost Change							6 yr. (2008) comp. avg.
	2008	2009	2010	2011	2012	2013	2014	
Victory	0.8%	1.8%	5.2%	6.6%	5.6%	6.8%	-3.3%	3.7%
Frontier	9.0%	7.6%	11.8%	12.1%	7.5%	-4.0%	-1.0%	5.5%

II. Per Mile Cost -- Fuel/Power, Vehicle Maintenance, I&D

	Unit Cost Change							6 yr. (2008) comp. avg.
	2008	2009	2010	2011	2012	2013	2014	
Victory - Bus	4.6%	16.3%	-2.5%	-12.6%	21.9%	-9.4%	3.2%	2.0%
Victory - NHSL	-8.4%	16.6%	13.6%	-12.0%	-2.3%	-11.6%	15.8%	2.6%
Frontier	15.3%	12.7%	5.1%	-6.8%	4.2%	8.5%	-15.3%	0.9%

III. Per Peak Vehicle-year -- Fixed Plant & Overhead

	Unit Cost Change							6 yr. (2008) comp. avg.
	2008	2009	2010	2011	2012	2013	2014	
Victory - Bus	0.0%	-2.5%	6.0%	-2.0%	3.8%	-7.8%	29.7%	3.9%
Victory - NHSL	-0.7%	0.5%	-3.7%	26.4%	30.3%	-9.1%	-3.6%	5.7%
Frontier	7.2%	-5.4%	25.7%	2.4%	3.9%	-2.0%	24.6%	7.5%

Appendix C includes details on conversion of the NHSL vehicle hour statistics for a single weekday into annual values. The weekday statistics are multiplied by 255 weekdays per year. Saturday statistics are computed by multiplying the weekday statistics by 52%, the SEPTA-provided ratio of Saturday to weekday service. Appendix C then multiplies this figure by 52, the number of Saturdays in a year. For Sunday/holiday service, the SEPTA-provided ratio to weekday service is 40%. The number of Sundays/holidays in a year in the Appendix C computations is 58. This same technique is applied to evaluate the alternatives. It should be noted that due to the introduction of service to King of Prussia, it may be possible that the SEPTA provided ratios will not apply in the future scenarios, and a higher or lower percentage of trips will be run on weekends.

Weekend ratios were also used for evaluating the bus O&M models. The SEPTA planning document "SEPTA route statistics 2014" was used to compute the ratio of Saturday and Sunday service for the 2014 operating plan. This was then applied to the individual bus routes. The results of this analysis appear in Table 6. Route 92 and Route 139 do not run on Sunday. Of note is that the Saturday service to the King of Prussia Mall on Route 123 is currently 96% of the weekday service. Table 6 also shows the annual costs for bus service for each route. Route 123 which would be eliminated on introduction of the NHSL service has an annual cost in excess of \$2.3 million. The total cost for all affected routes is \$17,088,833.

Table 6 – Spring 2014 Bus O&M Costs

Route	92	99	123	124	125	139
From	Exton	Phoenixville	King of Prussia Mall	Chesterbrook	Valley Forge	Limerick
To	King of Prussia Mall	Norristown	Upper Darby	Philadelphia	Philadelphia	King of Prussia Mall
Division	Frontier	Frontier	Victory	Frontier	Victory	Frontier
Peak Vehicles	4	7	4	9	8	3
One-Way Route Miles (avg.)	31.4	22.3	17.3	25.7	26.1	20
Weekday Trips	25	62	54	59	70	32
Sat. Trips	20	55	52	51	52	21
% of weekday	80%	89%	96%	86%	74%	66%
Sun. Trips	n/a	33	44	37	38	n/a
% of weekday	0%	53%	81%	63%	54%	0%
Annual Veh. Hours	15,255	30,112	18,680	36,491	38,113	12,516
Annual Veh. Miles	280,950	444,490	344,649	724,242	664,653	213,019
Annual Fully Allocated Expenses	\$1,686,456	\$3,016,181	\$2,333,381	\$4,081,414	\$4,649,033	\$1,322,368
On-Time %	75%	77%	75%	65%	62%	81%
Weekday ridership	417	1,304	1,436	1,693	1,870	416

4 O&M Cost Model Application to 2012 Operations

4.1 NHSL

The three-factor model as formulated for 2012 correlates closely to the fiscal year 2012 tabulation in Table 2. Table 7 uses the three-factor formula and 2012 NHSL operating statistics, also supplied by SEPTA, to estimate O&M costs for the existing line. The result is a total modeled cost of \$13,667,509 which is less than 2.1% higher than the SEPTA total shown in Table 2. Appendix B shows the underlying summer 2012 operating plan, including equipment cycling of individual train consists, while Appendix C shows the computation of train hours for the summer 2012 plan.

Table 7 – NHSL 2012 O&M Cost Model and Sample Application to FY 2012 Actual Miles and Hours

Item	Rates	Existing 2012
Operating Statistics		
Annual Revenue Vehicle Hours		42,871
Annual Revenue Vehicle Miles		865,987
Peak Vehicles		17
Rates		
Operator \$/Vehicle Hour	\$59.41	\$2,546,966
Maint & Ops/Vehicle Mile	\$3.37	\$2,918,376
Cost per Peak Vehicle	\$480,800	\$8,173,600
Total Annual O&M		\$13,638,942
Total Annual O&M/Vehicle Hour		\$318.14
Total Annual O&M/Vehicle Mile		\$15.75
NHSL Basics:		
Route Length (One-Way Miles)		13.4
Running Time (One-Way, Mins)		26
Average Speed (mph)		30.9
Service:		
Headways (Peak/Base, Mins)		Various/20
Correlation:		
Model Prediction (Above)		\$13,638,942
Actual (NHSL OM FY2012)		\$13,352,740
Estimate % Actual		102.1%

Given the small difference between the model-predicted O&M and the NHSL 2012 actual O&M, this model is deemed appropriate for application to the NHSL Extension AA/DEIS.

Comparing the SEPTA-provided peak vehicle requirement (17) with the computed peak train requirement (14) shown in Appendix B reveals that about 35% of peak train requirement is comprised of two-car trains (6 of the 17 peak vehicles are operating in two-car trains during the morning “peak of the peak”). This percentage increase (35%) is higher than the vehicle-mile and vehicle-hour two-car adjustment factor (14.0%) because the operation of two-car trains is concentrated in the peak. The peak train/peak vehicle factor is only concerned with peak operations, whereas the vehicle-mile and vehicle-hour factors are concerned with full weekday, Saturday and Sunday operation (but two-car operation occurs mostly during the weekday peaks).

Table 8, shows the calculation of the 2012 O&M costs based on actual mileage and hours when 2014 rates are applied. The costs are almost \$600,000 lower due to the changes in the cost per peak vehicle. For comparing alternatives, the actual FY 2012 cost of \$13,352,740 will be used.

Table 8 – NHSL 2014 O&M Cost Model applied to FY 2012 Miles and Hours

	<u>Annual Hours</u>	
Total Hours / Year		42,871.0
	<u>Annual Miles</u>	
Total Miles / Year		865,987.0
	<u>Marginal Operating and Maintenance Costs</u>	
Operator \$ per vehicle hour		\$61.32
Per Vehicle Mile Costs		\$3.45
Operator Costs		\$2,628,850
Vehicle and Maintenance Costs		\$2,987,655
Total Operating and Maintenance Marginal Costs		\$5,616,505
	<u>Overhead Costs</u>	
Peak Vehicles		17
First 18 Vehicles		\$421,100
> 18 Vehicles		\$211,100
Vehicle Overhead		\$7,158,700
Estimated O&M costs		\$12,775,205
Actual O & M costs		\$13,352,740
Estimate % Actual		95.7%

4.2 Bus

The 2014 bus factors were applied against the 2014 bus actual annual mileage and vehicle hours to compute an expected O&M cost. The estimated costs are 97.1% of the actual costs. The error is acceptably small for application as a cost model for evaluating changes in bus service associated with KOP Rail alternatives. For the individual routes, the largest error is within the 139 route, where actual costs were \$300,000 higher than the estimated costs. For Route 92, the difference between the predicted and the actual O&M costs is less than \$20,000. The source document for the Bus 2014 actual costs is the SEPTA annual route statistics document which is included in Appendix G – Bus 2014 Route Operating Statistics.

The statistics for FY 2012 are included in Appendix F – Bus 2012 Route Operating Statistics.

Table 9 – Application of FY 2014 O&M Model to FY 2014 Bus Mileage and Hours

Route		92	99	123	124	125	139
Div		FR	FR	VI	FR	VI	FR
Rates	VM	\$2	\$2	\$2	\$2	\$2	\$2
	VH	\$48	\$48	\$61	\$48	\$61	\$48
	Pk Veh	\$103,700	\$103,700	\$124,300	\$103,700	\$124,300	\$103,700
Peak Veh		4	7	4	9	8	3
Annual	Vehicle Miles	280,950	444,490	344,649	724,242	664,653	213,019
	Vehicle Hours	15,255	30,112	18,680	36,491	38,113	12,516
Annual Costs	Vehicle Mile	\$514,139	\$813,417	\$789,246	\$1,325,363	\$1,522,055	\$487,814
	Vehicle Hour	\$738,037	\$1,456,819	\$1,145,458	\$1,765,435	\$2,337,089	\$767,481
	Peak Vehicle	\$414,800	\$725,900	\$497,200	\$933,300	\$994,400	\$372,900
	Total	\$1,666,975	\$2,996,135	\$2,431,904	\$4,024,097	\$4,853,545	\$1,628,195
Grand Total							\$17,600,851
Actual Cost		\$1,686,456	\$3,016,181	\$2,333,381	\$4,081,414	\$4,649,033	\$1,322,368
Actual Grand Total							\$17,088,833
Estimate % Actual							97.1%

5 Alternative Service Plans

5.1 Rail Service Plans

Each alternative considered has identical service on the existing corridor and the plans vary only by the travel times, station stops, and distances along the extension. The service levels for each type of trip are shown in Table 10. On the existing corridor, service levels were unchanged from current operating plans, and the express and limited stopping patterns remain. There are no longer any trains that turn back at Hughes Park station, but the trips to King of Prussia follow the existing Hughes Park Limited and Express stopping patterns on the corridor.

Table 10 – Service Levels By Trip Type

Trip Type	Peak TPH	Off Peak TPH
69-BM	4	0
69-KOP	6	3
69-NT	4	3
KOP-NT	3	3

A base future operating plan was developed using the PECO / 1st avenue alignment travel times. This operating plan was used to calculate baseline statistics in terms of revenue operating hours and miles traveled which were then adjusted to be applied against the individual alternatives. The variations between the alignments in terms of travel times and miles are relatively small; therefore there is no change in the peak vehicle count, or in the number of trips operated. The number of peak service vehicles is 27. The base weekday future operating plan is shown in Appendix D.

The alternative one-way distances between terminals shown in Table 11 were used to determine the weekday miles for each alternative based on the base operating plan. The adjustments to run times between alternatives made to the operating hours in the base operating plan are shown in Table 12. In order to adjust the operating hours, only trips from the extension being removed from service had their operating times changed. In cases where a train is turning for a new trip, the change in travel time due to the alignment considered is assumed to be absorbed into terminal dwell times (that is, alignments with shorter travel times have more generous terminal turn times).

Table 11 – Alignment Terminal One Way Distances

Alignment	69th - NTC	69th - KOP	69th - BM	KOP-NTC
PECO - 1 st Ave.	13.40	15.95	5.40	5.79
PECO/TP - N. Gulph	13.40	15.83	5.40	5.66
PECO/TP - 1 st Ave.	13.40	15.41	5.40	5.25
U.S. 202 - N. Gulph	13.40	16.30	5.40	5.35
U.S. 202 - 1 st Ave.	13.40	15.83	5.40	4.89

Table 12 – Alignment Terminal Travel Times

Alignment	Travel Times		Change from Base Alt.	
	From DeKalb	From Hughes	From DeKalb	From Hughes
PECO - 1 st Ave.	0:14:54	0:15:36	0:00:00	0:00:00
PECO/TP - N. Gulph	0:13:41	0:14:22	-0:01:13	-0:01:14
PECO/TP - 1 st Ave.	0:12:14	0:12:55	-0:02:40	-0:02:41
U.S. 202 - N. Gulph	0:14:38	0:16:27	-0:00:16	0:00:51
U.S. 202 - 1 st Ave.	0:13:09	0:14:59	-0:01:45	-0:00:37

5.2 Bus Service Plans

The bus service plans were developed by the AECOM team and are detailed in a separate tech memo. LTK used the AECOM-developed hours and travel distances, along with the three variable model parameters in order to compute the expected bus O&M costs for each alternative. The bus service plans were designed to enhance the rail service without providing redundant service. Therefore, the current Route 123 was eliminated in all of the future bus service plans. The total inbound and outbound route distances by alternative are shown in Table 13.

Table 13 – Bus Service Plan Route Miles

Alternative	Route	92A	92B	99A	99B	124	125	139
		Division						
	Direction	FR	FR	FR	FR	FR	VI	FR
PECO - 1 st Ave.	OB	17.99	6.39	10.00	18.93	16.00	11.92	18.92
	IB	16.61	6.15	11.44	18.69	15.89	15.89	17.94
PECO/TP - N. Gulph	OB	18.3	6.68	9.40	18.34	16.13	11.55	18.86
	IB	17.07	6.47	10.82	18.12	15.45	10.93	17.85
PECO/TP - 1 st Ave.	OB	18.27	6.68	9.40	18.34	16.13	11.55	18.86
	IB	17.07	6.47	10.82	18.12	18.12	10.93	17.85
U.S. 202 - N. Gulph	OB	18.27	6.68	9.40	18.34	16.13	11.55	18.86
	IB	17.07	6.47	10.82	18.12	15.45	10.93	17.85
U.S. 202 - 1 st Ave.	OB	18.27	6.68	9.40	18.34	16.13	11.55	18.86
	IB	17.07	6.47	10.82	18.12	15.45	10.93	17.85

6 Alternative O&M Costs

6.1 PECO - 1st Ave.

The PECO 1st Avenue alignment runs along the PECO right of way until crossing at Gulph Road. Due to the alignment choice, the bus O&M cost is higher than in all of the other alternatives. Overall the PECO 1st Avenue alignment has the second highest total O&M cost of the alternatives. The growth from the base 2012 O&M costs is \$5,086,479.

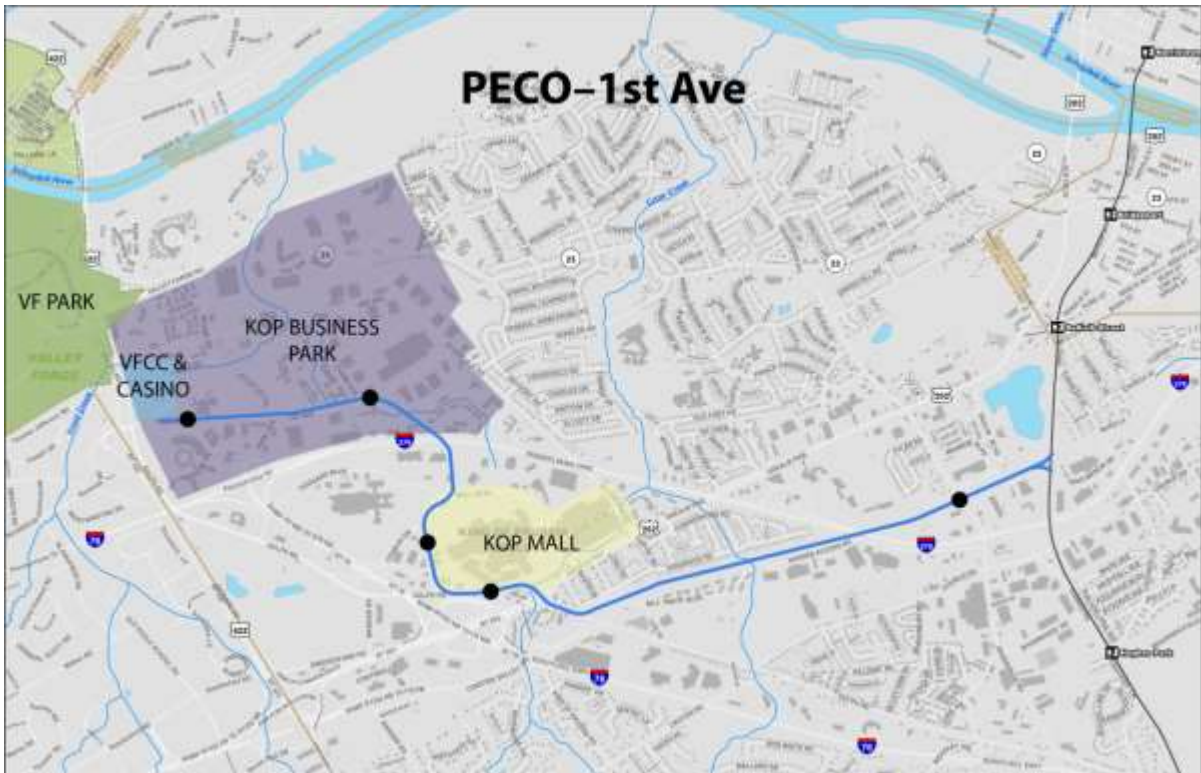


Figure 1 - PECO 1st Avenue Alignment

Table 14 – PECO - 1st Ave. Operating Plan O&M Calculation

<u>Annual Hours</u>	
Total Weekday Vehicle Hours	336.7
Weekdays / Year	255
Total Weekday Hours / Year	85,858.5
Total Sat. Vehicle Hours / Year (52% of weekday)	8,235.9
Total Sun. Holiday Vehicle Hours / Year (40% of weekday)	7,066.3
Total Hours / Year	101,160.6
<u>Annual Miles</u>	
Total Weekday Miles	7,115.1
Weekdays / Year	255
Total Weekday Trips	304
Total Weekday Two Car Trips	29
Total Weekday Miles / Year	1,814,363.2
Total Sat. Vehicle Miles / Year	174,138.6
Total Sun. Vehicle Miles / Year	149,408.8
Total Miles / Year	2,137,910.6
<u>Marginal Operating and Maintenance Costs</u>	
Operator \$ per vehicle hour	\$61.32
Per Vehicle Mile Costs	\$3.45
Operator Costs	\$6,203,170
Vehicle and Maintenance Costs	\$7,375,792
Total Operating and Maintenance Marginal Costs	\$13,578,961
<u>Overhead Costs</u>	
Peak Vehicles	27
First 18 Vehicles	\$421,100
> 18 Vehicles	\$211,100
Vehicle Overhead	\$9,479,700
Total Future O&M costs	<u>\$23,058,661</u>
<u>Bus Costs</u>	
FY 2012 O&M	\$17,600,851
Alignment O&M	\$12,981,408
Change in Bus O&M	(\$4,619,443)

Note: Saturday & Sunday service only one car trains

6.2 PECO/TP - N. Gulph

The O&M cost calculation for the PECO/TP - N. Gulph alternative, as shown in Figure 2, is detailed in Table 15. This alternative is the second least costly overall of the five alternatives considered. The rail O&M is higher than in the PECO/TP - 1st Avenue alternative, but the cost of bus service is identical. The total estimated annual O&M growth from the 2012 baseline is \$4,936,755.

Table 15 – PECO/TP - N. Gulph Operating Plan O&M Calculation

<u>Annual Hours</u>	
Total Weekday Vehicle Hours	336.4
Weekdays / Year	255
Total Weekday Hours / Year	85,790.4
Total Sat. Vehicle Hours / Year (52% of weekday)	8,229.3
Total Sun. Holiday Vehicle Hours / Year (40% of weekday)	7,060.7
Total Hours / Year	101,080.3
<u>Annual Miles</u>	
Total Weekday Miles	7,090.8
Weekdays / Year	255
Total Weekday Trips	304
Total Weekday Two Car Trips	29
Total Weekday Miles / Year	1,808,166.7
Total Sat. Vehicle Miles / Year	173,557.8
Total Sun. Vehicle Miles / Year	148,910.6
Total Miles / Year	2,130,635.1
<u>Marginal Operating and Maintenance Costs</u>	
Operator \$ per vehicle hour	\$61.32
Per Vehicle Mile Costs	\$3.45
Operator Costs	\$6,198,247
Vehicle and Maintenance Costs	\$7,350,691
Total Operating and Maintenance Marginal Costs	\$13,548,938
<u>Overhead Costs</u>	
Peak Vehicles	27
First 18 Vehicles	\$421,100
> 18 Vehicles	\$211,100
Vehicle Overhead	\$9,479,700
Total Future O&M costs	\$23,028,638
<u>Bus Costs</u>	
FY 2012 O&M	\$17,600,851
Alignment O&M	\$12,861,709
Change in Bus O&M	(\$4,739,142)

Note: Saturday & Sunday service only one car trains

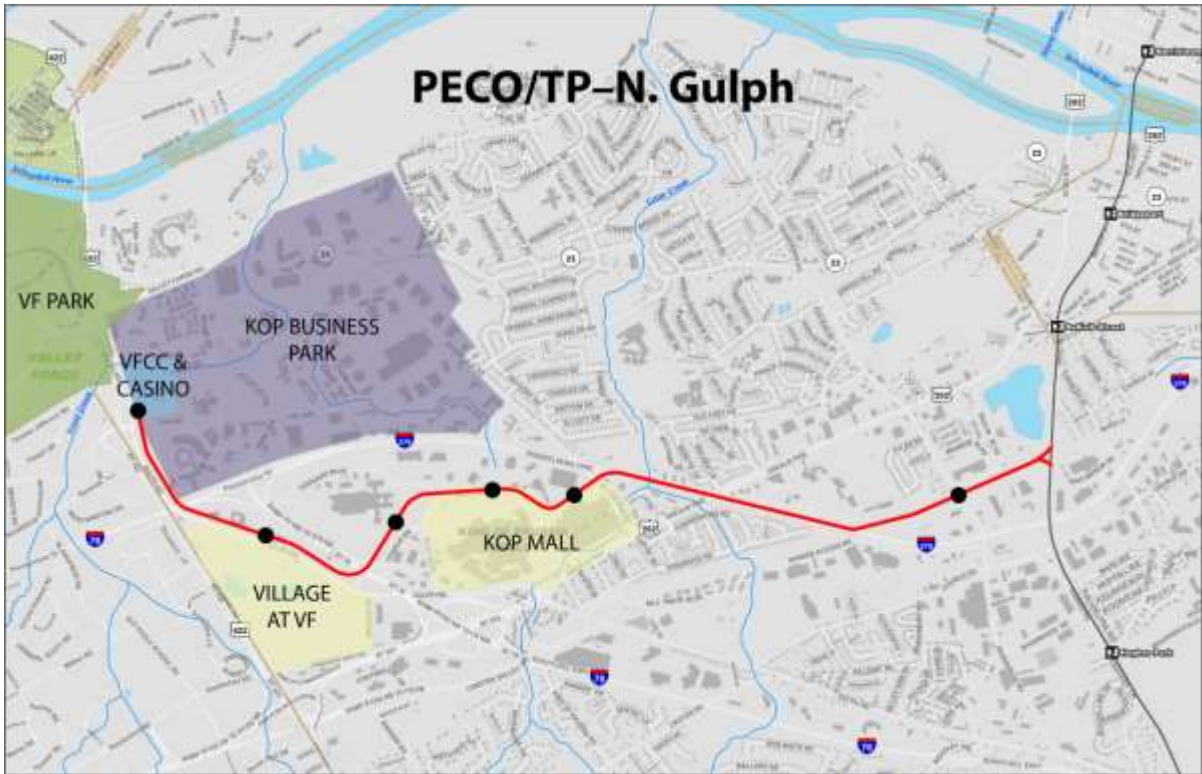


Figure 2 - PECO/TP - N. Gulph Alternative

6.3 PECO/TP - 1st Ave.

Table 16 details the estimated O&M costs for the PECO/TP - 1st Avenue alignment based on the 2014 three factor model. The overall O&M cost for the rail alignment is \$22,937,593, and the overall cost for the bus service is \$12,861,709. This represents a total O&M cost of \$35,920,370, which is an increase of \$4,966,779 from the combined cost of FY 2012 bus and rail operations. The PECO/TP 1st Avenue alignment is the least costly of the alignment in O&M costs, and has the lowest Rail O&M costs, but the variation between overall costs for the best and worst alignment is only \$220,916. As shown in Figure 2, this alignment only differs from the other PECO/TP alignment west of the King of Prussia Mall.

Table 16 – PECO/TP - 1st Ave. Operating Plan O&M Calculation

<u>Annual Hours</u>	
Total Weekday Vehicle Hours	336.1
Weekdays / Year	255
Total Weekday Hours / Year	85,710.2
Total Sat. Vehicle Hours / Year (52% of weekday)	8,221.6
Total Sun. Holiday Vehicle Hours / Year (40% of weekday)	7,054.1
Total Hours / Year	100,986.0
<u>Annual Miles</u>	
Total Weekday Miles	7,008.3
Weekdays / Year	255
Total Weekday Trips	304
Total Weekday Two Car Trips	29
Total Weekday Miles / Year	1,787,119.5
Total Sat. Vehicle Miles / Year	171,585.3
Total Sun. Vehicle Miles / Year	147,218.1
Total Miles / Year	2,105,922.9
<u>Marginal Operating and Maintenance Costs</u>	
Operator \$ per vehicle hour	\$61.32
Per Vehicle Mile Costs	\$3.45
Operator Costs	\$6,192,459
Vehicle and Maintenance Costs	\$7,265,434
Total Operating and Maintenance Marginal Costs	\$13,457,893
<u>Overhead Costs</u>	
Peak Vehicles	27
First 18 Vehicles	\$421,100
> 18 Vehicles	\$211,100
Vehicle Overhead	\$9,479,700
Total Future O&M costs	<u>\$22,937,593</u>
<u>Bus Costs</u>	
FY 2012 O&M	\$17,600,851
Alignment O&M	\$12,861,709
Change in Bus O&M	(\$4,739,142)

Note: Saturday & Sunday service only one car trains

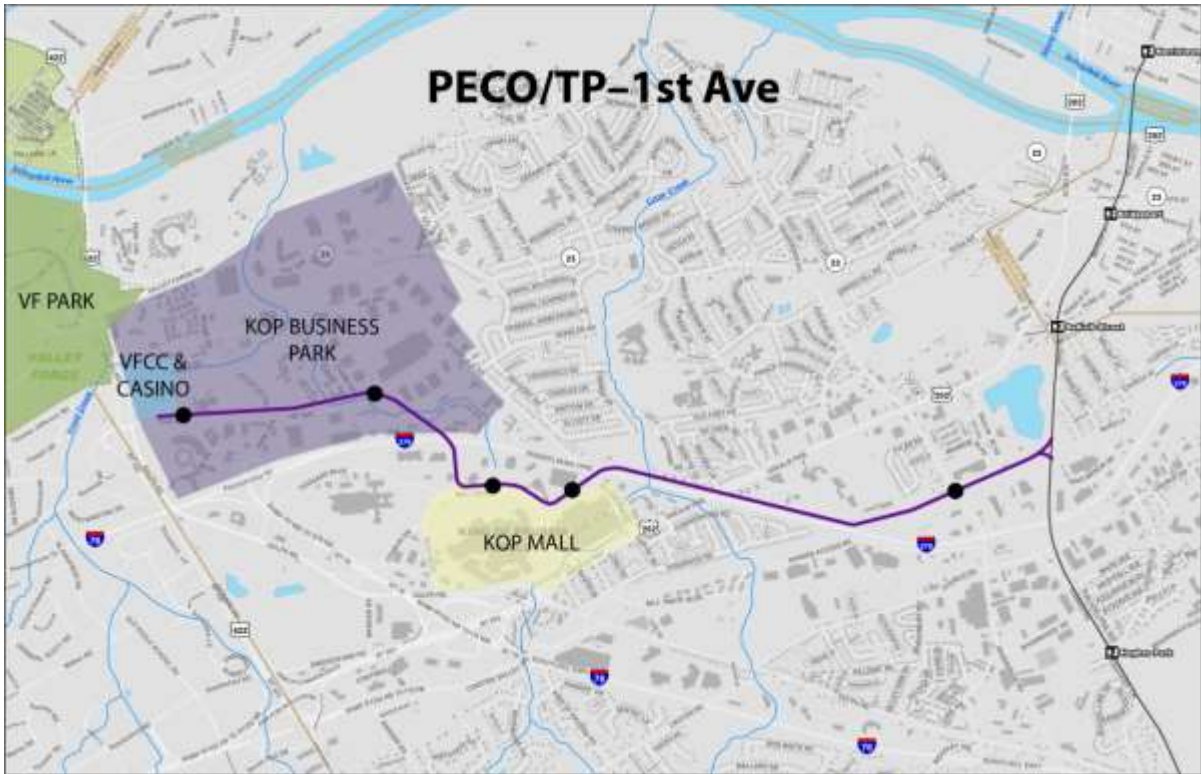


Figure 3 - PECO/TP - 1st Ave Alternative

6.4 U.S. 202 - N. Gulph

The U.S. 202 - N. Gulph alignment is the most expensive of the alternatives considered with a projected total O&M cost of \$36,106,589, as shown in the calculation in Table 17. It should be noted that this is only \$307,288 more than the least expensive of the Tier III alternatives. The rail O&M cost of \$23,129,854 is the highest of all alternatives, and the bus cost is the second highest of the alternatives. O&M costs increase from the baseline 2012 operations, by \$5,152,998. The alignment is identical to the PECO/TP - N. Gulph Road alternative to the west of King of Prussia mall.

Table 17 – U.S. 202 - N. Gulph Operating Plan O&M Calculation

<u>Annual Hours</u>	
Total Weekday Vehicle Hours	336.9
Weekdays / Year	255
Total Weekday Hours / Year	85,905.5
Total Sat. Vehicle Hours / Year (52% of weekday)	8,240.4
Total Sun. Holiday Vehicle Hours / Year (40% of weekday)	7,070.1
Total Hours / Year	101,216.0
<u>Annual Miles</u>	
Total Weekday Miles	7,180.8
Weekdays / Year	255
Total Weekday Trips	304
Total Weekday Two Car Trips	29
Total Weekday Miles / Year	1,831,112.4
Total Sat. Vehicle Miles / Year	175,701.0
Total Sun. Vehicle Miles / Year	150,749.4
Total Miles / Year	2,157,562.7
<u>Marginal Operating and Maintenance Costs</u>	
Operator \$ per vehicle hour	\$61.32
Per Vehicle Mile Costs	\$3.45
Operator Costs	\$6,206,563
Vehicle and Maintenance Costs	\$7,443,591
Total Operating and Maintenance Marginal Costs	\$13,650,154
<u>Overhead Costs</u>	
Peak Vehicles	27
First 18 Vehicles	\$421,100
> 18 Vehicles	\$211,100
Vehicle Overhead	\$9,479,700
Total Future O&M costs	<u>\$23,129,854</u>
<u>Bus Costs</u>	
FY 2012 O&M	\$17,600,851
Alignment O&M	\$12,976,735
Change in Bus O&M	(\$4,624,116)

Note: Saturday & Sunday service only one car trains

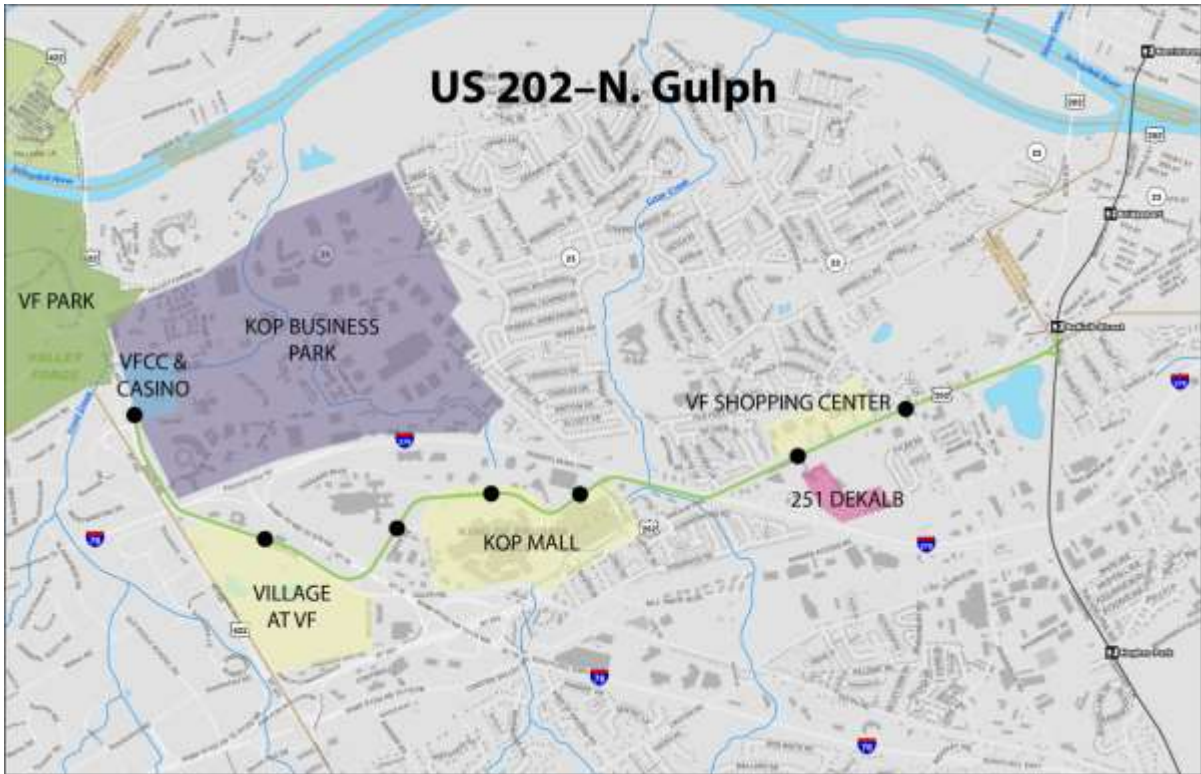


Figure 4 - U.S. 202 - N. Gulph Alternative

6.5 U.S. 202 - 1st Ave.

The U.S. 202 - 1st Avenue alternative as shown in Figure 4 differs from the U.S. 202 - N. Gulph alignment only to the west King of Prussia Mall, and is identical to the PECO/TP 1st Avenue alignment to the east of King of Prussia Mall. Both of the Route 202 alignments have the highest rail O&M costs, but the 1st Avenue version of the Route 202 alignment has slightly lower bus costs. The overall O&M cost for both bus and rail service is \$23,029,021.

Table 18 – U.S. 202 - 1st Ave. Operating Plan O&M Calculation

<u>Annual Hours</u>	
Total Weekday Vehicle Hours	336.6
Weekdays / Year	255
Total Weekday Hours / Year	85,824.4
Total Sat. Vehicle Hours / Year (52% of weekday)	8,232.6
Total Sun. Holiday Vehicle Hours / Year (40% of weekday)	7,063.5
Total Hours / Year	101,120.5
<u>Annual Miles</u>	
Total Weekday Miles	7,088.9
Weekdays / Year	255
Total Weekday Trips	304
Total Weekday Two Car Trips	29
Total Weekday Miles / Year	1,807,665.3
Total Sat. Vehicle Miles / Year	173,503.5
Total Sun. Vehicle Miles / Year	148,863.9
Total Miles / Year	2,130,032.7
<u>Marginal Operating and Maintenance Costs</u>	
Operator \$ per vehicle hour	\$61.32
Per Vehicle Mile Costs	\$3.45
Operator Costs	\$6,200,708
Vehicle and Maintenance Costs	\$7,348,613
Total Operating and Maintenance Marginal Costs	\$13,549,321
<u>Overhead Costs</u>	
Peak Vehicles	27
First 18 Vehicles	\$421,100
> 18 Vehicles	\$211,100
Vehicle Overhead	\$9,479,700
Total Future O&M costs	<u>\$23,029,021</u>
<u>Bus Costs</u>	
FY 2012 O&M	\$17,600,851
Alignment O&M	\$12,833,063
Change in Bus O&M	(\$4,767,788)

Note: Saturday & Sunday service only one car trains

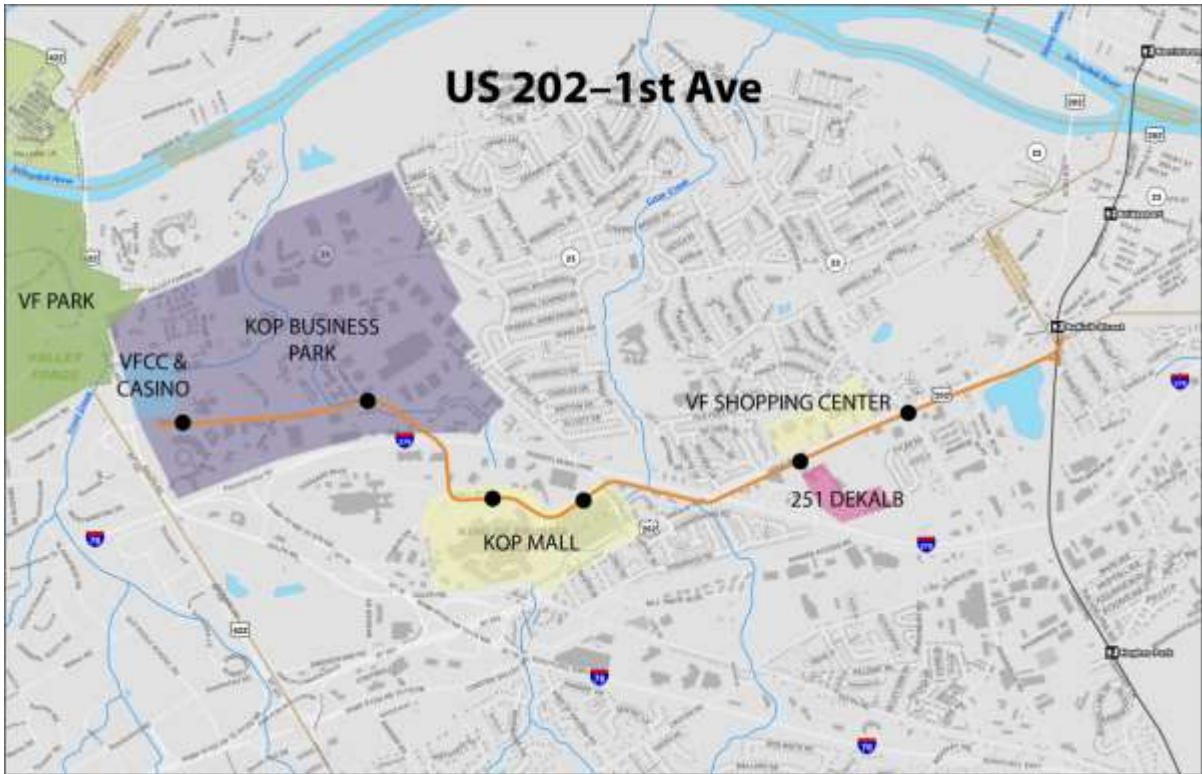


Figure 5 - U.S. 202 - 1st Ave Alternative

7 Conclusions

Table 19 summarizes the bus and rail O&M costs for each alternative and indicates the projected growth in O&M costs. Regardless of the alternative chosen, the costs will rise by approximately \$5 million above the FY 2012 O&M costs for running the NHSL. The difference between each alignment is relatively minor in terms of both rail and bus O&M costs, with the overall cost change from the baseline all falling between \$4.8M and \$5.2M.

Table 19 – Predicted Total O&M Costs By Alternative

	Baseline (2012 Dollars)	FY 2014 O&M Costs (For reference)	Alternatives				
			PECO - 1 st Ave.	PECO/TP - N. Gulph	PECO/TP - 1 st Ave.	U.S. 202 - N. Gulph	U.S. 202 - 1 st Ave.
Rail O&M	\$13,352,740	\$13,319,816	\$23,058,661	\$23,028,638	\$22,937,593	\$23,129,854	\$23,029,021
Bus O&M	\$17,600,851	\$17,088,833	\$12,981,408	\$12,861,709	\$12,861,709	\$12,976,735	\$12,833,063
Total O&M	\$30,953,591	\$30,408,649	\$36,040,070	\$35,890,346	\$35,799,301	\$36,106,589	\$35,862,084
O&M Growth³	-	(\$544,922)	\$5,086,479	\$4,936,755	\$4,845,710	\$5,152,998	\$4,908,493

³ Growth reflects difference between estimates in 2014 dollars and actual O&M costs in 2012 dollars and does not account for inflation during this 2-year time period.

Appendix A – SEPTA Rail and Bus O&M Model Documentation

Intra-Office
Memorandum

Southeastern Pennsylvania Transportation Authority
Operating Budget Department
1234 Market Street, 9th Floor, Philadelphia, PA 19107-3780

TO: C. L. Webb

cc: F. Gormley

FROM: D. Layton

Distribution

SUBJECT: SEPTA Unit Cost Model Update

DATE: October 30, 2014

The 2014 results of the SEPTA Three-Variable Fully Allocated Cost Model are enclosed and ready for use. This is an FTA-recommended model first published by Price Waterhouse in the late 1980's

The table formats are similar to previous years' packages. As before, this cost model uses as its primary source a cousin of the widely distributed 701 report, the 703 – which separates all expenses into modes within a given division.

There are a couple of changes in the results worth noting. The per-mile costs were affected – some significantly -- by another drop in SEPTA passenger claims from \$42.4 million in FY 2013 to \$28.8 million this year (\$58.5 million in fiscal 2012). In addition, there is a reserve established for a corporate claim whose effect on Peak Vehicle Cost ranges from \$15,000 to \$18,000 per vehicle.

While Service Planning is probably the primary user for the information, others want and need to know this for various capital and operating projects. This cost package also contains, in keeping with past practice, the derivations of average unlinked fare for Fiscal 2014.

These cost tables should replace any and all other charts and values currently in use. Please note that this package contains an incremental peak vehicle cost values for each mode as developed in conjunction with Peat Marwick. The fully allocated costs and fares will be used in the Route Operating Ratio Reports (ROR) and the Annual Service Plan (ASP).

If questions of appropriate application arise, I am available on extension 7881.

Fiscal 2014 SEPTA Unit Cost Model;
By Mode within Division

Distribution:

W. Askie
J. Calnan
M. Cassel
B. Comati
J. Coppedge
C. Crasto
J. Cullison
S. D'Antonio
J. Dezio
T. Flint
J. Geary
J. Gottlieb
D. Hiller
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D. Nemiroff
R. Robinson
M. Savage
C. Tierney

SEPTA Operating Budget Department
October 2014

SEPTA Unit Cost Model – Fiscal 2014 Edition

David T. Layton, SEPTA Operating Budget Department

CONTENTS

- I. Attachment 1:** Summary of the Three Variable Model application
 - A. Verbal description of the 3-Variable Model
 - B. Summary Table; Average fare; per hour, per mile, and peak vehicle cost
 - C. Operator labor and Fringes per work hour detail
 - D. Line item detail of the per mile cost by mode
 - E. Line item detail of the peak vehicle cost by mode

- II. Attachment 2:** Regional Rail Cost Model and overall SEPTA profiles of service and total expense

- III. Attachment 3:** historical comparisons of unit costs

The service levels and total expenses are equal to the ones reported out to State and Federal governments. To reiterate, all sources used here add up to SEPTA's reported \$1.270 billion in expense for fiscal year 2014 and match the COA and NTD reporting of service levels.

On the other side of "the ledger" from cost per se, the average fares come from the SEPTA Financial Report to the Board and the Finance Division Revenue Model with the support from the Revenue, Ridership, and Sales Department.

UNIT COST DESCRIPTIONS

The per vehicle hour cost -- Variable #1 -- has these elements:

Operator wages....

inclusive of all Overtime (as included in work hours), split shift premium,
Night Shift premium if any, Report/turn-in, and FLSA

per Vehicle Hour

**All payroll taxes and "vouchered" benefits - medical , Rx,
Insurance, Dental, Vision, Pension, Workers' Comp. or FELA**

The per mile cost is Variable #2 and contains:

Fuel/Traction Power

Tires

Maintenance parts

Maintenance Labor

Fringe benefits on direct labor above

Claims Cost - aka "I&D"

**The Peak Vehicle cost is defined per year, and as can be seen below,
has overhead expenses related to the size and complexity of the system, not to any one vehicle.
It has as its elements:**

Headquarters Allocation

Supervisory Labor (SAM):Transportation & Maint

Facilities Maintenance - MOW

Utilities

Miscellaneous Corporate Expenses

Fringe Benefits for categories 1,2, and 3 above

Interest & Depreciation

The total of these costs is the Fully Allocated Expense for the Division

Appendix A – SEPTA Rail and Bus O&M Model Documentation

SEPTA's UNIT COSTS - FISCAL YEAR 2014
 The Three Variable Fully Allocated Model: OMB A-87, Price Waterhouse

	Average Passenger Fare	Operator \$ per V-hour	Maint.&Op. per V-mile	Overhead - per Peak Vehicle-Year		Peak Fleet	Incremental % FA
				Fully Allocated	Incremental		
I. "CTD" -- City Transit							
01 TB	\$ 1.08	\$ 58.44	\$ 2.47	\$ 209,000	\$ 38,200	30	18%
02 LRV	1.08	58.44	6.05	338,400	51,200	103	15%
03 Bus	1.08	58.44	3.87	189,700	41,400	914	22%
04 High-Speed	1.08	21.88	2.73	603,700	92,900	249	15%
II. "VIC" -- Victory / Suburban							
02 LRV	1.26	\$ 61.32	4.74	339,000	53,600	18	16%
03 Bus	1.26	61.32	2.29	124,300	29,700	111	24%
04 High-Speed	1.26	61.32	3.45	421,100	62,800	18	15%
III. "FRT" -- Frontier / Suburban							
03 Bus	1.62	\$ 48.38	1.83	103,700	25,900	75	26%
IV. "RRD" -- Regional Rail							
07 Railroad	4.06	\$ 102.39	2.98	464,600	65,600	331	14%
		Amtrak Access: \$ 8.74 per Train -mile, Excess only					

SEPTA Operating Budget Department

file: 14_numat_ROR.xls
 print date: 10/22/2014

UNIT COST 2014 -- Vehicle Hour Rates, Variable #1: SEPTA @ \$1.270 Billion Total Expense

Fiscal 2014 Results				Remarks										
MSA Function 04: Vehicle Ops. - Route														
City Transit ("CTD")	<u>Cost / Hour</u>	<u>%</u>	<u>"VEB"</u>	<p>A. Variable # 1 of the SEPTA 3-Variable Cost Model</p> <p>B. The fully allocated labor cost from the model <u>1. is per VEHICLE HOUR</u>. 2. IS NOT a "pay rate". That would be the "Wage Rate Manual" figure. This is the cost rate that results after all work rule premiums, i.e. OT/lsa, spread, MSP are calculated into pay-time; uses "platform hours" as the divisor.</p> <p>C. The RRD cost comprises three (3) job classifications whose distribution throughout the <u>58%</u> at any given time is not uniform.</p>										
Operator Wages	31.28	54%	multiplier											
F/A Cost: Pd Abs. & Benefits	27.18	46%	87.0%											
FY 2014 Total	\$58.44	100%												
Victory District ("VIC")	<u>Cost / Hour</u>	<u>%</u>	<u>"VEB"</u>											
Operator Wages	\$36.03	59%	multiplier											
F/A Cost: Pd Abs. & Benefits	\$25.28	41%	70.2%											
FY 2014 Total	\$61.32	100%												
Frontier ("FRT")	<u>Cost / Hour</u>	<u>%</u>	<u>"VEB"</u>											
Operator Wages	\$29.30	61%	multiplier											
F/A Cost: Pd Abs. & Benefits	19.06	39%	65.1%											
FY 2014 Total	\$48.38	100%												
Railroad ("RRD")	<u>Cost / Hour</u>	<u>%</u>	<u>"VEB"</u>	<table border="1"> <thead> <tr> <th colspan="2">RRD Only</th> </tr> </thead> <tbody> <tr> <td>\$ 41.12</td> <td>Engineer</td> </tr> <tr> <td>\$ 38.94</td> <td>Conductor</td> </tr> <tr> <td>\$ 22.33</td> <td>Asst. Cond.</td> </tr> <tr> <td>\$ 102.39</td> <td></td> </tr> </tbody> </table>	RRD Only		\$ 41.12	Engineer	\$ 38.94	Conductor	\$ 22.33	Asst. Cond.	\$ 102.39	
RRD Only														
\$ 41.12	Engineer													
\$ 38.94	Conductor													
\$ 22.33	Asst. Cond.													
\$ 102.39														
Operator Wages	\$59.80	58%	multiplier											
F/A Cost: Pd Abs. & Benefits	42.59	42%	71.2%											
FY 2014 Total	\$102.39	100%												

Vehicle Mile Rates - FY 2014: SEPTA @ \$1.270 billion total expense

	Motor Bus		Light Rail		Heavy Rail		Trackless	
City Transit ("CTD")	CTD Bus		Subway - Surface		High Speed		"Trolleybus"	
	Cost / Mile	%	Cost / Mile	%	Cost / Mile	%	Cost / Mile	%
Diesel / Propulsion Power	\$1.03	27%	\$0.89	15%	\$0.78	20%	\$0.70	26%
Tires	0.04	1%	n/a	n/a	n/a	n/a	\$0.05	2%
Maintenance - Parts	0.95	25%	1.07	18%	0.48	17%	0.73	-
Sub-total Variable	\$2.02	52%	\$1.96	32%	\$1.24	45%	\$1.48	60%
Maintenance - Labor	0.68	18%	1.71	28%	0.74	27%	0.37	15%
Maintenance - Labor Fringes	0.59	15%	1.49	25%	0.64	23%	0.32	13%
Claims Paid	0.58	15%	0.89	15%	0.11	4%	0.30	12%
FY 2014 Total	\$3.87	100%	\$6.05	100%	\$2.73	100%	\$2.47	100%
Victory District ("VIC")	Victory Bus		Media - Sharon Hill		Norristown / Ris. 100			
	Cost / Mile	%	Cost / Mile	%	Cost / Mile	%		
Diesel / Propulsion Power	\$0.90	35%	\$1.00	25%	\$1.20	37%		
Tires	0.04	2%	n/a	n/a	n/a	n/a		
Maintenance - Parts	0.38	17%	0.80	32%	0.44	13%		
Sub-total Variable	\$1.22	53%	\$1.80	36%	\$1.70	45%		
Maintenance - Labor	0.43	16%	1.46	31%	0.97	28%		
Maintenance - Labor Fringes	0.31	14%	1.03	22%	0.68	20%		
Claims Paid	0.33	14%	0.66	12%	0.10	3%		
FY 2014 Total	\$2.29	100%	\$4.74	100%	\$3.45	100%		
Frontier ("FRT")	Frontier Bus				SEPTA Regional Rail			
	Cost / Mile	%			Cost / Mile	%		
Diesel / Propulsion Power	\$0.71	39%			\$0.98			
Tires	0.04	2%			\$0.00			
Maintenance - Parts (& tolls)	0.34	18%			\$0.45			
Sub-total Variable	\$1.09	60%			\$1.43			
Maintenance - Labor	0.45	25%			\$0.04		Plus:	\$8.56
Maintenance - Labor Fringes	0.30	16%			\$0.00		minus:	
Claims Paid	-0.01	-1%			\$0.11			
FY 2014 Total	\$1.83	100%			\$2.98			

-- Attachment #2 --

SEPTA UNIT COST SYSTEM -- HISTORY OF 3-VARIABLE MODEL -- AS USED FOR ROR, Route Operating Ratio

Amounts in whole \$

		Cost/Hour, by Fiscal Year				Unit Cost change				5 yr. comp. avg.						
		2008	2009	2010	2011	2012	2013	2014	2008	2009	2010	2011	2012	2013	2014	
I. Per Hour Cost -- Operators' Wage / Benefits																
1) CTD Surface	#	\$ 47.05	\$ 49.29	\$ 52.45	\$ 53.88	\$ 56.98	\$ 59.71	\$ 58.44	6.7%	4.8%	6.4%	2.7%	5.8%	4.8%	2.1%	3.7%
2) Victory		49.33	50.20	52.78	56.27	59.41	63.44	61.32	0.8%	1.8%	5.2%	6.6%	5.6%	6.6%	-3.3%	3.7%
3) Frontier		35.12	37.79	42.26	47.38	50.92	48.88	48.38	8.0%	7.6%	11.8%	12.1%	7.5%	-4.0%	-1.0%	5.5%
4) RRD		102.50	103.27	111.10	110.55	111.41	103.93	103.97	4.4%	0.4%	7.5%	-0.1%	0.4%	-6.7%	0.0%	0.2%
II. Per Mile Cost -- Fuel/Power, Vehicle Maintenance, I&D																
1. CTD																
Trackless		-	1.69	2.30	2.51	2.57	2.40	2.47	-	-	38.1%	9.1%	2.4%	-6.6%	2.8%	7.9% since '09 only
Streetcar		4.83	4.71	5.13	7.07	7.31	6.19	6.05	7.3%	-2.8%	8.9%	37.8%	3.4%	-13.3%	-2.3%	3.8%
Bus		3.69	4.07	3.82	4.18	4.00	3.92	3.87	7.6%	10.3%	-8.1%	9.4%	-4.3%	-2.0%	-1.3%	0.6%
Heavy Rail		2.18	2.20	2.40	2.56	2.60	2.74	2.73	2.8%	0.9%	9.1%	8.7%	1.8%	5.4%	-0.4%	3.8%
VIC		4.40	4.63	3.70	3.10	3.17	5.69	4.74	-12.7%	3.8%	-20.1%	-16.2%	86.8%	10.1%	-18.7%	1.0%
LRV		2.63	2.36	2.30	2.01	2.45	2.22	2.29	4.6%	16.3%	-2.5%	-12.6%	21.9%	-9.4%	3.2%	2.0%
Bus		2.98	3.45	3.62	3.45	3.37	2.98	3.45	-8.4%	18.6%	13.5%	-12.0%	-2.3%	+11.8%	15.8%	2.6%
NHSL		1.73	1.95	2.05	1.91	1.99	2.18	1.83	19.3%	12.7%	5.1%	-6.8%	4.2%	8.5%	-15.3%	0.9%
3. FRT		3.15	3.12	2.91	2.97	3.32	3.08	2.98	6.4%	-1.0%	-6.7%	2.1%	11.8%	-7.2%	-3.2%	-0.9%
4. RRD																
III. Per Peak Vehicle-year -- Fixed Plant & Overhead																
1. CTD																
Trackless		-	175,100	187,800	191,000	163,500	194,100	209,000	-	-	13.0%	-3.4%	1.4%	0.3%	7.7%	3.6% since '09 only
Streetcar		274,700	270,150	296,400	295,300	307,000	364,700	338,400	2.9%	-1.7%	10.5%	-1.0%	4.0%	18.8%	-7.2%	3.5%
Bus		155,700	160,200	173,800	168,100	170,000	168,700	189,700	0.7%	2.6%	7.9%	-2.7%	1.1%	-0.8%	12.4%	3.3%
Heavy Rail		493,000	501,650	550,200	562,400	576,600	586,700	603,700	3.5%	3.8%	9.7%	2.2%	2.5%	1.8%	2.9%	3.8%
VIC		256,100	257,700	334,600	263,800	207,000	324,100	339,000	3.6%	0.6%	29.8%	-21.2%	-21.5%	56.6%	4.6%	4.8%
LRV		98,800	96,300	102,100	100,100	103,000	95,800	124,300	0.0%	-2.5%	6.0%	-2.0%	3.8%	-7.8%	28.7%	3.9%
Bus		301,500	303,100	291,800	368,900	480,800	437,000	421,100	-0.7%	0.5%	-3.7%	26.4%	30.3%	-9.1%	-3.6%	5.7%
NHSL		87,100	63,500	79,800	81,700	84,900	83,300	103,700	7.2%	-5.4%	25.7%	2.4%	3.9%	-2.0%	24.6%	7.5%
3. FRT		408,900	395,200	427,000	425,400	459,800	461,400	464,800	7.4%	-2.6%	8.0%	-0.4%	8.1%	0.3%	0.7%	2.3%
4. RRD																

Appendix B – SEPTA NHSL Weekday Timetable and Train Consist Cycles (Summer 2012 Timetable)

Outbound from 69th Street TC					Inbound to 69th Street TC					Comments
Consist	69 th Street	Bryn Mawr	Hughes Park	Norrist'n TC	Consist	Norrist'n TC	Hughes Park	Bryn Mawr	69th Street	
A-01	4:20	4:32	4:44	4:49	A-01	4:54	4:59	5:08	5:19	
B-01	4:50	5:02	5:14	5:19	B-01	5:24	5:29	5:39	5:54	
C-01	5:10	5:22	5:34	5:39	C-01	5:44	5:49	5:59	6:13	
D-01	5:25	5:37	5:49	5:54	D-01	6:04	6:09	6:18	6:32	
A-02	5:42	5:54	6:06	6:11	A-02	6:15	6:20	6:29	6:43	
F-01	5:58	--	6:16	6:21	B-02	--	--	6:38	6:53	
E-01	6:00	6:12	6:24	6:29	F-01	6:31	6:36	6:46	6:57	E-Done (NTC)
G1-01	6:15	--	6:33	6:38	H-01	--	6:44	6:54	7:09	
G2-01	6:15	--	6:33	6:38	G1-01	6:46	6:51	7:01	7:12	
H-01	6:17	6:27	6:40	--	G2-01	6:46	6:51	7:01	7:12	
B-02	6:20	6:33	--	--	K-01	--	--	7:04	7:19	
C-02	6:30	--	6:48	6:53	I-01	--	7:00	7:10	7:25	
I-01	6:32	6:44	6:57	--	C-02	7:01	7:06	7:16	7:27	C-Done
J-01	6:45	--	7:03	7:08	A-03	--	--	7:19	7:34	
D-02	6:46	6:56	7:09	--	D-02	--	7:13	7:23	7:36	
K-01	6:48	7:01	--	--	J-01	7:16	7:21	7:31	7:42	
L-01	7:00	--	7:18	7:23	B-03	--	--	7:34	7:49	
M-01	7:00	--	7:18	7:23	N-01	--	7:28	7:38	7:51	
N-01	7:01	7:11	7:24	--	L-01	7:31	7:36	7:46	7:57	
A-03	7:03	7:16	--	--	M-01	7:31	7:36	7:46	7:57	
O-01	7:15	--	7:33	7:38	H-02	--	--	7:49	8:04	
P-01	7:15	--	7:33	7:38	F-02	--	7:44	7:54	8:07	
F-02	7:16	7:26	7:39	--	O-01	7:46	7:51	8:01	8:12	O-Done
B-03	7:18	7:31	--	--	P-01	7:46	7:51	8:01	8:12	P-Done
G1-02	7:30	--	7:48	7:53	A-04	--	--	8:04	8:19	A-Done
G2-02	7:30	--	7:48	7:53	K-02	--	7:58	8:08	8:23	K-Done
K-02	7:31	7:41	7:54	--	G1-02	8:01	8:06	8:16	8:27	
H-02	7:33	7:46	--	--	G2-02	8:01	8:06	8:16	8:27	
I-02	7:45	--	8:03	8:08	J-02	--	--	8:19	8:34	J-Done
D-03	7:47	7:57	8:10	--	D-03	--	8:14	8:24	8:39	D-Done
A-04	7:48	8:01	--	--	I-02	8:16	8:21	8:31	8:42	
B-04	8:00	--	8:18	8:23	M-02	--	--	8:34	8:49	M-Done
N-02	8:01	8:11	8:24	--	N-02	--	8:28	8:38	8:51	N-Done
J-02	8:03	8:16	--	--	B-04	8:32	8:37	8:46	9:00	
L-02	8:15	8:23	8:36	8:41	L-02	8:46	8:51	9:02	9:16	
M-02	8:17	8:30	--	--	F-03	9:06	9:11	9:22	9:36	
F-03	8:28	--	8:46	8:51	G1-03	9:26	9:31	9:42	9:56	G1-Done
H-03	8:30	8:42	8:55	9:00	G2-03	9:26	9:31	9:42	9:56	H-Done (NTC) G2-Done
G1-03	8:45	8:57	9:10	9:15	I-03	9:46	9:51	10:02	10:16	
G2-03	8:45	8:57	9:10	9:15	M-03	10:06	10:11	10:22	10:36	
I-03	9:00	9:18	9:30	9:36	N-03	10:06	10:11	10:22	10:36	N-Done
M-03	9:20	9:38	9:50	9:56	B-05	10:26	10:31	10:42	10:56	
N-03	9:20	9:38	9:50	9:56	L-03	10:46	10:51	11:02	11:16	
B-05	9:40	9:58	10:10	10:16	F-04	11:06	11:11	11:22	11:36	

Appendix B – SEPTA NHSL Weekday Timetable and Train Consist Cycles (Summer 2012 Timetable)

Outbound from 69th Street TC					Inbound to 69th Street TC					Comments
Consist	69 th Street	Bryn Mawr	Hughes Park	Norrist'n TC	Consist	Norrist'n TC	Hughes Park	Bryn Mawr	69th Street	
L-03	10:00	10:18	10:30	10:36	I-04	11:26	11:31	11:42	11:56	
F-04	10:20	10:38	10:50	10:56	M-04	11:46	11:51	12:02	12:16	
I-04	10:40	10:58	11:10	11:16	B-06	12:06	12:11	12:22	12:36	
M-04	11:00	11:18	11:30	11:36	L-04	12:26	12:31	12:42	12:56	
B-06	11:20	11:38	11:50	11:56	F-05	12:46	12:51	13:02	13:16	F-Done
L-04	11:40	11:58	12:10	12:16	I-05	13:06	13:11	13:22	13:36	I-Done
F-05	12:00	12:18	12:30	12:36	M-05	13:26	13:31	13:42	13:56	M-Done
I-05	12:20	12:38	12:50	12:56	B-07	13:46	13:51	14:02	14:16	B-Done
M-05	12:40	12:58	13:10	13:16	L-05	14:06	14:11	14:22	14:36	
B-07	13:00	13:18	13:30	13:36	G1-04	14:26	14:31	14:42	14:56	
L-05	13:20	13:38	13:50	13:56	G2-04	14:26	14:31	14:42	14:56	
G1-04	13:40	13:58	14:10	14:16	F-06	14:46	14:51	15:02	15:16	
G2-04	13:40	13:58	14:10	14:16	N-04	14:46	14:51	15:02	15:16	
F-06	14:00	14:18	14:30	14:36	D-04	15:01	15:06	15:17	15:31	
N-04	14:00	14:18	14:30	14:36	I-06	15:01	15:06	15:17	15:31	
D-04	14:20	14:38	14:50	14:56	J-03	15:20	15:25	15:36	15:50	
I-06	14:20	14:38	14:50	14:56	M-06	15:20	15:25	15:36	15:50	
J-03	14:40	14:57	15:08	15:14	L-06	--	15:36	15:47	16:01	
M-06	14:40	14:57	15:08	15:14	B-08	15:36	15:41	15:52	16:03	
B-08	15:00	15:08	15:21	15:26	K-03	--	15:46	15:57	16:11	K-Done
L-06	15:05	15:18	15:30	--	G1-05	15:50	15:55	16:06	16:17	
G1-05	15:15	15:23	15:36	15:41	G2-05	15:50	15:55	16:06	16:17	
G2-05	15:15	15:23	15:36	15:41	A-05	--	--	16:08	16:21	
K-03	15:18	15:31	15:43	--	N-05	--	16:02	16:13	16:27	
F-07	15:30	15:38	15:51	15:56	F-07	16:05	16:10	--	16:28	
N-05	15:33	15:46	15:58	--	D-05	--	16:15	16:26	16:40	
I-07	15:45	15:53	16:06	16:11	I-07	16:20	16:25	--	16:43	I-Done
D-05	15:46	15:56	16:09	--	M-07	--	16:30	16:41	16:55	
A-05	15:50	16:03	--	--	J-04	16:35	16:40	--	16:58	
J-04	16:00	16:08	16:21	16:26	L-07	--	16:45	16:56	17:10	L-Done
M-07	16:02	16:15	16:27	--	B-09	16:50	16:55	17:06	17:17	B-Done
B-09	16:15	16:23	16:36	16:41	A-06	--	17:01	17:12	17:26	
L-07	16:16	16:29	16:41	--	G1-06	17:05	17:10	--	17:28	
G1-06	16:30	16:38	16:51	16:56	G2-06	17:05	17:10	--	17:28	
G2-06	16:30	16:38	16:51	16:56	H-04	17:07	17:12	17:23	17:34	
A-06	16:32	16:45	16:57	--	N-06	--	17:17	17:28	17:42	
F-08	16:46	16:54	17:07	17:12	F-08	17:20	17:25	17:36	17:47	
N-06	16:48	17:01	17:13	--	D-06	--	17:30	17:41	17:55	D-Done
K-04	17:00	17:08	17:21	17:26	K-04	17:34	17:39	17:50	18:01	
P-02	17:00	17:08	17:21	17:26	P-02	17:34	17:39	17:50	18:01	
D-06	17:01	17:14	17:26	--	M-08	--	17:47	17:57	18:08	
J-05	17:17	--	17:35	17:40	J-05	17:50	17:55	18:04	18:15	
M-08	17:19	17:32	17:44	--	H-05	--	--	18:07	18:18	
I-08	17:32	17:40	17:53	17:58	A-07	--	18:05	18:14	18:25	A-Done
O-02	17:32	17:40	17:53	17:58	I-08	18:07	18:12	18:21	18:32	I-Done
A-07	17:36	17:49	18:01	--	O-02	18:07	18:12	18:21	18:32	O-Done
G1-07	17:47	17:55	18:08	18:13	N-07	--	--	18:24	18:35	
G2-07	17:47	17:55	18:08	18:13	E-02	18:15	18:20	--	18:38	
H-05	17:50	18:03	--	--	G1-07	18:19	18:24	18:34	18:45	G1-Done
F-09	18:00	18:08	18:21	18:26	G2-07	18:19	18:24	18:34	18:45	G2-Done
N-07	18:05	18:18	--	--	P-03	--	--	18:36	18:47	

Appendix B – SEPTA NHSL Weekday Timetable and Train Consist Cycles (Summer 2012 Timetable)

Outbound from 69th Street TC					Inbound to 69th Street TC					Comments
Consist	69 th Street	Bryn Mawr	Hughes Park	Norrist'n TC	Consist	Norrist'n TC	Hughes Park	Bryn Mawr	69th Street	
K-05	18:15	18:23	18:36	18:41	F-09	18:31	18:36	18:45	18:56	F-Done
P-03	18:17	18:30	--	--	M-09	--	--	18:49	19:00	M-Done
J-06	18:30	18:38	18:51	18:56	K-05	18:50	18:55	19:05	19:16	
M-09	18:33	18:46	--	--	H-06	--	19:08	19:17	19:28	
H-06	18:43	18:55	19:05	--	J-06	19:10	19:15	19:25	19:36	J-Done
E-03	18:50	19:02	19:12	19:18	N-08	--	19:25	19:34	19:45	N-Done
N-08	19:00	19:12	19:22	--	E-03	19:30	19:35	19:45	19:56	
P-04	19:10	19:22	19:32	19:38	P-04	19:50	19:55	20:05	20:16	
K-06	19:30	19:42	19:52	19:58	K-06	20:10	20:15	20:25	20:36	
H-07	19:50	20:02	20:11	20:17	H-07	20:30	20:35	20:45	20:56	
E-04	20:10	20:22	20:31	20:37	E-04	20:50	20:55	21:05	21:16	
P-05	20:30	20:42	20:51	20:57	P-05	21:10	21:15	21:25	21:36	
K-07	20:50	21:02	21:11	21:17	K-07	21:30	21:35	21:45	21:56	
H-08	21:10	21:22	21:31	21:37	H-08	21:50	21:55	22:05	22:16	
E-05	21:30	21:42	21:51	21:57	E-05	22:10	22:15	22:25	22:36	
P-06	21:50	22:02	22:11	22:16	P-06	22:30	22:35	22:45	22:56	P-Done
K-08	22:10	22:22	22:31	22:36	K-08	22:50	22:55	23:05	23:16	
H-09	22:30	22:42	22:51	22:56	H-09	23:10	23:15	23:25	23:36	
E-06	22:50	23:02	23:11	23:16	E-06	23:30	23:35	23:45	23:56	
K-09	23:20	23:32	23:41	23:46	K-09	23:55	0:00	0:10	0:21	K-Done
H-10	23:52	0:04	0:13	0:18	H-10	0:25	0:30	0:40	0:51	H-Done
E-07	0:22	0:34	0:43	0:48	E-07	0:55	1:00	1:10	1:21	
E-08	1:40	1:52	2:01	2:06	E-08	2:10	2:15	2:25	2:36	E-Done

Appendix C – SEPTA NHSL Operating Statistics - Vehicle Hours (Summer 2012 Timetable)

Consist	1st Run		2nd Run		3rd Run		Total Time			
	On	Done	On	Done	On	Done	1st	2nd	3rd	Total
A	4:20	8:26	15:50	18:25	--	--	4:06	2:35	--	6:41
B	4:50	14:16	15:00	17:17	--	--	9:26	2:17	--	11:43
C	5:10	7:27	--	--	--	--	2:17	0:00	--	2:17
D	5:25	8:39	14:20	17:55	--	--	3:14	3:35	--	6:49
E	6:00	6:29	18:15	2:36	--	--	0:29	8:21	--	8:50
F	5:58	13:16	14:00	18:56	--	--	7:18	4:56	--	12:14
G1	6:15	9:56	13:40	18:45	--	--	3:41	5:05	--	8:46
G2	6:15	9:56	13:40	18:45	--	--	3:41	5:05	--	8:46
H	6:17	9:00	17:07	0:51	--	--	2:43	7:44	--	10:27
I	6:32	13:36	14:20	16:43	17:32	18:32	7:04	2:23	1:00	10:27
J	6:45	8:34	14:40	19:36	--	--	1:49	4:56	--	6:45
K	6:48	8:23	15:18	16:11	17:00	0:21	1:35	0:53	7:21	9:49
L	7:00	17:10	--	--	--	--	10:10	0:00	--	10:10
M	7:00	8:49	9:20	13:56	14:40	19:00	1:49	4:36	4:20	10:45
N	7:01	8:51	9:20	13:56	14:40	19:00	1:50	4:36	4:20	10:46
O	7:15	8:12	17:32	18:32	--	--	0:57	1:00	--	1:57
P	7:15	8:12	17:00	22:56	--	--	0:57	5:56	--	6:53
17										
Total Weekday Rev Vehicle Hrs										144h 5m
Weekdays/Year										255
Total Wkdy Rev Veh Hrs/Year										36741.25
Total Sat Rev Veh Hrs/Year (52% of Wkday)										3400.76
Total Sun-Hol Rev Veh Hrs/Yr (40% of Wkday)										2917.81
Total Rev Veh Hrs/Year										<u>43059.8</u>

Appendix D – SEPTA Base NHSLX Operating Plan Weekday Timetable and Train Consist Cycles

Table 20 – PECO – 1st Avenue Operating Plan (Base Alignment)

Consist	NTC	KOP	Bryn Mawr	69th Street	69th Street	Bryn Mawr	KOP	NTC	Next Departure	Comment
A-1				4:19	4:24	4:35		4:52	4:58	
B-1				4:24	4:29	4:40	5:08		5:20	
C-1				4:28	4:33	4:44	5:12		5:18	
C-2							5:18	5:36	5:42	
D-1				4:34	4:39	4:50	5:18		5:30	
E-1				4:39	4:44	4:55		5:12	5:18	
F-1				4:44	4:49	5:00	5:28		5:40	
G-1				4:48	4:53	5:04	5:32		5:38	
H1-1				4:54	4:59	5:10	5:38		5:50	
H2-1				4:54	4:59	5:10	5:38		5:50	
I-1				4:59	5:04	5:15		5:32	5:38	
J-1				5:04	5:09	5:20	5:48		6:00	
G-2							5:38	5:56	6:02	
K-1				5:08	5:13	5:24	5:52		5:58	
K-2							5:58	6:16	6:22	
L-1				5:14	5:19	5:30	5:58		6:10	
M-1				5:19	5:24	5:35		5:52	5:58	
N1-1				5:24	5:29	5:40	6:08		6:20	
N2-1				5:24	5:29	5:40	6:08		6:20	
O-1				5:34	5:39	5:50	6:18		6:30	
A-2	4:58		5:12	5:26	5:44	5:55		6:12	6:18	
P-1				5:44	5:49	6:00	6:28		6:40	
Q1-1				5:54	5:59	6:10	6:38		6:50	
Q2-1				5:54	5:59	6:10	6:38		6:50	
E-2	5:18		5:32	5:46	6:20	6:29	6:58		7:10	
R1-1				6:04	6:04	6:15		6:32	6:38	
R2-1				6:04	6:04	6:15		6:32	6:38	
B-2		5:20	5:46	5:59	6:09	6:20	6:48		7:00	
I-2	5:38		5:52	6:06	6:31	6:44			6:48	
C-3	5:42	6:00					6:18	6:36	6:42	
D-2		5:30	5:56	6:09	6:30	6:39	7:08		7:20	
F-2		5:40	6:06	6:19	6:29			6:52	6:58	
M-2	5:58		6:12	6:26	6:40	6:49	7:18		7:30	
G-3	6:02	6:20					6:38	6:56	7:02	
H1-2		5:50	6:15	6:29	6:49			7:12	7:18	
H2-2		5:50	6:15	6:29	6:49			7:12	7:18	
J-2		6:00	6:26	6:39	6:45			7:08	7:22	
A-3	6:18		6:33	6:44	6:50	6:59	7:28		7:40	
K-3	6:22	6:40					6:58	7:16	7:26	
S-1				6:46	6:51	7:04			7:08	
L-2		6:10	6:35	6:49	7:00	7:09	7:38		7:50	
N1-2		6:20	6:46	6:59	7:09			7:32	7:38	
N2-2		6:20	6:46	6:59	7:09			7:32	7:38	
I-3			6:48	7:03	7:11	7:24			7:28	
R1-2	6:38		6:53	7:04	7:10	7:19	7:48		8:00	
R2-2	6:38		6:53	7:04	7:10	7:19	7:48		8:00	
C-4	6:42	7:00					7:18	7:36	7:42	
T-1				7:15	7:20	7:29	7:58		8:10	
O-2		6:30	6:56	7:09	7:30	7:39	8:08		8:20	

Table 20 – PECO – 1st Avenue Operating Plan (Base Alignment)

Consist	NTC	KOP	Bryn Mawr	69th Street	69th Street	Bryn Mawr	KOP	NTC	Next Departure	Comment
P-2		6:40	7:06	7:19	7:29			7:52	7:58	
S-2			7:08	7:23	7:31	7:44			7:48	
F-3	6:58		7:13	7:24	7:40	7:49	8:18		8:30	
G-4	7:02	7:20					7:38	7:56	8:02	
U-1				7:36	7:41	7:54			8:01	
Q1-2		6:50	7:16	7:29	7:49			8:12	8:18	
Q2-2		6:50	7:16	7:29	7:49			8:12	8:18	
B-3		7:00	7:26	7:39	7:45			8:08	8:22	
I-4			7:28	7:43	7:51	8:04			8:08	
H1-3	7:18		7:33	7:44	7:50	7:59	8:28		8:40	
H2-3	7:18		7:33	7:44	7:50	7:59	8:28		8:40	
J-3	7:22	7:40					7:58	8:16	8:26	
E-3		7:10	7:36	7:49	8:00	8:09	8:38		8:50	
D-3		7:20	7:46	7:59	8:20	8:29	8:58		9:10	
K-4	7:26		7:41	7:52						K Done
V1-1				8:04	8:09			8:32	8:38	
V2-1				8:04	8:09			8:32	8:38	
S-3			7:48	8:03	8:10	8:19	8:48		9:00	
N1-3	7:38		7:53	8:04	8:11	8:24			8:28	
N2-3	7:38		7:53	8:04						N2 Done
C-5	7:42	8:00					8:18	8:36	8:42	
M-3		7:30	7:56	8:09	8:30	8:39	9:08		9:20	
U-2			8:01	8:16	8:41	8:54			9:01	
A-4		7:40	8:06	8:19	8:29			8:52	8:58	
I-5			8:08	8:23	8:31	8:44			8:48	
P-3	7:58		8:13	8:24	8:40	8:49	9:18			P Done
G-5	8:02	8:20					8:38	8:56	9:02	
L-3		7:50	8:16	8:29	8:49			9:12	9:18	
R1-3		8:00	8:26	8:39	8:45			9:08	9:22	
R2-3		8:00	8:26	8:39						R2 Done
N1-4			8:28	8:43						N1 Done
Q1-3	8:18		8:33	8:44	8:50	9:01	9:29		9:40	
Q2-3	8:18		8:33	8:44						Q2 Done
B-4	8:22	8:40					8:58	9:16	9:26	
T-2		8:10	8:36	8:49	9:09	9:20	9:48		10:00	
J-4	8:26		8:41	8:52	8:59					J Done
O-3		8:20	8:46	8:59	9:04	9:15		9:32	9:38	
I-6			8:48	9:03						I Done
V1-2	8:38		8:53	9:04						V1 Done
V2-2	8:38		8:53	9:04						V2 Done
C-6	8:42	9:00					9:18	9:36	9:42	
F-4		8:30	8:56	9:09	9:24	9:35		9:52	9:58	
U-3			9:01	9:16						U Done
H1-4		8:40	9:06	9:19	9:29	9:40	10:08		10:20	
H2-4		8:40	9:06	9:19						H2 Done
A-5	8:58		9:13	9:24						A Done
G-6	9:02	9:20					9:38	9:56	10:02	
E-4		8:50	9:15	9:29	9:44	9:55		10:12	10:18	
S-4		9:00	9:26	9:39	9:49	10:00	10:28		10:40	
L-4	9:18		9:33	9:44						L Done
R1-4	9:22	9:40					9:58	10:16	10:22	
D-4		9:10	9:35	9:49	10:04	10:15		10:32	10:38	
B-5	9:26		9:41	9:52						B Done

Table 20 – PECO – 1st Avenue Operating Plan (Base Alignment)

Consist	NTC	KOP	Bryn Mawr	69th Street	69th Street	Bryn Mawr	KOP	NTC	Next Departure	Comment
M-4		9:20	9:45	9:59	10:09	10:20	10:48		11:00	
O-4	9:38		9:52	10:06	10:24	10:35		10:52	10:58	
C-7	9:42	10:00					10:18	10:36	10:42	
Q1-4		9:40	10:05	10:19	10:29	10:40	11:08		11:20	
F-5	9:58		10:12	10:26	10:44	10:55		11:12	11:18	
G-7	10:02	10:20					10:38	10:56	11:02	
T-3		10:00	10:25	10:39	10:49	11:00	11:28		11:40	
E-5	10:18		10:32	10:46	11:04	11:15		11:32	11:38	
R1-5	10:22	10:40					10:58	11:16	11:22	
H1-5		10:20	10:45	10:59	11:09	11:20	11:48		12:00	
D-5	10:38		10:52	11:06	11:24	11:35		11:52	11:58	
C-8	10:42	11:00					11:18	11:36	11:42	
S-5		10:40	11:05	11:19	11:29	11:40	12:08		12:20	
O-5	10:58		11:12	11:26	11:44	11:55		12:12	12:18	
G-8	11:02	11:20					11:38	11:56	12:02	
M-5		11:00	11:25	11:39	11:49	12:00	12:28		12:40	
F-6	11:18		11:32	11:46	12:04	12:15		12:32	12:38	
R1-6	11:22	11:40					11:58	12:16	12:22	
Q1-5		11:20	11:45	11:59	12:09	12:20	12:48		13:00	
E-6	11:38		11:52	12:06	12:24	12:35		12:52	12:58	
C-9	11:42	12:00					12:18	12:36	12:42	
T-4		11:40	12:05	12:19	12:29	12:40	13:08		13:20	
D-6	11:58		12:12	12:26	12:44	12:55		13:12	13:18	
G-9	12:02	12:20					12:38	12:56	13:02	
H1-6		12:00	12:25	12:39	12:49	13:00	13:28		13:40	
O-6	12:18		12:32	12:46	13:04	13:15		13:32	13:38	
R1-7	12:22	12:40					12:58	13:16	13:22	
S-6		12:20	12:45	12:59	13:09	13:20	13:48		14:00	
F-7	12:38		12:52	13:06	13:24	13:35		13:52	13:58	
C-10	12:42	13:00					13:18	13:36	13:42	
M-6		12:40	13:05	13:19	13:29	13:40	14:08		14:20	
E-7	12:58		13:12	13:26	13:44	13:55		14:12	14:18	
G-10	13:02	13:20					13:38	13:56	14:02	
Q1-6		13:00	13:25	13:39	13:49	14:00	14:28		14:40	
D-7	13:18		13:32	13:46	14:04	14:15		14:32	14:38	
R1-8	13:22	13:40					13:58	14:16	14:22	
T-5		13:20	13:45	13:59	14:09	14:20	14:48		15:00	
O-7	13:38		13:52	14:06	14:24	14:35		14:52	14:58	
C-11	13:42	14:00					14:18	14:36	14:42	
H1-7		13:40	14:05	14:19	14:51	15:04			15:08	
V1-3				14:24	14:29	14:40	15:08		15:20	
V2-3				14:24	14:29	14:40	15:08		15:20	
F-8	13:58		14:12	14:26	14:44	14:55		15:12	15:18	
G-11	14:02	14:20					14:38	14:56	15:02	
S-7		14:00	14:25	14:39	14:50	14:59	15:28		15:40	
E-8	14:18		14:32	14:46						E Done
H2-5				15:01	15:06	15:14		15:32	15:38	
Q2-4				15:01	15:06	15:14		15:32	15:38	
N1-5				15:04	15:09	15:20	15:48		16:00	
N2-4				15:04	15:09	15:20	15:48		16:00	
R1-9	14:22	14:40					14:58	15:16	15:22	
M-7		14:20	14:45	14:59	15:19	15:30	15:58		16:10	
D-8	14:38		14:52	15:06	15:42	15:50		16:08	16:22	

Table 20 – PECO – 1st Avenue Operating Plan (Base Alignment)

Consist	NTC	KOP	Bryn Mawr	69th Street	69th Street	Bryn Mawr	KOP	NTC	Next Departure	Comment
K-5				15:19	15:24	15:35		15:52	15:58	
J-5				15:19	15:24	15:35		15:52	15:58	
C-12	14:42	15:00					15:18	15:36	15:42	
Q1-7		14:40	15:05	15:19	15:51	16:04			16:08	
R2-4				15:25	15:30	15:39	16:08		16:20	
U-4				15:25	15:30	15:39	16:08		16:20	
H1-8			15:08	15:23	15:31	15:44			15:48	
O-8	14:58		15:13	15:24	15:36	15:47	16:15		16:30	
A-6				15:41	15:46	15:54		16:12	16:18	
G-12	15:02	15:20					15:38	15:56	16:02	
T-6		15:00	15:25	15:39	15:50	15:59	16:28		16:40	
F-9	15:18		15:32	15:46	16:00	16:09	16:38		16:50	
R1-10	15:22	15:40					15:58	16:16	16:26	
V1-4		15:20	15:46	15:59	16:06	16:14		16:32	16:38	
V2-4		15:20	15:46	15:59	16:06	16:14		16:32	16:38	
H1-9			15:48	16:03	16:11	16:24			16:28	
H2-6	15:38		15:53	16:04	16:10	16:19	16:48		17:00	
Q2-5	15:38		15:53	16:04	16:10	16:19	16:48		17:00	
B-6				16:15	16:20	16:29	16:58		17:10	
C-13	15:42	16:00					16:18	16:36	16:42	
S-8		15:40	16:06	16:19	16:26	16:34		16:52	16:58	
Q1-8			16:08	16:23	16:31	16:44			16:48	
K-6	15:58		16:13	16:24	16:30	16:39	17:08		17:20	
J-6	15:58		16:13	16:24	16:30	16:39	17:08		17:20	
G-13	16:02	16:20					16:38	16:56	17:02	
P-4		15:50	16:16	16:29	16:37	16:46	17:15		17:30	
L-5				16:37	16:42	16:50		17:08	17:22	
I-7				16:38	16:43	16:56			17:01	
N1-6		16:00	16:26	16:39	16:46	16:54		17:12	17:18	
N2-5		16:00	16:26	16:39	16:46	16:54		17:12	17:18	
H1-10			16:28	16:43	16:51	17:04			17:08	
A-7	16:18		16:33	16:44	16:50	16:59	17:28		17:40	
M-8		16:10	16:36	16:49	17:00	17:09	17:38		17:50	
D-9	16:22	16:40					16:58	17:16	17:26	
R1-11	16:26		16:41	16:52	17:42	17:50		18:08	18:22	
R2-5		16:20	16:46	16:59	17:06	17:14		17:32	17:38	
U-5		16:20	16:46	16:59	17:06	17:14		17:32	17:38	
Q1-9			16:48	17:03	17:11	17:24			17:28	
V1-5	16:38		16:53	17:04	17:10	17:19	17:48		18:00	
V2-5	16:38		16:53	17:04	17:10	17:19	17:48		18:00	
C-14	16:42	17:00					17:18	17:36	17:42	
O-9		16:30	16:56	17:09	17:20	17:29	17:58		18:10	
I-8			17:01	17:16	17:43	17:56			18:01	
T-7		16:40	17:06	17:19	17:26	17:34		17:52	17:58	
H1-11			17:08	17:23	17:31	17:44			17:48	
S-9	16:58		17:13	17:24	17:30	17:39	18:08		18:20	
G-14	17:02	17:20					17:38	17:56	18:02	
F-10		16:50	17:16	17:29	17:37	17:46	18:15		18:30	
H2-7		17:00	17:26	17:39	17:46	17:54		18:12	18:18	
Q2-6		17:00	17:26	17:39	17:46	17:54		18:12	18:18	
Q1-10			17:28	17:43	17:51	18:04			18:08	
N1-7	17:18		17:33	17:44	17:50	17:59	18:28		18:40	
N2-6	17:18		17:33	17:44	17:50	17:59	18:28		18:40	

Table 20 – PECO – 1st Avenue Operating Plan (Base Alignment)

Consist	NTC	KOP	Bryn Mawr	69th Street	69th Street	Bryn Mawr	KOP	NTC	Next Departure	Comment
B-7		17:10	17:36	17:49	18:00	18:09	18:38		18:50	
L-6	17:22	17:40					17:58	18:16	18:26	
D-10	17:26		17:41	17:52	18:42	18:50		19:08	19:22	
K-7		17:20	17:46	17:59	18:06	18:14		18:32	18:38	
J-7		17:20	17:46	17:59	18:06	18:14		18:32	18:38	
H1-12			17:48	18:03	18:11	18:24			18:28	
R2-6	17:38		17:53	18:04	18:10	18:19	18:48		19:00	
U-6	17:38		17:53	18:04	18:10	18:19	18:48		19:00	
C-15	17:42	18:00					18:18	18:36	18:42	
P-5		17:30	17:56	18:09	18:20	18:29	18:58		19:12	
I-9			18:01	18:16	18:43	18:56			19:01	
A-8		17:40	18:06	18:19	18:26	18:34		18:52	18:58	
Q1-11			18:08	18:23	18:31	18:44			18:48	
T-8	17:58		18:13	18:24	18:30	18:39	19:08		19:20	
G-15	18:02	18:20					18:38	18:56	19:02	
M-9		17:50	18:16	18:29						M Done
V1-6		18:00	18:26	18:39	18:46	18:54		19:12	19:18	
V2-6		18:00	18:26	18:39	18:46	18:54		19:12	19:18	
H1-13			18:28	18:43						H1 Done
H2-8	18:18		18:33	18:44	18:50	18:59	19:28		19:40	
Q2-7	18:18		18:33	18:44	18:50	18:59	19:28		19:40	
O-10		18:10	18:36	18:49						O Done
R1-12	18:22	18:40					18:58	19:16	19:26	
L-7	18:26		18:41	18:52	19:04	19:15		19:32	19:38	
S-10		18:20	18:46	18:59	19:09	19:20	19:48		20:00	
Q1-12			18:48	19:03						Q1 Done
K-8	18:38		18:53	19:04						K Done
J-8	18:38		18:53	19:04						J Done
C-16	18:42	19:00					19:18	19:36	19:42	
F-11		18:30	18:56	19:09	19:24	19:35		19:52	19:58	
I-10			19:01	19:16						I Done
N1-8		18:40	19:06	19:19	19:29	19:40	20:08		20:20	
N2-7		18:40	19:06	19:19						N2 Done
A-9	18:58		19:13	19:24						A Done
G-16	19:02	19:20					19:38	19:56	20:02	
B-8		18:50	19:16	19:29	19:44	19:55		20:12	20:18	
R2-7		19:00	19:26	19:39	19:49	20:00	20:28		20:40	
U-7		19:00	19:26	19:39						U Done
V1-7	19:18		19:32	19:46	20:04	20:15		20:32	20:38	
V2-7	19:18		19:32	19:46						V2 Done
D-11	19:22	19:40					19:58	20:16	20:22	
P-6		19:12	19:38	19:51						P Done
R1-13	19:26		19:41	19:52						R1 Done
T-9		19:20	19:45	19:59	20:09	20:20	20:48		21:00	
L-8	19:38		19:52	20:06	20:24	20:35		20:52	20:58	
H2-9		19:40	20:05	20:19	20:29	20:40	21:08		21:20	
Q2-8		19:40	20:05	20:19						Q2 Done
C-17	19:42	20:00					20:18	20:36	20:42	
F-12	19:58		20:12	20:26	20:44	20:55		21:12	21:18	
S-11		20:00	20:25	20:39	20:49	21:00	21:28		21:40	
G-17	20:02	20:20					20:38	20:56	21:02	
B-9	20:18		20:32	20:46	21:04	21:15		21:32	21:38	
N1-9		20:20	20:45	20:59	21:09	21:20	21:48		22:00	

Table 20 – PECO – 1st Avenue Operating Plan (Base Alignment)

Consist	NTC	KOP	Bryn Mawr	69th Street	69th Street	Bryn Mawr	KOP	NTC	Next Departure	Comment
D-12	20:22	20:40					20:58	21:16	21:22	
V1-8	20:38		20:52	21:06	21:24	21:35		21:52	21:58	
R2-8		20:40	21:05	21:19	21:29	21:40	22:08		22:20	
C-18	20:42	21:00					21:18	21:36	21:42	
L-9	20:58		21:12	21:26	21:44	21:55		22:12	22:18	
T-10		21:00	21:25	21:39	21:49	22:00	22:28		22:40	
G-18	21:02	21:20					21:38	21:56	22:02	
F-13	21:18		21:32	21:46	22:04	22:15		22:32	22:38	
H2-10		21:20	21:45	21:59	22:09	22:20	22:48		23:00	
D-13	21:22	21:40					21:58	22:16	22:22	
B-10	21:38		21:52	22:06	22:24	22:35		22:52	22:58	
S-12		21:40	22:05	22:19	22:29	22:40	23:08		23:20	
C-19	21:42	22:00					22:18	22:36	22:42	
V1-9	21:58		22:12	22:26	22:44	22:55		23:12	23:18	
N1-10		22:00	22:25	22:39	22:49	23:00	23:28		23:40	
G-19	22:02	22:20					22:38	22:56	23:02	
L-10	22:18		22:32	22:46	23:04	23:15		23:32	23:38	
R2-9		22:20	22:45	22:59	23:09	23:20	23:48		0:00	
D-14	22:22	22:40					22:58	23:16	23:22	
F-14	22:38		22:52	23:06	23:24	23:35		23:52	23:58	
T-11		22:40	23:05	23:19	23:29	23:40	0:08		0:20	
C-20	22:42	23:00					23:18	23:36	23:42	
B-11	22:58		23:12	23:26	23:44	23:55		0:12	0:18	
H2-11		23:00	23:25	23:39	23:49	0:00	0:28		0:40	
G-20	23:02	23:20					23:38	23:56	0:02	
V1-10	23:18		23:32	23:46	0:04	0:15		0:32	0:38	
S-13		23:20	23:45	23:59	0:09					S Done
D-15	23:22	23:40					23:58	0:16	0:22	
L-11	23:38		23:52	0:06						L Done
N1-11		23:40	0:05	0:19						N1 Done
C-21	23:42	0:00					0:18	0:36	0:42	
F-15	23:58		0:12	0:26						F Done
R2-10		0:00	0:25	0:39						R2 Done
G-21	0:02	0:20					0:38	0:56	1:02	
B-12	0:18		0:32	0:46						B Done
T-12		0:20	0:45	0:59						T Done
D-16	0:22	0:40					0:58	1:16	1:22	
V1-11	0:38		0:52	1:06						V1 Done
H2-12		0:40	1:05	1:19						H2 Done
C-22	0:42	1:00					1:18	1:36	1:42	
G-22	1:02			1:22						G Done
D-17	1:22			1:42						D Done
C-23	1:42			2:02						C Done

Table 21 – PECO – 1st Avenue Operating Plan Trip Hours and Miles (Base Alignment)

Consist	Miles					Hours				
	PECO - 1st Ave.	PECO/TP - N. Gulph	PECO/TP - 1st Ave.	U.S. 202 - N. Gulph	U.S. 202 - 1st Ave.	PECO - 1st Ave.	PECO/TP - N. Gulph	PECO/TP - 1st Ave.	U.S. 202 - N. Gulph	U.S. 202 - 1st Ave.
A-1	13.40	13.40	13.40	13.40	13.40	0.65	0.65	0.65	0.65	0.65
B-1	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
C-1	15.95	15.83	15.41	16.30	15.83	0.83	0.83	0.83	0.83	0.83
C-2	5.79	5.66	5.25	5.35	4.89	0.40	0.40	0.40	0.40	0.40
D-1	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
E-1	13.40	13.40	13.40	13.40	13.40	0.65	0.65	0.65	0.65	0.65
F-1	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
G-1	15.95	15.83	15.41	16.30	15.83	0.83	0.83	0.83	0.83	0.83
H1-1	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
H2-1	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
I-1	13.40	13.40	13.40	13.40	13.40	0.65	0.65	0.65	0.65	0.65
J-1	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
G-2	5.79	5.66	5.25	5.35	4.89	0.40	0.40	0.40	0.40	0.40
K-1	15.95	15.83	15.41	16.30	15.83	0.83	0.83	0.83	0.83	0.83
K-2	5.79	5.66	5.25	5.35	4.89	0.40	0.40	0.40	0.40	0.40
L-1	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
M-1	13.40	13.40	13.40	13.40	13.40	0.65	0.65	0.65	0.65	0.65
N1-1	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
N2-1	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
O-1	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
A-2	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
P-1	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
Q1-1	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
Q2-1	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
E-2	29.35	29.23	28.81	29.70	29.23	1.87	1.87	1.87	1.87	1.87
R1-1	13.40	13.40	13.40	13.40	13.40	0.57	0.57	0.57	0.57	0.57
R2-1	13.40	13.40	13.40	13.40	13.40	0.57	0.57	0.57	0.57	0.57
B-2	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
I-2	18.80	18.80	18.80	18.80	18.80	1.17	1.17	1.17	1.17	1.17
C-3	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
D-2	31.91	31.66	30.83	32.59	31.66	1.83	1.83	1.83	1.83	1.83
F-2	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
M-2	29.35	29.23	28.81	29.70	29.23	1.53	1.53	1.53	1.53	1.53
G-3	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
H1-2	29.35	29.23	28.81	29.70	29.23	1.47	1.47	1.47	1.47	1.47
H2-2	29.35	29.23	28.81	29.70	29.23	1.47	1.47	1.47	1.47	1.47
J-2	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
A-3	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
K-3	26.80	26.80	26.80	26.80	26.80	1.07	1.07	1.07	1.07	1.07
S-1	5.40	5.40	5.40	5.40	5.40	0.37	0.37	0.37	0.37	0.37
L-2	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
N1-2	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
N2-2	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
I-3	10.80	10.80	10.80	10.80	10.80	0.67	0.67	0.67	0.67	0.67
R1-2	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
R2-2	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
C-4	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
T-1	15.95	15.83	15.41	16.30	15.83	0.92	0.92	0.92	0.92	0.92
O-2	31.91	31.66	30.83	32.59	31.66	1.83	1.83	1.83	1.83	1.83
P-2	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
S-2	10.80	10.80	10.80	10.80	10.80	0.67	0.67	0.67	0.67	0.67
F-3	29.35	29.23	28.81	29.70	29.23	1.53	1.53	1.53	1.53	1.53

Table 21 – PECO – 1st Avenue Operating Plan Trip Hours and Miles (Base Alignment)

Consist	Miles					Hours				
	PECO - 1st Ave.	PECO/TP - N. Gulph	PECO/TP - 1st Ave.	U.S. 202 - N. Gulph	U.S. 202 - 1st Ave.	PECO - 1st Ave.	PECO/TP - N. Gulph	PECO/TP - 1st Ave.	U.S. 202 - N. Gulph	U.S. 202 - 1st Ave.
G-4	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
U-1	5.40	5.40	5.40	5.40	5.40	0.42	0.42	0.42	0.42	0.42
Q1-2	29.35	29.23	28.81	29.70	29.23	1.47	1.47	1.47	1.47	1.47
Q2-2	29.35	29.23	28.81	29.70	29.23	1.47	1.47	1.47	1.47	1.47
B-3	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
I-4	10.80	10.80	10.80	10.80	10.80	0.67	0.67	0.67	0.67	0.67
H1-3	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
H2-3	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
J-3	26.80	26.80	26.80	26.80	26.80	1.07	1.07	1.07	1.07	1.07
E-3	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
D-3	31.91	31.66	30.83	32.59	31.66	1.83	1.83	1.83	1.83	1.83
K-4	13.40	13.40	13.40	13.40	13.40	0.43	0.43	0.43	0.43	0.43
V1-1	13.40	13.40	13.40	13.40	13.40	0.57	0.57	0.57	0.57	0.57
V2-1	13.40	13.40	13.40	13.40	13.40	0.57	0.57	0.57	0.57	0.57
S-3	21.35	21.23	20.81	21.70	21.23	1.20	1.20	1.20	1.20	1.20
N1-3	18.80	18.80	18.80	18.80	18.80	0.83	0.83	0.83	0.83	0.83
N2-3	13.40	13.40	13.40	13.40	13.40	0.43	0.43	0.43	0.43	0.43
C-5	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
M-3	31.91	31.66	30.83	32.59	31.66	1.83	1.83	1.83	1.83	1.83
U-2	10.80	10.80	10.80	10.80	10.80	1.00	1.00	1.00	1.00	1.00
A-4	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
I-5	10.80	10.80	10.80	10.80	10.80	0.67	0.67	0.67	0.67	0.67
P-3	29.35	29.23	28.81	29.70	29.23	1.33	1.33	1.33	1.33	1.33
G-5	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
L-3	29.35	29.23	28.81	29.70	29.23	1.47	1.47	1.47	1.47	1.47
R1-3	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
R2-3	15.95	15.83	15.41	16.30	15.83	0.65	0.63	0.61	0.66	0.64
N1-4	5.40	5.40	5.40	5.40	5.40	0.25	0.25	0.25	0.25	0.25
Q1-3	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
Q2-3	13.40	13.40	13.40	13.40	13.40	0.43	0.43	0.43	0.43	0.43
B-4	26.80	26.80	26.80	26.80	26.80	1.07	1.07	1.07	1.07	1.07
T-2	31.91	31.66	30.83	32.59	31.66	1.83	1.83	1.83	1.83	1.83
J-4	13.40	13.40	13.40	13.40	13.40	0.55	0.55	0.55	0.55	0.55
O-3	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
I-6	5.40	5.40	5.40	5.40	5.40	0.25	0.25	0.25	0.25	0.25
V1-2	13.40	13.40	13.40	13.40	13.40	0.43	0.43	0.43	0.43	0.43
V2-2	13.40	13.40	13.40	13.40	13.40	0.43	0.43	0.43	0.43	0.43
C-6	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
F-4	29.35	29.23	28.81	29.70	29.23	1.47	1.47	1.47	1.47	1.47
U-3	5.40	5.40	5.40	5.40	5.40	0.25	0.25	0.25	0.25	0.25
H1-4	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
H2-4	15.95	15.83	15.41	16.30	15.83	0.65	0.63	0.61	0.66	0.64
A-5	13.40	13.40	13.40	13.40	13.40	0.43	0.43	0.43	0.43	0.43
G-6	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
E-4	29.35	29.23	28.81	29.70	29.23	1.47	1.47	1.47	1.47	1.47
S-4	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
L-4	13.40	13.40	13.40	13.40	13.40	0.43	0.43	0.43	0.43	0.43
R1-4	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
D-4	29.35	29.23	28.81	29.70	29.23	1.47	1.47	1.47	1.47	1.47
B-5	13.40	13.40	13.40	13.40	13.40	0.43	0.43	0.43	0.43	0.43
M-4	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
O-4	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33

Table 21 – PECO – 1st Avenue Operating Plan Trip Hours and Miles (Base Alignment)

Consist	Miles					Hours				
	PECO - 1st Ave.	PECO/TP - N. Gulph	PECO/TP - 1st Ave.	U.S. 202 - N. Gulph	U.S. 202 - 1st Ave.	PECO - 1st Ave.	PECO/TP - N. Gulph	PECO/TP - 1st Ave.	U.S. 202 - N. Gulph	U.S. 202 - 1st Ave.
C-7	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
Q1-4	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
F-5	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
G-7	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
T-3	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
E-5	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
R1-5	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
H1-5	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
D-5	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
C-8	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
S-5	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
O-5	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
G-8	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
M-5	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
F-6	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
R1-6	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
Q1-5	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
E-6	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
C-9	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
T-4	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
D-6	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
G-9	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
H1-6	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
O-6	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
R1-7	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
S-6	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
F-7	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
C-10	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
M-6	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
E-7	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
G-10	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
Q1-6	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
D-7	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
R1-8	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
T-5	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
O-7	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
C-11	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
H1-7	21.35	21.23	20.81	21.70	21.23	1.47	1.47	1.47	1.47	1.47
V1-3	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
V2-3	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
F-8	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
G-11	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
S-7	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
E-8	13.40	13.40	13.40	13.40	13.40	0.47	0.47	0.47	0.47	0.47
H2-5	13.40	13.40	13.40	13.40	13.40	0.62	0.62	0.62	0.62	0.62
Q2-4	13.40	13.40	13.40	13.40	13.40	0.62	0.62	0.62	0.62	0.62
N1-5	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
N2-4	15.95	15.83	15.41	16.30	15.83	0.93	0.93	0.93	0.93	0.93
R1-9	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
M-7	31.91	31.66	30.83	32.59	31.66	1.83	1.83	1.83	1.83	1.83
D-8	26.80	26.80	26.80	26.80	26.80	1.73	1.73	1.73	1.73	1.73
K-5	13.40	13.40	13.40	13.40	13.40	0.65	0.65	0.65	0.65	0.65

Table 21 – PECO – 1st Avenue Operating Plan Trip Hours and Miles (Base Alignment)

Consist	Miles					Hours				
	PECO - 1st Ave.	PECO/TP - N. Gulph	PECO/TP - 1st Ave.	U.S. 202 - N. Gulph	U.S. 202 - 1st Ave.	PECO - 1st Ave.	PECO/TP - N. Gulph	PECO/TP - 1st Ave.	U.S. 202 - N. Gulph	U.S. 202 - 1st Ave.
J-5	13.40	13.40	13.40	13.40	13.40	0.65	0.65	0.65	0.65	0.65
C-12	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
Q1-7	21.35	21.23	20.81	21.70	21.23	1.47	1.47	1.47	1.47	1.47
R2-4	15.95	15.83	15.41	16.30	15.83	0.92	0.92	0.92	0.92	0.92
U-4	15.95	15.83	15.41	16.30	15.83	0.92	0.92	0.92	0.92	0.92
H1-8	10.80	10.80	10.80	10.80	10.80	0.67	0.67	0.67	0.67	0.67
O-8	29.35	29.23	28.81	29.70	29.23	1.53	1.53	1.53	1.53	1.53
A-6	13.40	13.40	13.40	13.40	13.40	0.62	0.62	0.62	0.62	0.62
G-12	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
T-6	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
F-9	29.35	29.23	28.81	29.70	29.23	1.53	1.53	1.53	1.53	1.53
R1-10	26.80	26.80	26.80	26.80	26.80	1.07	1.07	1.07	1.07	1.07
V1-4	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
V2-4	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
H1-9	10.80	10.80	10.80	10.80	10.80	0.67	0.67	0.67	0.67	0.67
H2-6	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
Q2-5	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
B-6	15.95	15.83	15.41	16.30	15.83	0.92	0.92	0.92	0.92	0.92
C-13	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
S-8	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
Q1-8	10.80	10.80	10.80	10.80	10.80	0.67	0.67	0.67	0.67	0.67
K-6	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
J-6	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
G-13	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
P-4	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
L-5	13.40	13.40	13.40	13.40	13.40	0.75	0.75	0.75	0.75	0.75
I-7	5.40	5.40	5.40	5.40	5.40	0.38	0.38	0.38	0.38	0.38
N1-6	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
N2-5	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
H1-10	10.80	10.80	10.80	10.80	10.80	0.67	0.67	0.67	0.67	0.67
A-7	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
M-8	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
D-9	26.80	26.80	26.80	26.80	26.80	1.07	1.07	1.07	1.07	1.07
R1-11	26.80	26.80	26.80	26.80	26.80	1.93	1.93	1.93	1.93	1.93
R2-5	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
U-5	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
Q1-9	10.80	10.80	10.80	10.80	10.80	0.67	0.67	0.67	0.67	0.67
V1-5	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
V2-5	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
C-14	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
O-9	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
I-8	10.80	10.80	10.80	10.80	10.80	1.00	1.00	1.00	1.00	1.00
T-7	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
H1-11	10.80	10.80	10.80	10.80	10.80	0.67	0.67	0.67	0.67	0.67
S-9	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
G-14	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
F-10	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
H2-7	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
Q2-6	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
Q1-10	10.80	10.80	10.80	10.80	10.80	0.67	0.67	0.67	0.67	0.67
N1-7	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
N2-6	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37

Table 21 – PECO – 1st Avenue Operating Plan Trip Hours and Miles (Base Alignment)

Consist	Miles					Hours				
	PECO - 1st Ave.	PECO/TP - N. Gulph	PECO/TP - 1st Ave.	U.S. 202 - N. Gulph	U.S. 202 - 1st Ave.	PECO - 1st Ave.	PECO/TP - N. Gulph	PECO/TP - 1st Ave.	U.S. 202 - N. Gulph	U.S. 202 - 1st Ave.
B-7	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
L-6	26.80	26.80	26.80	26.80	26.80	1.07	1.07	1.07	1.07	1.07
D-10	26.80	26.80	26.80	26.80	26.80	1.93	1.93	1.93	1.93	1.93
K-7	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
J-7	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
H1-12	10.80	10.80	10.80	10.80	10.80	0.67	0.67	0.67	0.67	0.67
R2-6	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
U-6	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
C-15	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
P-5	31.91	31.66	30.83	32.59	31.66	1.70	1.70	1.70	1.70	1.70
I-9	10.80	10.80	10.80	10.80	10.80	1.00	1.00	1.00	1.00	1.00
A-8	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
Q1-11	10.80	10.80	10.80	10.80	10.80	0.67	0.67	0.67	0.67	0.67
T-8	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
G-15	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
M-9	15.95	15.83	15.41	16.30	15.83	0.65	0.63	0.61	0.66	0.64
V1-6	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
V2-6	29.35	29.23	28.81	29.70	29.23	1.30	1.30	1.30	1.30	1.30
H1-13	5.40	5.40	5.40	5.40	5.40	0.25	0.25	0.25	0.25	0.25
H2-8	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
Q2-7	29.35	29.23	28.81	29.70	29.23	1.37	1.37	1.37	1.37	1.37
O-10	15.95	15.83	15.41	16.30	15.83	0.65	0.63	0.61	0.66	0.64
R1-12	26.80	26.80	26.80	26.80	26.80	1.07	1.07	1.07	1.07	1.07
L-7	26.80	26.80	26.80	26.80	26.80	1.20	1.20	1.20	1.20	1.20
S-10	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
Q1-12	5.40	5.40	5.40	5.40	5.40	0.25	0.25	0.25	0.25	0.25
K-8	13.40	13.40	13.40	13.40	13.40	0.43	0.43	0.43	0.43	0.43
J-8	13.40	13.40	13.40	13.40	13.40	0.43	0.43	0.43	0.43	0.43
C-16	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
F-11	29.35	29.23	28.81	29.70	29.23	1.47	1.47	1.47	1.47	1.47
I-10	5.40	5.40	5.40	5.40	5.40	0.25	0.25	0.25	0.25	0.25
N1-8	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
N2-7	15.95	15.83	15.41	16.30	15.83	0.65	0.63	0.61	0.66	0.64
A-9	13.40	13.40	13.40	13.40	13.40	0.43	0.43	0.43	0.43	0.43
G-16	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
B-8	29.35	29.23	28.81	29.70	29.23	1.47	1.47	1.47	1.47	1.47
R2-7	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
U-7	15.95	15.83	15.41	16.30	15.83	0.65	0.63	0.61	0.66	0.64
V1-7	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
V2-7	13.40	13.40	13.40	13.40	13.40	0.47	0.47	0.47	0.47	0.47
D-11	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
P-6	15.95	15.83	15.41	16.30	15.83	0.65	0.63	0.61	0.66	0.64
R1-13	13.40	13.40	13.40	13.40	13.40	0.43	0.43	0.43	0.43	0.43
T-9	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
L-8	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
H2-9	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
Q2-8	15.95	15.83	15.41	16.30	15.83	0.65	0.63	0.61	0.66	0.64
C-17	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
F-12	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
S-11	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
G-17	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
B-9	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33

Table 21 – PECO – 1st Avenue Operating Plan Trip Hours and Miles (Base Alignment)

Consist	Miles					Hours				
	PECO - 1st Ave.	PECO/TP - N. Gulph	PECO/TP - 1st Ave.	U.S. 202 - N. Gulph	U.S. 202 - 1st Ave.	PECO - 1st Ave.	PECO/TP - N. Gulph	PECO/TP - 1st Ave.	U.S. 202 - N. Gulph	U.S. 202 - 1st Ave.
N1-9	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
D-12	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
V1-8	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
R2-8	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
C-18	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
L-9	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
T-10	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
G-18	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
F-13	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
H2-10	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
D-13	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
B-10	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
S-12	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
C-19	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
V1-9	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
N1-10	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
G-19	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
L-10	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
R2-9	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
D-14	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
F-14	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
T-11	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
C-20	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
B-11	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
H2-11	31.91	31.66	30.83	32.59	31.66	1.67	1.67	1.67	1.67	1.67
G-20	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
V1-10	26.80	26.80	26.80	26.80	26.80	1.33	1.33	1.33	1.33	1.33
S-13	15.95	15.83	15.41	16.30	15.83	0.82	0.80	0.77	0.83	0.81
D-15	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
L-11	13.40	13.40	13.40	13.40	13.40	0.47	0.47	0.47	0.47	0.47
N1-11	15.95	15.83	15.41	16.30	15.83	0.65	0.63	0.61	0.66	0.64
C-21	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
F-15	13.40	13.40	13.40	13.40	13.40	0.47	0.47	0.47	0.47	0.47
R2-10	15.95	15.83	15.41	16.30	15.83	0.65	0.63	0.61	0.66	0.64
G-21	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
B-12	13.40	13.40	13.40	13.40	13.40	0.47	0.47	0.47	0.47	0.47
T-12	15.95	15.83	15.41	16.30	15.83	0.65	0.63	0.61	0.66	0.64
D-16	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
V1-11	13.40	13.40	13.40	13.40	13.40	0.47	0.47	0.47	0.47	0.47
H2-12	15.95	15.83	15.41	16.30	15.83	0.65	0.63	0.61	0.66	0.64
C-22	26.80	26.80	26.80	26.80	26.80	1.00	1.00	1.00	1.00	1.00
G-22	13.40	13.40	13.40	13.40	13.40	0.33	0.33	0.33	0.33	0.33
D-17	13.40	13.40	13.40	13.40	13.40	0.33	0.33	0.33	0.33	0.33
C-23	13.40	13.40	13.40	13.40	13.40	0.33	0.33	0.33	0.33	0.33

Appendix E – SEPTA Base NHSLX Weekday Timetable Operating Statistics - Vehicle Miles

Runs & Miles/Weekday	Runs	1-Way Mi	Wkdy Mi
69 th TC-Norristown	166	13.4	2224.4
69 th TC-K of Prussia	138	15.9	2194.2
69 th TC-Bryn Mawr	26	5.4	140.4
69 th Depot	142	0.25	35.5
Total Weekday	<u>472</u>		<u>4594.5</u>
Weekdays/Year			<u>255</u>
Total Wkdy Rev Veh Miles/Year			<u>1171597.5</u>
Total Sat Rev Veh Miles/Yr (52 @ 52% Wkdy)			<u>110682.3</u>
Total Sun-Hol Rev Veh Miles/Yr (58 @ 40% Wkdy)			<u>94964.1</u>
Total Rev Veh Miles/Year			<u>1377244.0</u>

Appendix F – Bus 2012 Route Operating Statistics



SERVICE LEVELS
(FREQUENCY IN MINUTES)

<u>WEEKDAYS</u>		<u>SATURDAYS</u>		<u>SUNDAYS</u>	
AM PEAK	60	AM	90	AM	--
BASE	90	BASE	90	BASE	--
PM PEAK	90/60	PM	90	PM	--
EARLY EVENING	120	EARLY EVENING	90	EARLY EVENING	--
LATE NIGHT	--	LATE NIGHT	--	LATE NIGHT	--
OWL	--	OWL	--	OWL	--
TOTAL TRIPS	28	TOTAL TRIPS	20	TOTAL TRIPS	--
SERVICE SPAN	6:00A - 10:30P	7:00A - 10:30P		0:00A - 0:00P	

OPERATING STATISTICS

ONE WAY ROUTE MILES (AVG.)	34.1	RANK
DAILY AVERAGE (WK) RIDERSHIP	370	37TH
VEHICLE HOURS (ANNUAL)	12,473	
VEHICLE MILES (ANNUAL)	246,224	
PEAK VEHICLES	4	
FULLY ALLOCATED EXPENSES	\$1,388,061	
PASSENGER REVENUE	\$142,751	
OPERATING RATIO	10%	45TH
ON TIME % (SEASON)	70%	

CHARACTERISTICS

MODE	BUS
DIVISION	SURFACE - SUBURBAN
OPERATING DISTRICT(S)	FRONTIER
COUNTY(S) SERVED	CHESTER, MONTGOMERY
VEHICLE SIZE	40'

SPRING 2012



SERVICE LEVELS (FREQUENCY IN MINUTES)

WEEKDAYS	SATURDAYS	SUNDAYS
AM PEAK 30	AM 60	AM 60
BASE 30	BASE 30	BASE 60
PM PEAK 30	PM 30/60	PM 60
EARLY EVENING 60	EARLY EVENING 60	EARLY EVENING 60
LATE NIGHT 3 TRIPS	LATE NIGHT 2 TRIPS	LATE NIGHT 2 TRIPS
OWL --	OWL --	OWL --
TOTAL TRIPS 64	TOTAL TRIPS 57	TOTAL TRIPS 33
SERVICE SPAN 5:00A - 1:00A	5:30A - 12:30A	6:00A - 11:00P

OPERATING STATISTICS

		RANK
ONE WAY ROUTE MILES (AVG.)	23.5	
DAILY AVERAGE (WK) RIDERSHIP	1,317	18TH
VEHICLE HOURS (ANNUAL)	28,668	
VEHICLE MILES (ANNUAL)	411,942	
PEAK VEHICLES	6	
FULLY ALLOCATED EXPENSES	\$2,635,315	
PASSENGER REVENUE	\$534,771	
OPERATING RATIO	20%	30TH
ON TIME % (SEASON)	79%	

CHARACTERISTICS

MODE	BUS
DIVISION	SURFACE - SUBURBAN
OPERATING DISTRICT(S)	FRONTIER
COUNTY(S) SERVED	MONTGOMERY, CHESTER
VEHICLE SIZE	40'

SPRING 2012

123

King of Prussia
To 69th Street
Transportation
Center





 SEPTA

Serving Manoa

SERVICE LEVELS (FREQUENCY IN MINUTES)

<u>WEEKDAYS</u>		<u>SATURDAYS</u>		<u>SUNDAYS</u>	
AM PEAK	60/30	AM	30	AM	2 TRIPS
BASE	30	BASE	30	BASE	30
PM PEAK	30	PM	30	PM	30
EARLY EVENING	60	EARLY EVENING	30/45	EARLY EVENING	--
LATE NIGHT	1 TRIP	LATE NIGHT	1 TRIP	LATE NIGHT	--
OWL	--	OWL	--	OWL	--
TOTAL TRIPS	55	TOTAL TRIPS	52	TOTAL TRIPS	43
SERVICE SPAN	5:00A - 11:30P	SERVICE SPAN	8:00A - 11:30P	SERVICE SPAN	8:00A - 7:30P

OPERATING STATISTICS

ONE WAY ROUTE MILES (AVG.)	17.2	RANK
DAILY AVERAGE (WK) RIDERSHIP	1,300	19TH
VEHICLE HOURS (ANNUAL)	18,655	
VEHICLE MILES (ANNUAL)	354,546	
PEAK VEHICLES	4	
FULLY ALLOCATED EXPENSES	\$2,162,752	
PASSENGER REVENUE	\$461,898	
OPERATING RATIO	21%	26TH
ON TIME % (SEASON)	76%	

CHARACTERISTICS

MODE	BUS
DIVISION	SURFACE - SUBURBAN
OPERATING DISTRICT(S)	VICTORY
COUNTY(S) SERVED	DELAWARE, MONTGOMERY
VEHICLE SIZE	40'

SPRING 2012

124

Chesterbrook and
King of Prussia
To 13th-Market







Serving
Center City

SERVICE LEVELS (FREQUENCY IN MINUTES)

<u>WEEKDAYS</u>		<u>SATURDAYS</u>		<u>SUNDAYS</u>	
AM PEAK	15/30	AM	30	AM	60
BASE	60/30	BASE	30	BASE	30
PM PEAK	30	PM	30	PM	40+
EARLY EVENING	60	EARLY EVENING	30/60	EARLY EVENING	60
LATE NIGHT	3 TRIPS	LATE NIGHT	2 TRIPS	LATE NIGHT	2 TRIPS
OWL	--	OWL	--	OWL	--
TOTAL TRIPS	59	TOTAL TRIPS	51	TOTAL TRIPS	37
SERVICE SPAN	4:30A - 1:00A	6:00A - 1:30A		6:30A - 12:30A	

OPERATING STATISTICS

ONE WAY ROUTE MILES (AVG.)	27.0	RANK
DAILY AVERAGE (WK) RIDERSHIP	1,560	16TH
VEHICLE HOURS (ANNUAL)	34,478	
VEHICLE MILES (ANNUAL)	679,683	
PEAK VEHICLES	6	
FULLY ALLOCATED EXPENSES	\$3,406,658	
PASSENGER REVENUE	\$727,320	
OPERATING RATIO	21%	27TH
ON TIME % (SEASON)	72%	

FIGURES FOR THIS ROUTE INCLUDE OUTSIDE SUBSIDIES

CHARACTERISTICS

MODE	BUS
DIVISION	SURFACE - SUBURBAN
OPERATING DISTRICT(S)	FRONTIER
COUNTY(S) SERVED	PHILADELPHIA, MONTGOMERY, CHESTER
VEHICLE SIZE	40'

SPRING 2012

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Valley Forge and
King of Prussia
To 13th-Market





 SEPTA

Serving Center City

SERVICE LEVELS (FREQUENCY IN MINUTES)

<u>WEEKDAYS</u>		<u>SATURDAYS</u>		<u>SUNDAYS</u>	
AM PEAK	15	AM	60/30	AM	40
BASE	30	BASE	30/60	BASE	60
PM PEAK	20/30	PM	60	PM	60/30
EARLY EVENING	60/15	EARLY EVENING	60/40	EARLY EVENING	60
LATE NIGHT	20/60	LATE NIGHT	3 TRIPS	LATE NIGHT	3 TRIPS
OWL	--	OWL	--	OWL	--
TOTAL TRIPS	73	TOTAL TRIPS	52	TOTAL TRIPS	38
SERVICE SPAN	5:00A - 1:00A		5:00A - 12:30A		6:00A - 12:00A

OPERATING STATISTICS

ONE WAY ROUTE MILES (AVG.)	26.6	RANK
DAILY AVERAGE (WK) RIDERSHIP	1,750	12TH
VEHICLE HOURS (ANNUAL)	39,339	
VEHICLE MILES (ANNUAL)	732,675	
PEAK VEHICLES	8	
FULLY ALLOCATED EXPENSES	\$4,471,745	
PASSENGER REVENUE	\$823,690	
OPERATING RATIO	18%	
ON TIME % (SEASON)	72%	33RD

CHARACTERISTICS

<p>MODE</p> <p>DIVISION</p> <p>OPERATING DISTRICT(S)</p> <p>COUNTY(S) SERVED</p> <p>VEHICLE SIZE</p>	<p>BUS</p> <p>SURFACE - SUBURBAN</p> <p>VICTORY</p> <p>PHILADELPHIA, MONTGOMERY</p> <p>40'</p>
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SPRING 2012

139

Limerick to
King of Prussia





 SEPTA

Serving
Royersford and
Phoenixville

SERVICE LEVELS (FREQUENCY IN MINUTES)

<u>WEEKDAYS</u>		<u>SATURDAYS</u>		<u>SUNDAYS</u>	
AM PEAK	60	AM	90	AM	--
BASE	90	BASE	90	BASE	--
PM PEAK	60	PM	90	PM	--
EARLY EVENING	100	EARLY EVENING	90	EARLY EVENING	--
LATE NIGHT	1 TRIP	LATE NIGHT	1 TRIP	LATE NIGHT	--
OWL	--	OWL	--	OWL	--
TOTAL TRIPS	32	TOTAL TRIPS	21	TOTAL TRIPS	--
SERVICE SPAN	4:30A - 11:30P		7:00A - 11:30P		0:00A - 0:00P

OPERATING STATISTICS

ONE WAY ROUTE MILES (AVG.)	19.8	RANK
DAILY AVERAGE (WK) RIDERSHIP	405	36TH
VEHICLE HOURS (ANNUAL)	12,681	
VEHICLE MILES (ANNUAL)	232,393	
PEAK VEHICLES	3	
FULLY ALLOCATED EXPENSES	\$1,289,812	
PASSENGER REVENUE	\$156,255	
OPERATING RATIO	12%	
ON TIME % (SEASON)	85%	43RD

CHARACTERISTICS

MODE	BUS
DIVISION	SURFACE - SUBURBAN
OPERATING DISTRICT(S)	FRONTIER
COUNTY(S) SERVED	MONTGOMERY, CHESTER
VEHICLE SIZE	40'

SPRING 2012

Appendix G – Bus 2014 Route Operating Statistics



SERVICE LEVELS
(FREQUENCY IN MINUTES)

<u>WEEKDAYS</u>		<u>SATURDAYS</u>		<u>SUNDAYS</u>	
AM PEAK	60	AM	90	AM	--
BASE	90	BASE	90	BASE	--
PM PEAK	60/90	PM	90	PM	--
EARLY EVENING	90	EARLY EVENING 2 TRIPS	--	EARLY EVENING	--
LATE NIGHT	--	LATE NIGHT	--	LATE NIGHT	--
OWL	--	OWL	--	OWL	--
TOTAL TRIPS	25	TOTAL TRIPS	20	TOTAL TRIPS	--
SERVICE SPAN	6:00A - 10:00P	7:00A - 10:30P	NO SERVICE		

OPERATING STATISTICS

ONE WAY ROUTE MILES (AVG.)	31.4	RANK
DAILY AVERAGE (WK) RIDERSHIP	417	37TH
VEHICLE HOURS (ANNUAL)	15,255	
VEHICLE MILES (ANNUAL)	280,950	
PEAK VEHICLES	4	
FULLY ALLOCATED EXPENSES	\$1,686,456	
PASSENGER REVENUE	\$162,854	
OPERATING RATIO	10%	44TH
ON TIME % (SEASON)	75%	

CHARACTERISTICS

MODE	BUS
DIVISION	SURFACE - SUBURBAN
OPERATING DISTRICT(S)	FRONTIER
COUNTY(S) SERVED	CHESTER, MONTGOMERY
VEHICLE SIZE	40'

SPRING 2014



SERVICE LEVELS (FREQUENCY IN MINUTES)

<u>WEEKDAYS</u>		<u>SATURDAYS</u>		<u>SUNDAYS</u>	
AM PEAK	30	AM	60	AM	60
BASE	30	BASE	30	BASE	60
PM PEAK	30	PM	30	PM	60
EARLY EVENING	60	EARLY EVENING	60	EARLY EVENING	60
LATE NIGHT	3 TRIPS	LATE NIGHT	60	LATE NIGHT	2 TRIPS
OWL	--	OWL	--	OWL	--
TOTAL TRIPS	62	TOTAL TRIPS	55	TOTAL TRIPS	33
SERVICE SPAN	5:00A - 12:00A	5:30A - 12:30A	6:00A - 11:30P		

OPERATING STATISTICS

ONE WAY ROUTE MILES (AVG.)	22.3	RANK
DAILY AVERAGE (WK) RIDERSHIP	1,304	19TH
VEHICLE HOURS (ANNUAL)	30,112	
VEHICLE MILES (ANNUAL)	444,490	
PEAK VEHICLES	7	
FULLY ALLOCATED EXPENSES	\$3,016,181	
PASSENGER REVENUE	\$532,652	
OPERATING RATIO	18%	34TH
ON TIME % (SEASON)	77%	

CHARACTERISTICS

MODE	BUS
DIVISION	SURFACE - SUBURBAN
OPERATING DISTRICT(S)	FRONTIER
COUNTY(S) SERVED	MONTGOMERY, CHESTER
VEHICLE SIZE	40'

SPRING 2014

123

Express
King of Prussia
to 69th Street
Transportation
Center





Serving Manoa

SERVICE LEVELS (FREQUENCY IN MINUTES)

<u>WEEKDAYS</u>	<u>SATURDAYS</u>	<u>SUNDAYS</u>
AM PEAK	60/30	AM
BASE	30	30
PM PEAK	30	BASE
EARLY EVENING	30	30
LATE NIGHT	1 TRIP	PM
OWL	--	EARLY EVENING
TOTAL TRIPS	54	30/45
		LATE NIGHT
		1 TRIP
		OWL
		--
		TOTAL TRIPS
		52
		3 TRIPS
		30
		30
		--
		--
		--
		44
SERVICE SPAN	5:00A - 11:30P	7:30A - 11:00P
		8:00A - 7:30P

OPERATING STATISTICS

ONE WAY ROUTE MILES (AVG.)	17.3	RANK
DAILY AVERAGE (WK) RIDERSHIP	1,436	16TH
VEHICLE HOURS (ANNUAL)	18,680	
VEHICLE MILES (ANNUAL)	344,649	
PEAK VEHICLES	4	
FULLY ALLOCATED EXPENSES	\$2,333,381	
PASSENGER REVENUE	\$485,306	
OPERATING RATIO	21%	21ST
ON TIME % (SEASON)	75%	


CHARACTERISTICS

MODE	BUS
DIVISION	SURFACE - SUBURBAN
OPERATING DISTRICT(S)	VICTORY
COUNTY(S) SERVED	DELAWARE, MONTGOMERY
VEHICLE SIZE	40'




SPRING 2014

124

Chesterbrook and
King of Prussia
to 13th-Market



Serving
Center City

SERVICE LEVELS (FREQUENCY IN MINUTES)

<u>WEEKDAYS</u>		<u>SATURDAYS</u>		<u>SUNDAYS</u>	
AM PEAK	15/30	AM	60/30	AM	60
BASE	60/30	BASE	20/40	BASE	20/40
PM PEAK	30	PM	20/60	PM	60
EARLY EVENING	60	EARLY EVENING	60/30	EARLY EVENING	60
LATE NIGHT	3 TRIPS	LATE NIGHT	3 TRIPS	LATE NIGHT	2 TRIPS
OWL	--	OWL	--	OWL	--
TOTAL TRIPS	59	TOTAL TRIPS	51	TOTAL TRIPS	37
SERVICE SPAN	4:30A - 1:00A		6:00A - 1:30A		6:30A - 12:30A

OPERATING STATISTICS

ONE WAY ROUTE MILES (AVG.)	25.7	RANK
DAILY AVERAGE (WK) RIDERSHIP	1,693	12TH
VEHICLE HOURS (ANNUAL)	36,491	
VEHICLE MILES (ANNUAL)	724,242	
PEAK VEHICLES	9	
FULLY ALLOCATED EXPENSES	\$4,081,414	
PASSENGER REVENUE	\$811,831	
OPERATING RATIO	20%	26TH
ON TIME % (SEASON)	65%	

FIGURES FOR THIS ROUTE INCLUDE OUTSIDE SUBSIDIES

CHARACTERISTICS

MODE DIVISION OPERATING DISTRICT(S) COUNTY(S) SERVED VEHICLE SIZE	BUS SURFACE - SUBURBAN FRONTIER PHILADELPHIA, MONTGOMERY, CHESTER 40'
--	--

SPRING 2014

125

Valley Forge and
King of Prussia
to 13th-Market







Serving Center City

SERVICE LEVELS (FREQUENCY IN MINUTES)

<u>WEEKDAYS</u>		<u>SATURDAYS</u>		<u>SUNDAYS</u>	
AM PEAK	15	AM	60/30	AM	40
BASE	30	BASE	30/60	BASE	60
PM PEAK	20/30	PM	60	PM	60/15
EARLY EVENING	60/15	EARLY EVENING	60/40	EARLY EVENING	60/30
LATE NIGHT	20/60	LATE NIGHT	3 TRIPS	LATE NIGHT	3 TRIPS
OWL	--	OWL	--	OWL	--
TOTAL TRIPS	70	TOTAL TRIPS	52	TOTAL TRIPS	38
SERVICE SPAN	5:00A - 1:00A	5:00A - 12:30A		6:00A - 12:00A	

OPERATING STATISTICS

ONE WAY ROUTE MILES (AVG.)	26.1	RANK
DAILY AVERAGE (WK) RIDERSHIP	1,870	11TH
VEHICLE HOURS (ANNUAL)	38,113	
VEHICLE MILES (ANNUAL)	664,653	
PEAK VEHICLES	8	
FULLY ALLOCATED EXPENSES	\$4,649,033	
PASSENGER REVENUE	\$849,728	
OPERATING RATIO	18%	
ON TIME % (SEASON)	62%	32ND

FIGURES FOR THIS ROUTE INCLUDE OUTSIDE SUBSIDIES

CHARACTERISTICS

MODE	BUS
DIVISION	SURFACE - SUBURBAN
OPERATING DISTRICT(S)	VICTORY
COUNTY(S) SERVED	PHILADELPHIA, MONTGOMERY
VEHICLE SIZE	40'


SPRING 2014

139

Limerick to
King of Prussia







Serving
Royersford and
Phoenixville

SERVICE LEVELS (FREQUENCY IN MINUTES)

<u>WEEKDAYS</u>		<u>SATURDAYS</u>		<u>SUNDAYS</u>	
AM PEAK	60	AM	90	AM	--
BASE	90	BASE	90	BASE	--
PM PEAK	60	PM	90	PM	--
EARLY EVENING	70	EARLY EVENING	90	EARLY EVENING	--
LATE NIGHT	1 TRIP	LATE NIGHT	1 TRIP	LATE NIGHT	--
OWL	--	OWL	--	OWL	--
TOTAL TRIPS	32	TOTAL TRIPS	21	TOTAL TRIPS	--
SERVICE SPAN	4:30A - 11:00P	7:00A - 11:00P	NO SERVICE		

OPERATING STATISTICS

ONE WAY ROUTE MILES (AVG.)	20.0	RANK
DAILY AVERAGE (WK) RIDERSHIP	416	38TH
VEHICLE HOURS (ANNUAL)	12,516	
VEHICLE MILES (ANNUAL)	213,019	
PEAK VEHICLES	3	
FULLY ALLOCATED EXPENSES	\$1,322,368	
PASSENGER REVENUE	\$164,192	
OPERATING RATIO	12%	
ON TIME % (SEASON)	81%	43RD

CHARACTERISTICS

MODE	BUS
DIVISION	SURFACE - SUBURBAN
OPERATING DISTRICT(S)	FRONTIER
COUNTY(S) SERVED	MONTGOMERY, CHESTER
VEHICLE SIZE	40'

SPRING 2014