Presentation To

Berks Alliance & Greater Reading Chamber Alliance

"A Community Forum"

Preliminary Study-Summary:

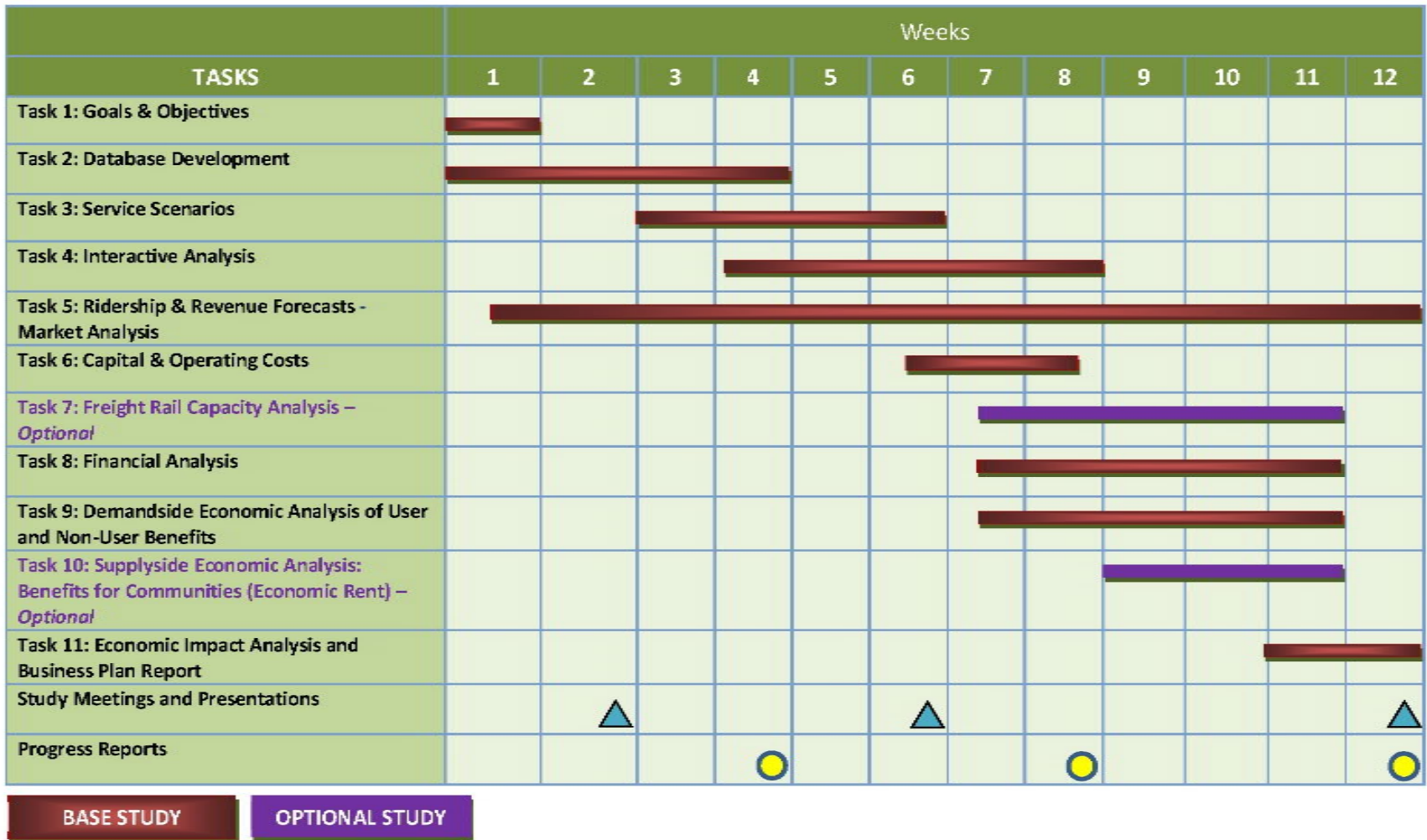# Restoring Passenger Rail Service to Berks County, PA

July 29, 2020

Presentation By

TEMS

Transportation Economics & Management Systems, Inc.

Study Timeline (Including Optional Tasks)

TASKS	Weeks											
	1	2	3	4	5	6	7	8	9	10	11	12
Task 1: Goals & Objectives	■											
Task 2: Database Development	■	■	■	■								
Task 3: Service Scenarios			■	■	■	■						
Task 4: Interactive Analysis				■	■	■	■	■				
Task 5: Ridership & Revenue Forecasts - Market Analysis		■	■	■	■	■	■	■	■	■	■	■
Task 6: Capital & Operating Costs						■	■					
Task 7: Freight Rail Capacity Analysis – Optional							■	■	■	■	■	
Task 8: Financial Analysis							■	■	■	■	■	
Task 9: Demandside Economic Analysis of User and Non-User Benefits							■	■	■	■	■	
Task 10: Supplyside Economic Analysis: Benefits for Communities (Economic Rent) – Optional									■	■		
Task 11: Economic Impact Analysis and Business Plan Report											■	■
Study Meetings and Presentations		▲				▲						▲
Progress Reports				●				●				●

BASE STUDY   **OPTIONAL STUDY**

This Concept Study has been completed on time and within budget.

RAIL CORRIDOR MAP AND STATIONS

It's a 59-mile route to 30th Street Station.

TRAIN TECHNOLOGIES

A number of high-performance train technologies could be capable of running from Reading through Philadelphia's Center City Commuter tunnel and onto the Northeast Corridor.

Self-Propelled Electric or Diesel with Battery
- Or –
Self-Propelled Hydrogen Fuel Cell

Diesel with Battery

Electric Loco w/Diesel or Battery Power Tender

Diesel + Electric on Each End

79-MPH TILT TRAIN TO PHILADELPHIA WITH NEW YORK EXTENSION AT 125 MPH

- This run-through schedule is extended to New York is based on existing Keystone NEC timings east of Philadelphia.
- From Reading to Jefferson Station is about 23 minutes faster than the former 1981 schedule due to raising the speed limit to 79-mph with tilt.
- However, it skips the former stops at Birdsboro and Valley Forge Park.

	Miles	Time	
Reading Franklin St	0	0:00	Dp
Pottstown	18	0:18	Ar
Royersford	26	0:27	Ar
Phoenixville	30	0:38	Ar
Norristown Trans Ctr	41	0:48	Ar
Temple Univ	56	1:06	Ar
Market East/Jefferson	58	1:11	Ar
Suburban	58	1:16	Ar
30th Street	59	1:22	Ar
Trenton, NJ	92	1:53	Ar
Newark, NJ	140	2:26	Ar
New York, NY	150	2:46	Ar

* Schedule is based on 7" Cant Deficiency assumption

THREE OPTIONS ASSESSED FOR THE STUDY

Commuter Service with a Transfer - 15¢/mile

Riders could transfer to the NEC on their own at Philadelphia, but the Reading service would only get 15¢/mile for the feeder trip and would not receive any portion of NEC revenues
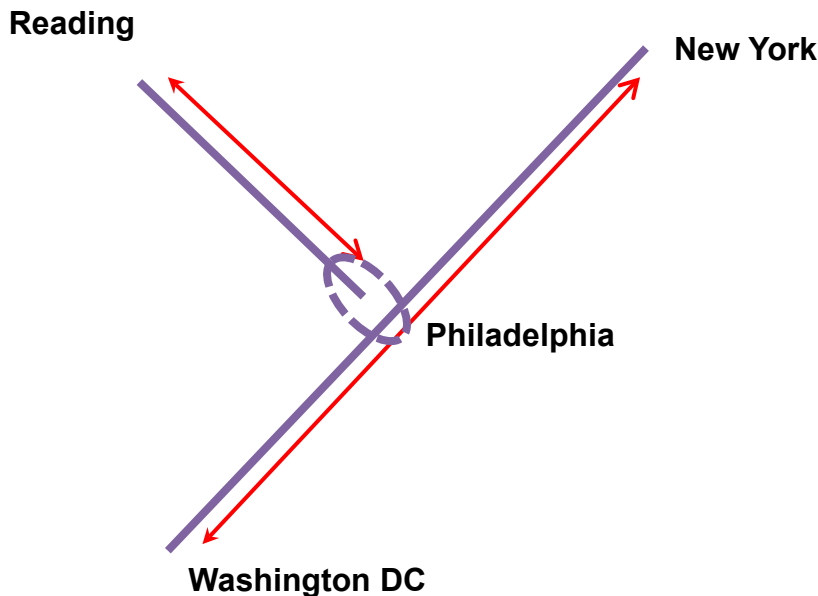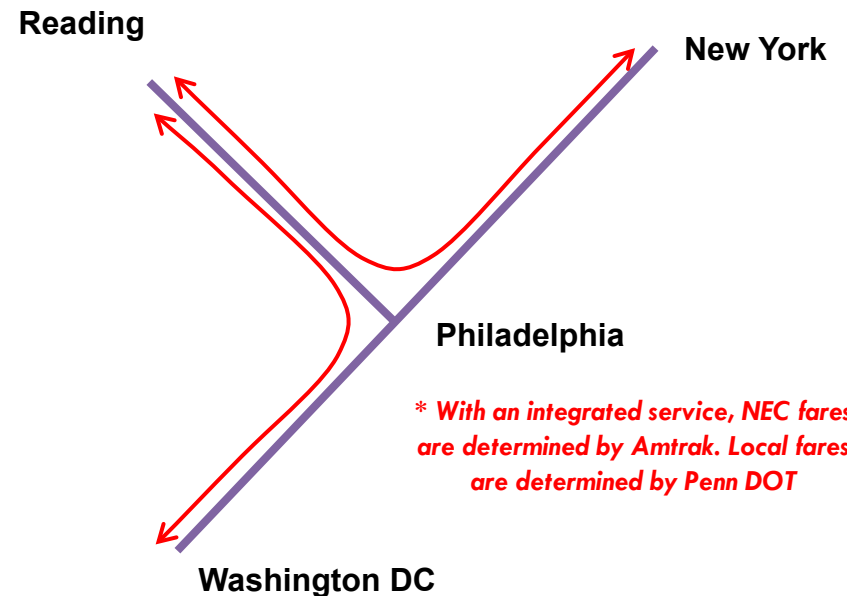
Integrated Intercity Service - 20¢ or 28¢/mile*

With integrated ticketing, Reading service would receive (at a minimum) a mileage based pro rata share of NEC thru-ticketed revenues (28¢/mile or better.) Service and fare integration would also increase NEC connecting ridership

Option 1

Option 2 & 3

* With an integrated service, NEC fares are determined by Amtrak. Local fares are determined by Penn DOT

CAPACITY ANALYSIS

- **A detailed Capacity Analysis of existing and future freight operations shows that with minimal infrastructure improvements, the existing double track is capable of accommodating the proposed Reading to Philadelphia passenger rail service.**

- **Today the NS system has 8 trains per day each way that could grow to 12 trains per day by 2045.**

- **The route can accommodate the additional passenger rail 10 trains per day each way without any significant delay to NS trains.**

SIMULATION VIDEO

NS COMPENSATION

- **NS will expect compensation for passenger use of its rail line. In part, this reflects the value of investments NS has already made, many of which would be of benefit to the proposed passenger service.**

- **One Option is –**

  PennDOT could purchase one of the tracks from NS along with half the right-of-way, as has recently occurred in Michigan, Virginia and Ohio.

  o Comparable costs for purchasing track range from $0.54 up to $2.33 million per mile. PennDOT has a **Rail Transportation Assistance Program** that can purchase track.

  o We would expect the cost to fall within a **$22 to $100 million range**.

  o The higher $100 million up-front number has been assumed as a placeholder in the cost benefit ratio.

Capital Cost Summary ($2020)

Right-of-Way	Infrastructure	Equipment	TOTAL	$/Mile* Overall
$100	$46	$210	$356	$6.0

The route is 41 miles over NS and 18 miles over SEPTA.

- Overall costs are estimated as $356 million:

  - **Right-of-Way** – $2.33 million per mile, a $100 million placeholder for the cost for acquiring a non-exclusive access to use and share the right-of-way belonging to Norfolk Southers from Norristown to Reading.
  - **Infrastructure** – $46 million have been allocated for infrastructure capital including train maintenance base and servicing facility improvements, station platforms, grade crossing improvements and minor capacity upgrades.
  - **Equipment** – $35 million each for six trainsets or $210 million total.
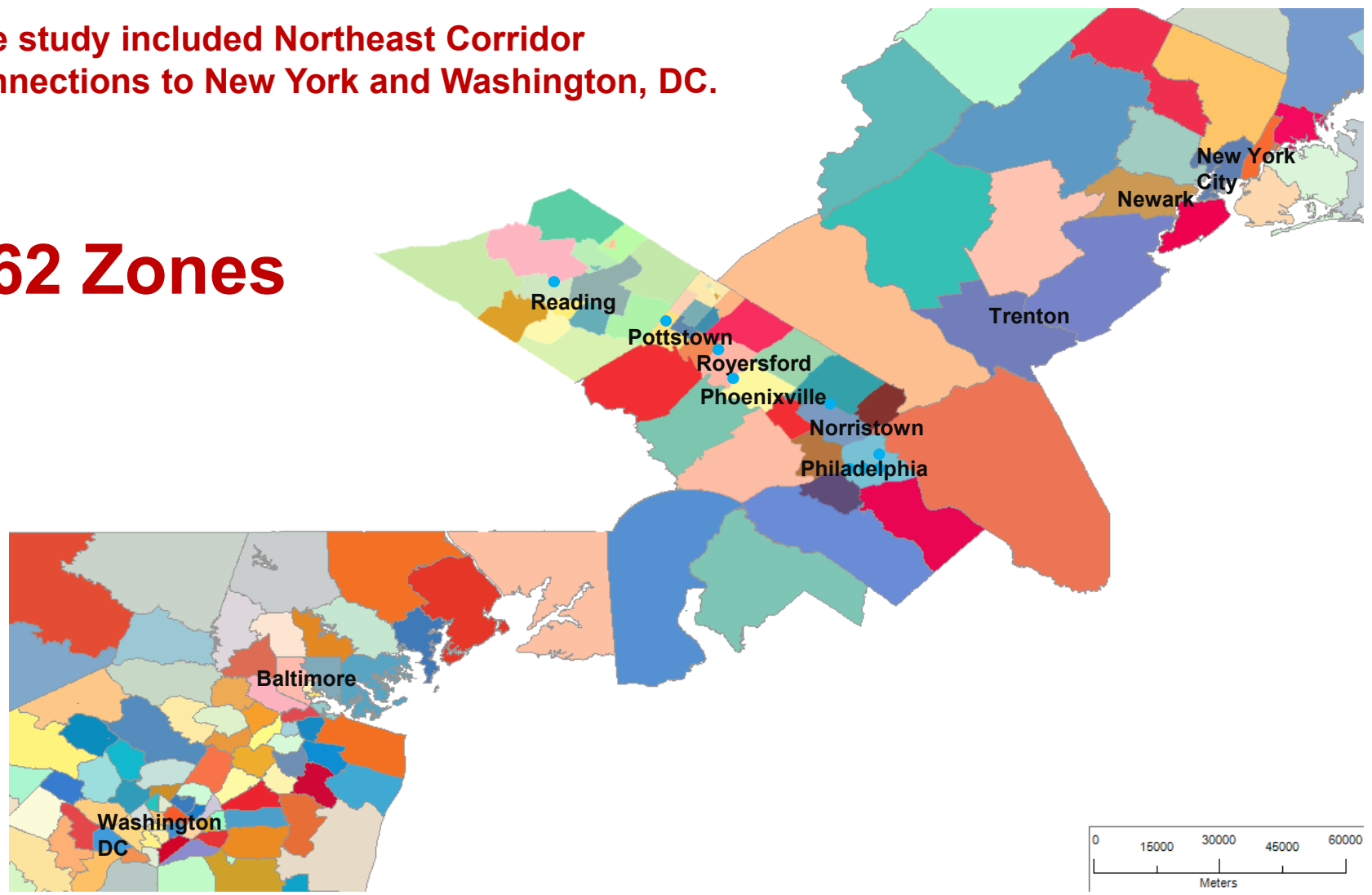
OPERATING COST RESULT
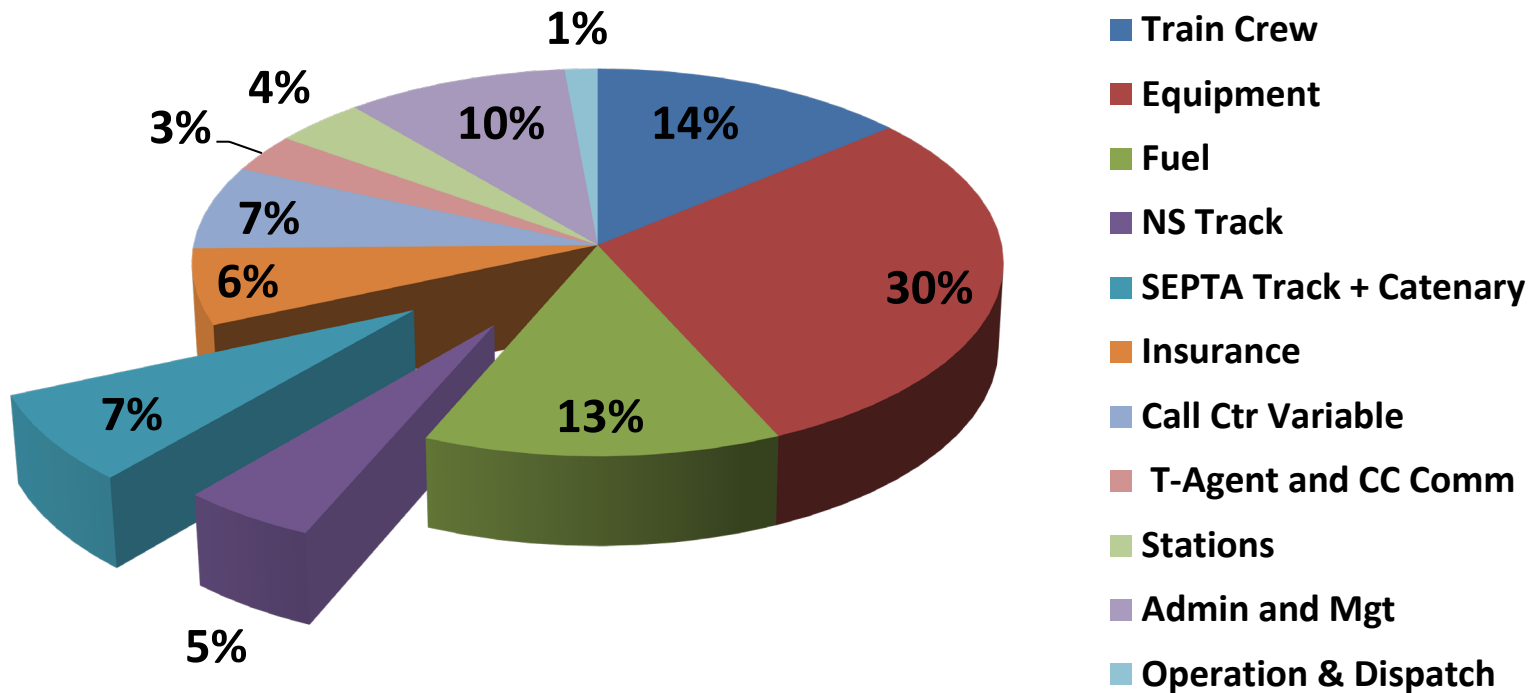
TOTAL ANNUAL COST $20.2 MILLION

$68.59 / TRAIN MILE; 42% OF WHICH IS FOR TRACK AND EQUIPMENT MAINTENANCE

PASSENGER RAIL CORRIDOR ZONES

The study included Northeast Corridor connections to New York and Washington, DC.

# 162 Zones

PASSENGER RAIL CORRIDOR SOCIOECONOMIC PROJECTION

Reading-Philadelphia Corridor Only

	2020	2030	2050	Average Annual Growth Rate
Population	4,756,374	4,933,883	5,101,331	**0.23%**
Employment	3,001,997	3,305,147	3,804,989	**0.79%**
Per Capita Income ($)	45,334	51,712	62,744	**1.09%**

Reading-Philadelphia Corridor and Northeast Corridor

|	2020	2030	2050	Average Annual Growth Rate
Population	31,514,046	33,228,464	35,777,734	**0.42%**
Employment	20,971,456	23,247,140	27,259,850	**0.88%**
Per Capita Income ($)	52,413	58,729	69,622	**0.95%**

FORECASTED RIDERSHIP BY YEAR
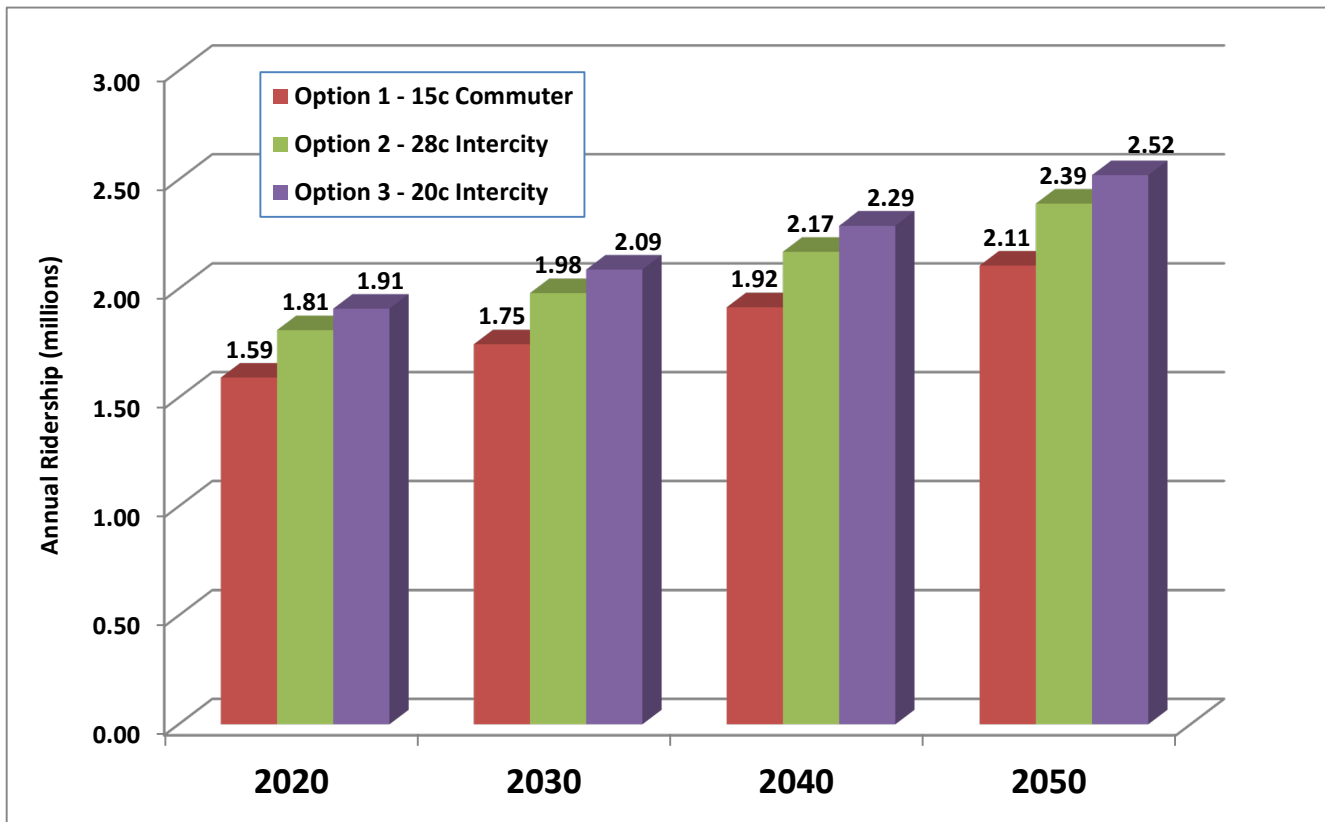
With integrated service, connecting trips through to the NEC are increased by single seat rides, integrated fare structure and through ticketing.

FORECASTED REVENUES BY YEAR
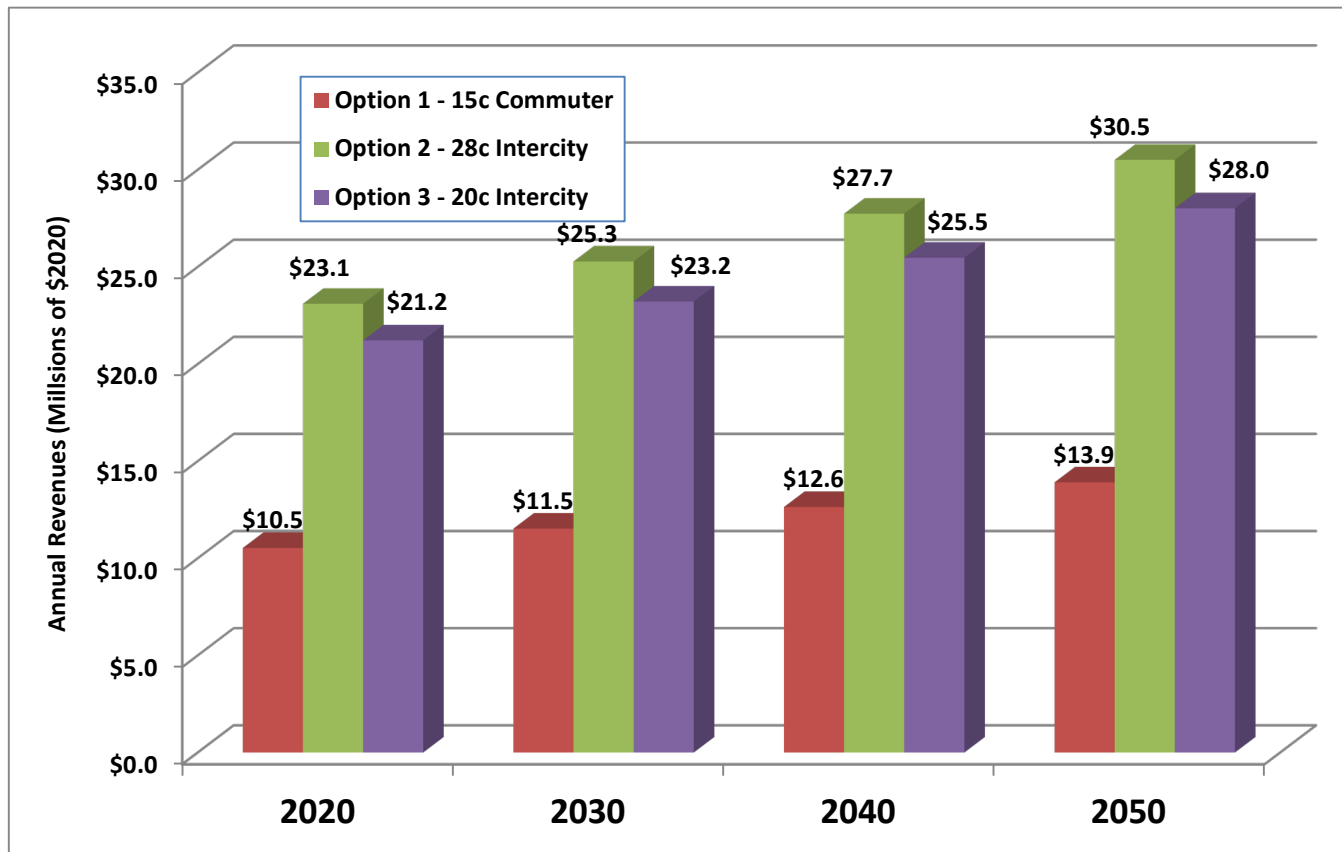
With integrated service, revenue from trips connecting through to the NEC is increased by single seat rides, integrated fare structure and through ticketing.
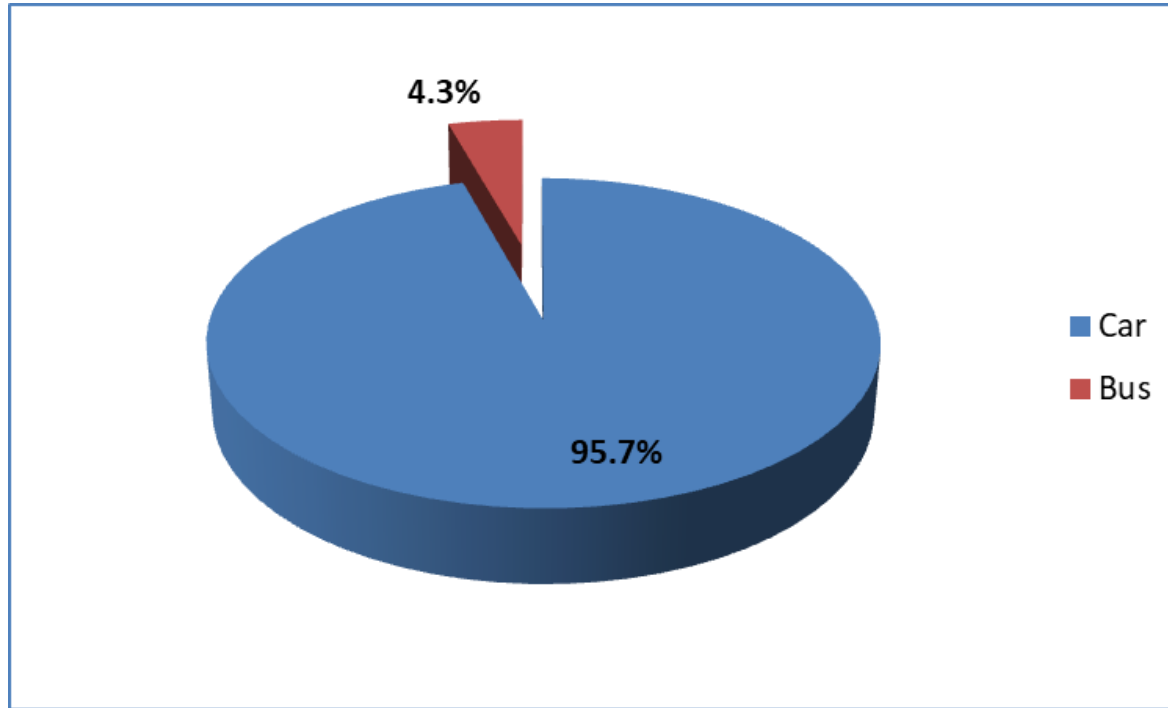
Reading-Philadelphia and Northeast Corridor Modal Split Forecast (2020)
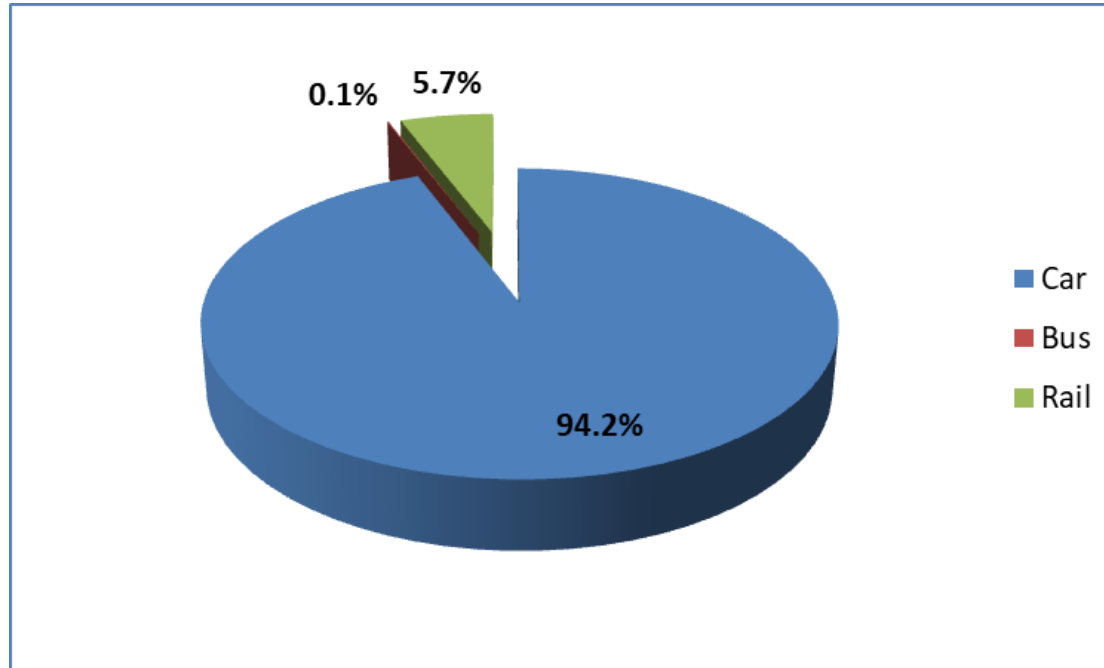
Rail achieves a 5-6% share of rail-eligible trips in the Reading to Philadelphia corridor.
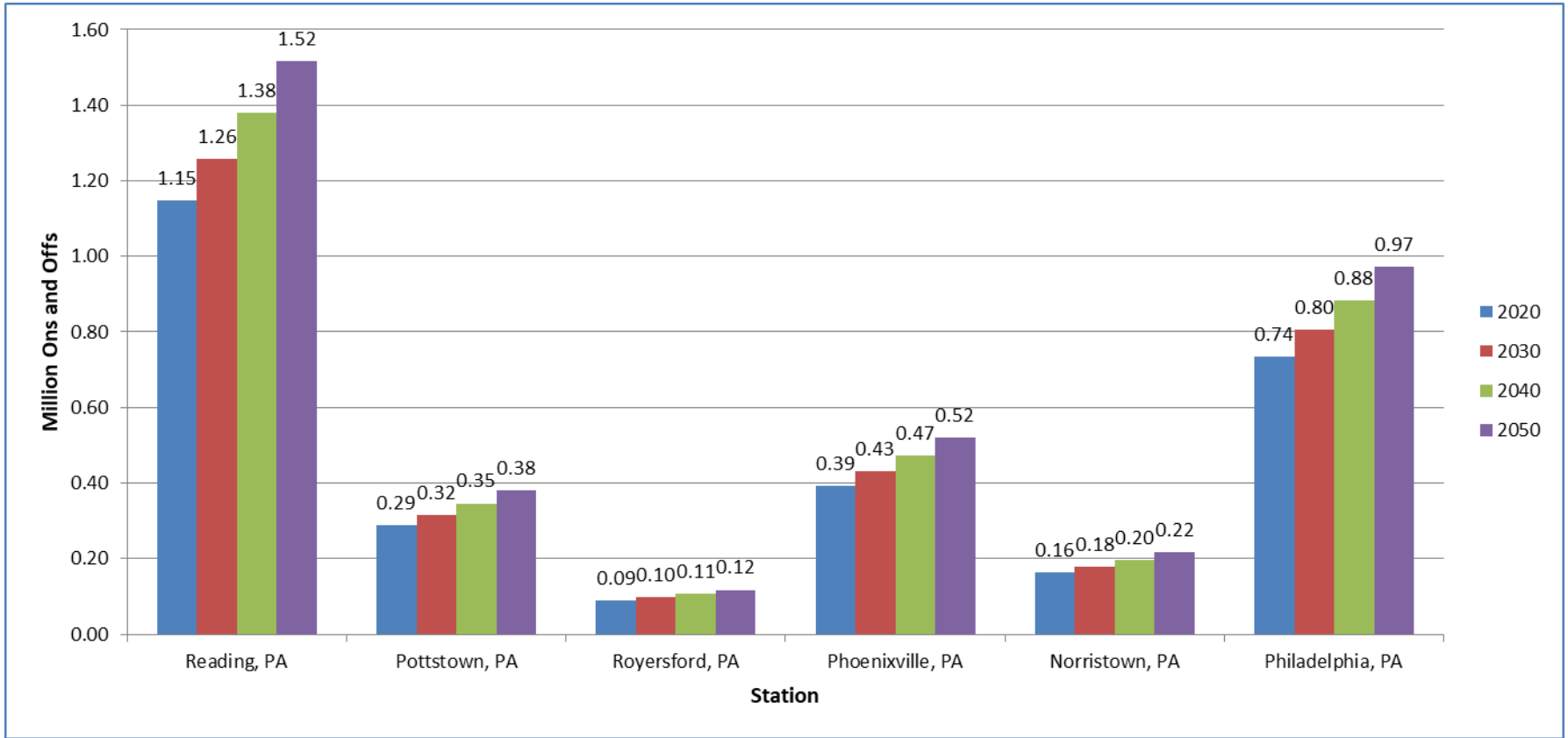
# READING-PHILADELPHIA AND NORTHEAST CORRIDOR SOURCE OF RAIL TRIPS FORECAST (2020)

Over 95% of rail trips would be diverted from auto.

READING-PHILADELPHIA AND NORTHEAST CORRIDOR STATION VOLUME FORECAST FOR 28¢/MILE

PRELIMINARY FINANCIAL AND ECONOMIC ANALYSES

RENTS™ WILL DETERMINE WHAT TECHNOLOGY AND ROUTES ARE FINANCIAL AND ECONOMICALLY FEASIBLE AND MEET FTA/FRA REQUIREMENTS
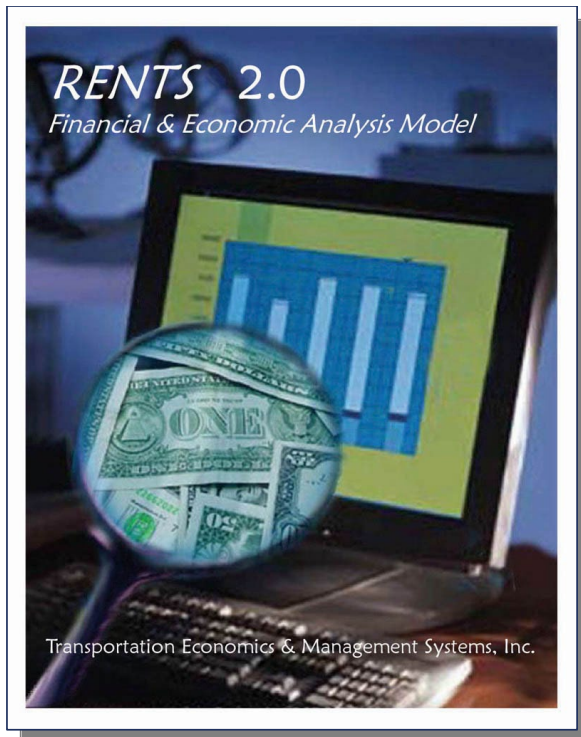
RENTS™ uses output from the **COMPASS™** and **GOODS™** Demand Forecasting Systems to estimate the financial and economic benefits of a project:

• **FINANCIAL RETURNS** (Operating Ratio, NPV and IRR)

• **ECONOMIC RETURN** (Gross and Net Consumer Surplus, NPV, and Cost-Benefit Ratio), and

• **ECONOMIC RENT** (Community benefits, such as changes in household income, employment by sector, property values, and population) that result from infrastructure and technology improvements or timetable and fare modifications.

INTEREST RATES FOR COST BENEFIT ANALYSIS

3% and 7% <u>REAL</u> as according to OMB Circular A-94:

"GUIDELINES AND DISCOUNT RATES

FOR BENEFIT-COST ANALYSIS OF FEDERAL PROGRAMS"

Inflation is currently running a little over 2% per year, so this requirement is equivalent to a nominal interest rate of 5% to 9% per year.

Moody's Seasoned AAA Corporate Bond Yield:

2.94% (nominal) in January 2020

Today, corporate bonds are offering about a 1-2% real return.

COST BENEFIT AND FINANCIAL ANALYSIS "INTEGRATED INTERCITY OPTION 3 w/20¢ YIELD"
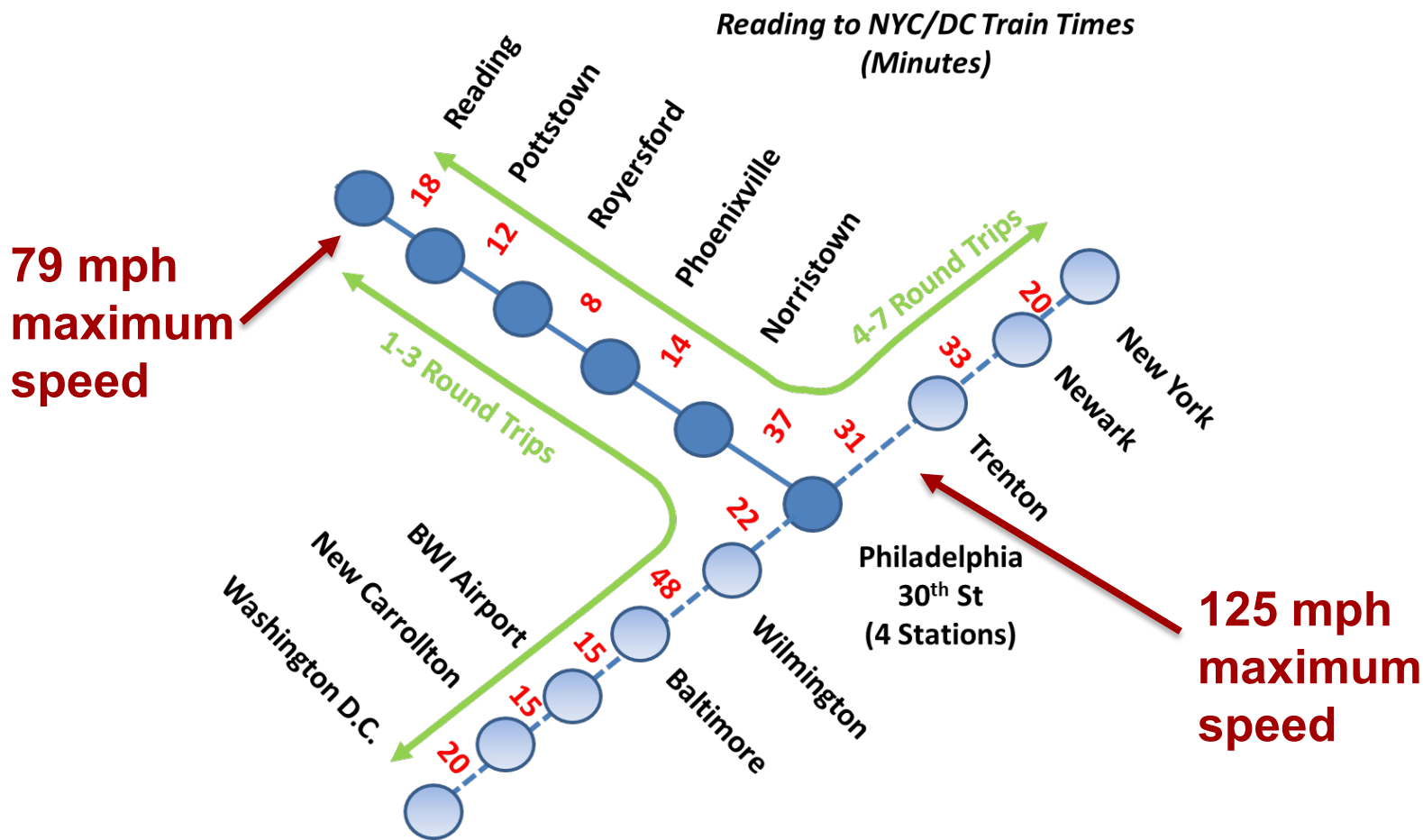
Financial NPV: System breaks even on Year 1: Generates Positive Cash Flow from Operations after that

Economic NPV: Benefits exceed Costs over 25-Years at 7% Real Interest Rate: Economic Benefits are greater due to higher Highway Diversion at a 20 cent Fare.

Discount Rate	3.0%	7.0%
Revenues		
System Passenger Revenues	$308.32	$126.74
On Board Service Revenues	$0.00	$0.00
Total Revenues	**$308.32**	**$126.74**
Costs		
O&M Costs	$293.33	$121.05
Total Costs	**$293.33**	**$121.05**
Net Cash Flow from Operations	*$14.99*	*$5.68*
Operating Ratio	*1.05*	*1.05*
Discount Rate	3.0%	7.0%
Benefits to Users		
Users Consumer Surplus	$585.12	$239.28
Benefits to Public at Large		
Highway Congestion Delay Savings (million 2017$)	$256.97	$104.84
Highway Reduced Emissions (million 2017$)	$141.12	$57.58
Highway Safety Savings (million 2017$)	$11.81	$4.82
Total Public at Large Benefits	$409.90	$167.23
Total Benefits	**$995.02**	**$406.51**
Costs		
Capital Cost	$264.04	$180.07
O&M Costs	$293.33	$121.05
Cyclic Mtn	$7.83	$2.63
Total Costs	**$565.20**	**$303.75**
Benefits Less Costs	*$429.82*	*$102.76*
Benefit/Cost Ratio	*1.76*	*1.34*

79 MPH/125 MPH PASSENGER RAIL NETWORK – PREFERRED OPTION

79 mph maximum speed

125 mph maximum speed

Reading to NYC/DC Train Times (Minutes)

Reading — Pottstown — Royersford — Phoenixville — Norristown

18 — 12 — 8 — 14 — 37 — 31 — 33 — 20

New York — Newark — Trenton

4-7 Round Trips

1-3 Round Trips

Washington D.C. — New Carrollton — BWI Airport — Baltimore — Wilmington — Philadelphia 30th St (4 Stations)

20 — 15 — 15 — 48 — 22

PROPERTY VALUE IMPROVEMENT BY STATION COVERAGE AREA

Station Name	Property Value Improvement 2025~2054 (million $)
Reading, PA	265.9
Pottstown, PA	103.8
Royersford, PA	33.7
Phoenixville, PA	99.0
Norristown, PA	117.0
Philadelphia, PA	456.9
Total	**1,076.3**

The TOD for the five northern towns is over $600 million.

Socioeconomic and Transfer Payments Improvements Summary

Economic Supply Side Items	Economic Supply Side Improvements
Direct Socioeconomic Benefits	
Employment (2025~2054 man years)	28,573
Income (2025~2054, million $)	1,381.0
Property Value (2025~2054, million $)	1,076.3
Transfer Payments (Tax Benefits)	
Federal Income Tax (2025~2054, million $)	248.0
Local Income Tax (2025~2054, million $)	60.3
Property Tax (2025~2054, million $)	676.0

The project will create over 28,000 person years of work and increase income by nearly $1.4 billion.

CONCLUSIONS

- **Strong case for developing the Reading to Philadelphia Corridor, with trains running into the Northeast Corridor to New York and Washington, DC.**

- **The system can operate without subsidy, with fares set at a very competitive level.**

- **Key issues are negotiation with NS and obtaining PennDOT and USDOT support.**

- **The economic development impact from direct and indirect jobs is very substantial. Over 28,000 person years of work.**

- **Property values and development are over $1 billion.**

- **The expansion of the Federal, State and local tax base will pay for the project.**

NEXT STEPS

- **BluePrint Study:** This study will provide the implementation plan for the process of establishing the passenger train service. This includes institutional and stakeholder negotiation and agreements, funding proposals and plans, and application for USDOT grants.

- **Tier 1 EIS Study:** This study should be paid for by USDOT. It is designed to obtain a Record of Decision (ROD) and environmental permits for the route. It is likely that in an existing right-of-way, the project will obtain a Finding of No Significant Impact (FONSI) or Categorical Exclusion (CE).

THANK YOU