

On Track to Accessibility

*Increasing Service of the Pennsylvanian:
Benefits and Costs*

Prepared for:



Prepared by:

Adam Schøtt Hovne, M.Sc.
Economic Development Consultant

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EXECUTIVE SUMMARY

This report provides a detailed, quantitative analysis of the costs and benefits associated with increasing Amtrak's passenger rail service in Pennsylvania. The analysis compares running the existing Pennsylvanian train line, a single round trip between Pittsburgh and New York City, to running three daily round trips. Using ridership data from other short-distance Amtrak routes to model a multiple linear regression, ridership is conservatively expected to increase by 195,117 tickets within a year of implemented service expansion with continued growth thereafter. Revenue from these tickets, food and beverage service, and increased spending from existing riders is projected to increase by \$10,523,021.

	2013	Net Increase	Total
Ridership	218,917	195,117	414,034
Revenue	\$ 11,100,000	\$ 10,523,021	\$ 21,623,021

Pennsylvania will realize indirect and induced benefits of increased service, as well. Travelers utilizing the train instead of their car will create savings for the State through reduced emissions, accidents, and highway and bridge maintenance costs. Additionally, individual households could save money which could support other sectors of the economy. Below is a summary of the benefits of additional service.

<u>Benefit¹</u>	<u>Net Benefit</u>
Revenue	\$ 10,523,021
Emissions	\$ 165,716
Accidents	\$ 55,594,240
Highway Maintenance	\$ 201,353,229
Household Savings	\$ 34,366,408
Total Projected Annual Benefits	\$ 302,002,614

To realize these benefits, the State must invest in service expansion for this corridor. Capital costs, consisting of new train sets, "rolling stock", are estimated to cost \$37.4-74.9 million, depending on the train schedule that Amtrak and PennDOT pursue. The State may elect to finance this capital cost with debt, costing an estimated \$2.4-4.9 million annually. In fiscal year 2014, Pennsylvania will pay \$3.8 million, which is the gap between projected revenue and projected operating costs. The increase in service will increase this gap by \$4,222,000.

<u>Cost²</u>	<u>Net Cost (Low)</u>	<u>Net Cost (High)</u>
Capital Cost, debt-financed	\$ 2,435,665	\$ 4,781,330
FY14 Operating Deficit	\$ 3,800,000	\$ 3,800,000
Marginal Operating Deficit	\$ 4,222,000	\$ 4,222,000
Total Projected Annual State Support	\$ 10,457,665	\$ 12,803,330

Tripling rail service of the Pennsylvanian will nearly double revenue and ridership. The support for each additional train is less than that of the previous train due to currently existing fixed costs. This means that the level of State support will increase less than proportionally to the increase in service.

¹ See pages 15-19 for the detailed analysis and methodology

² See pages 20-22 for the detailed analysis and methodology

INTRODUCTION

PURPOSE

This report provides a detailed quantitative analysis of the costs and benefits associated with increasing Amtrak's passenger rail service in southwestern and southcentral Pennsylvania. The analysis compares running the existing Pennsylvanian train, a single round-trip between Pittsburgh and New York City, to running three daily round trips.

SCOPE

To understand the role of the Pennsylvanian, this report provides contextual descriptions about system characteristics, current and historical service levels, and the population served by the route. For comparison, the Pennsylvanian's performance is benchmarked against 17 other short-distance routes. Features compared include each line's on-time performance, average speed, utilized capacity, and state support.

The report then quantifies direct, indirect, and induced effects of this service to Pennsylvania and its residents including projected revenue, expenditure savings, and consumer savings. Capital and operating costs associated with increasing service are also projected. This study does not address infrastructure improvements, High Speed Rail, ticket price changes, or their impacts on the system.

CONCURRENT STUDIES

In 2008, Congress passed the Passenger Rail Investment and Improvement Act (PRIIA). PRIIA reauthorizes Amtrak as the national intercity passenger rail service provider, built new funding channels, and required specific service studies. PRIIA Section 224 (a) (5) required a feasibility study of the Pennsylvanian line between Harrisburg and Pittsburgh to determine if Amtrak and the State of Pennsylvania should increase service. As required, The Pennsylvania Feasibility Studies Report was published in October 2009.

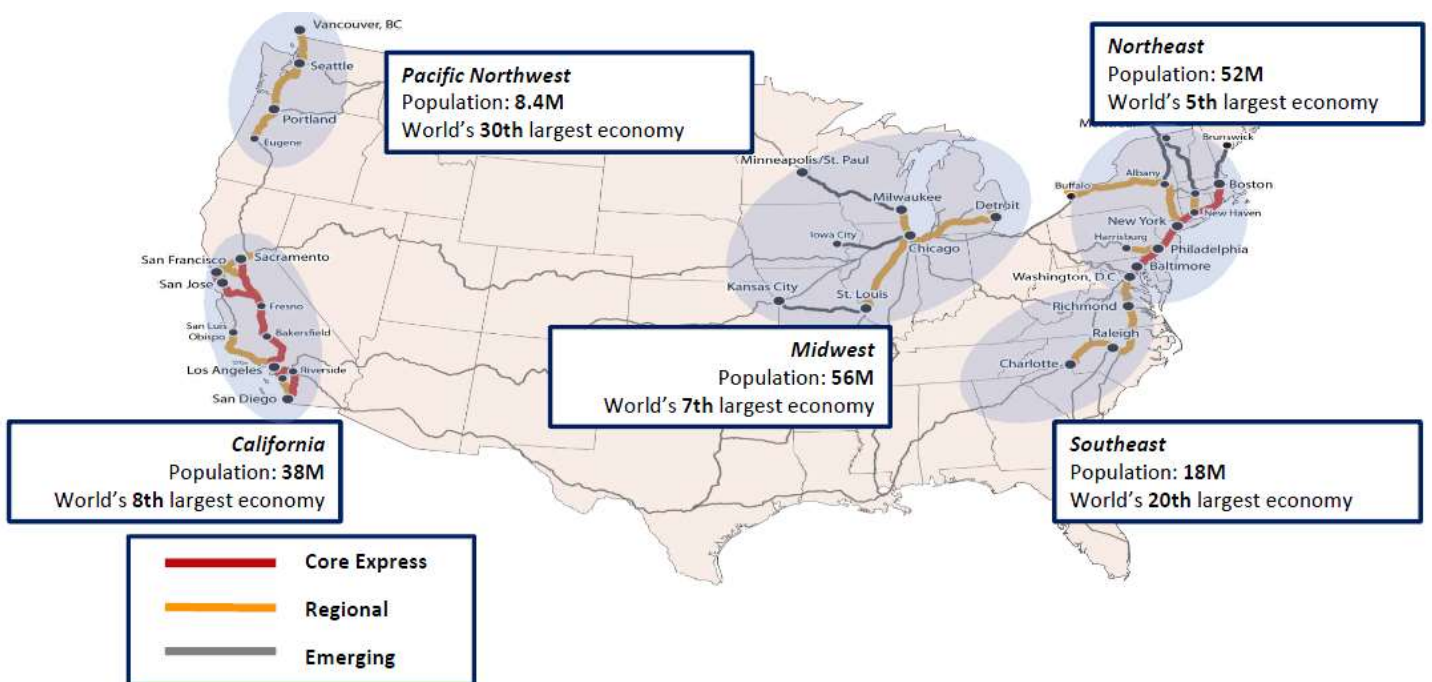
Thereafter, the Pennsylvania Department of Transportation (PennDOT) sought and received matching funds of \$750,000 from the American Reinvestment and Recovery Act to commission a further study on the question of increasing service of the Pennsylvanian. The study was initially expected in the summer of 2013 but has yet to be published and distributed. This report is intended to supplement the initial Pennsylvania Feasibility Studies Report of 2009 and the subsequent study.

THE PENNSYLVANIAN IN CONTEXT

SERVICE CONTEXT

The Pennsylvanian route connects Pittsburgh with Harrisburg, Philadelphia, and New York City. As such, the line is situated between two of Amtrak's mega-regions: the Northeast Corridor (NEC) spine running between Washington, D.C. and Boston and the Chicago hub extending to Milwaukee, St. Louis, and Detroit. While the Pennsylvanian helps connect these major markets, western Pennsylvania today experiences a lower level of passenger rail service than experienced historically. As recently as 1969, Pittsburgh was served by 12 passenger trains from Harrisburg. Today it is served by one.

Figure 1: Amtrak's Mega-Regions



Source: Szabo

Between its endpoints of Pittsburgh and New York City, the Pennsylvanian serves stations in Greensburg, Latrobe, Johnstown, Altoona, Tyrone, Huntingdon, Lewistown, Harrisburg, Elizabethtown, Lancaster, Exton, Paoli, Philadelphia, Trenton, and Newark. Seventy percent of the Pennsylvanian's passengers get on or off west of Harrisburg.³ In Pittsburgh, the Pennsylvanian intersects with the Capitol Limited, the long distance line connecting Washington, D.C. and Chicago. Between Harrisburg and New York City, the Pennsylvanian overlaps with the Keystone. Between Philadelphia and New York, both lines overlap with the NEC, which connects Washington, D.C. and Boston.

Figure 2: The Pennsylvanian's route and major stops



Source: PennDOT, PA Intercity Passenger & Freight Rail Plan, 2010

³ Pennsylvania House Transportation Committee Hearing, May 23, 2013

PennDOT has identified Pennsylvania counties served by Amtrak, shaded green in Figure 3. The Keystone runs 13 daily weekday round trip trains and 3 weekend round trip trains between Harrisburg and New York City. The circled counties are counties west of Harrisburg served by the Pennsylvanian.⁴ Some of these counties have direct service while residents of Butler, Beaver, Washington, Fayette, Somerset, Bedford, and Fulton counties drive or take other transportation to the nearest station. Due to the extensive service already offered on the Keystone, this study focuses on the impact that an increase in service of the Pennsylvanian would have on the people and region of south-central and south-western Pennsylvania.

Figure 3: Counties served directly or indirectly by the Pennsylvanian



Source: PennDOT

⁴ Erie County is served by the Lake Shore Limited. Allegheny and Fayette Counties are also served by the Capitol Limited. Counties served by the Pennsylvanian west of Harrisburg are Allegheny, Beaver, Bedford, Blair, Butler, Cambria, Fayette, Fulton, Huntingdon, Indiana, Juniata, Mifflin, Perry, Somerset, Washington, and Westmoreland.

POLITICAL CONTEXT

The Passenger Rail Investment and Improvement Act (PRIIA), passed by Congress in 2008, requires that states support Amtrak’s short-distance routes, which are routes less than 750 miles. Pennsylvania must pay capital and operating costs in proportion to the in-state operations of the Pennsylvanian and the Keystone. The goal of the bill is to price all corridors transparently and equitably.⁵ State subsidy of the Keystone has risen from nearly \$7 million in Fiscal Year 2007 to nearly \$9 million in Fiscal Year 2012.⁶ The Pennsylvanian was state-supported from 1980-1993 and did not receive any State funding until Fiscal Year 2014 when PRIIA’s short-distance route requirements were implemented.⁷

In November 2013, Pennsylvania legislators passed a comprehensive transportation funding bill, Act 89. This bill funds multi-modal investment grants which, beginning in 2015, are indexed to inflation. Through these grants, minimum funding for passenger rail projects will be \$6 million in Fiscal Year 2014 and \$8 million in Fiscal Year 2015 within a multi-modal fund. Within five years, the bill will provide \$2.3 billion to various segments of the State’s transportation system.⁸ Table 1 summarizes the plan.

Table 1: Summary of Funding Levels under Act 89

Projects	Year 1 (1/1/14-6/30/14) est.	Year 5 estimate
State Roads and Bridges	\$188 million	\$1.3 billion
Public Transportation	\$60 million	\$497 million
Local Roads and Bridges	\$35 million	\$237 million
PA Turnpike Expansion	\$13 million	\$86 million
Multi-Modal Fund	\$30 million	\$144 million
Fish and Boat Commission	\$3 million	\$9 million
County/Forestry Bridges	\$2 million	\$12 million
Dirt/Gravel/Low-Volume Roads	\$ 0	\$35 million
Total	\$331 million	\$2.3 billion

Source: Pennsylvania Highway Information Association

While these investments contribute to Pennsylvania Department of Transportation’s mission “to provide a safe and sustainable transportation system with services that enhance Pennsylvania’s communities and economy,”⁹ residents also hope that their policy-makers will provide funding that offers all Pennsylvanians broader transportation choices for intercity travel than the status quo. At a 2009 Congressional field hearing on transportation, Congressman Tim Murphy described how Pittsburgh “...has become something of an island,” losing 95% of its flights and advocated for increased investment in rail.¹⁰ These sentiments echo a desire to recognize the importance of funding a sustainable transportation system in Pennsylvania.

⁵ PRIIA Section 209 Cost Methodology Policy

⁶ Plan the Keystone

⁷ PRIIA Section 224 Pennsylvania Feasibility Studies Report

⁸ Pennsylvania’s New Transportation Funding Law

⁹ Pennsylvania Budget

¹⁰ Expanding Passenger Rail Service Field Hearing, 2009

PHYSICAL CHARACTERISTICS

The Pennsylvanian offers a single daily train eastbound from Pittsburgh and westbound from New York City. In Pittsburgh, passengers may connect with the Capitol Limited, which also runs once daily in each direction between Washington, D.C. and Chicago. The Keystone service runs between Harrisburg and New York City on the same tracks as the Pennsylvanian and serves many of the same stations. The Keystone serves some communities in eastern Pennsylvania, New Jersey, and Newark International Airport which the Pennsylvanian does not. The Pennsylvanian and Keystone run along the NEC between Philadelphia and New York City.

West of Harrisburg, Norfolk Southern, a private freight rail company, owns the track upon which the Pennsylvanian runs. The majority of Amtrak's route miles are run on rails owned by private parties. PRIIA gives passenger trains priority, but Amtrak negotiates with the host railroad for time slots. Host railroads are also given incentives to increase the on-time performance of passenger trains.

East of Harrisburg and on the Northeast Corridor, the tracks are owned, operated, and maintained by Amtrak. These routes are electrified. Electrification requires infrastructure investment but allows for higher train speeds and energy savings. For example, west of Harrisburg, the Pennsylvanian is limited to 79 MPH and averages 45 MPH for the entire trip. East of Harrisburg, the Keystone may run up to 110 MPH while averaging speeds of 60-65 MPH between Harrisburg and Philadelphia.¹¹ Higher speeds mean higher ridership and revenues as well as more cost-effective utilization of crew labor and equipment. The electric locomotives of the Keystone are limited to electrified routes whereas the diesel locomotives of the Pennsylvanian run on both the tracks west of Harrisburg and the electrified routes between Harrisburg and Philadelphia. In Philadelphia, the diesel locomotive is exchanged for an electric locomotive on the way to New York City or the electric locomotive is exchanged for a diesel locomotive on the way to Pittsburgh. This exchange occurs because only electric trains can pass through the tunnel connecting Manhattan and New Jersey.

Topography affects train speed, as well. West of Harrisburg, the train must traverse the Appalachian Mountains, contributing to the lower average speed. East of Harrisburg, the flat land makes it easier for trains to run at higher speeds. With the cooperation of Norfolk Southern, engineering improvements and track changes could reduce travel time. However, this report assumes that the additional trains will run at the same speeds as the current Pennsylvanian.

¹¹ PRIIA Section 224 Pennsylvania Feasibility Studies Report and Plan the Keystone

CURRENT AND HISTORICAL SERVICE AND USAGE

Less than 70 years ago, there were 24 daily roundtrip trains connecting western and eastern Pennsylvania. Before Congress authorized Amtrak as the National Passenger Rail Corporation in 1971, there were twelve. After 1971, there were two direct service passenger trips between Harrisburg and Pittsburgh. Two trains served this route until 2005 when one was discontinued, leaving the current, single round trip Pennsylvanian. Figure 4 gives a brief history.

Figure 4: Timeline of rail service between Pittsburgh and Harrisburg

Date	Service
1948	Pennsylvania Railroad operated 24 daily trains between Philadelphia and Pittsburgh.
1969	Penn Central operated a dwindling number of long-distance trains. 12 trains daily just before Amtrak.
1971 (Amtrak)	Two trains: Broadway Limited and National Limited
1979	National Limited discontinued
1980	State-supported Pennsylvanian began
Mid-1980s	Pennsylvanian turned back and stored overnight at Altoona. The ALT-PGH train was known as the Fort Pitt.
1993	Pennsylvanian ceased to be state-supported.
1995	Broadway Limited discontinued. Replaced with a coach train, the Three Rivers.
2005 to present	Three Rivers discontinued when Amtrak stops hauling mail and express. Pennsylvanian: One daily frequency in each direction between PGH and NYP via 30th Street Station in Philadelphia.

Source: PRIIA Section 224 Pennsylvania Feasibility Studies Report

Departing from New York – Penn Station at 10:52 A.M., the Pennsylvanian is scheduled to arrive in Pittsburgh at 8:05 P.M., 9 hours and 13 minutes later. Eastbound, the train leaves Pittsburgh at 7:30 A.M. and arrives in New York – Penn Station at 4:50 P.M., a trip lasting 9 hours and 20 minutes. Figure 5 shows the current schedule.

Figure 5: Pennsylvanian Daily Schedule

Train 43 - Westbound			Train 42 - Eastbound		
Station	Arrive	Depart	Station	Arrive	Depart
New York - Penn Station		10:52	Pittsburgh		7:30
Newark	11:10	11:10	Greensburg	8:11	8:11
Trenton	11:44	11:44	Latrobe	8:21	8:21
Philadelphia - 30th St Station	12:12	12:42	Johnstown	9:04	9:04
Paoli	13:12	13:12	Altoona	10:01	10:01
Lancaster	13:52	13:52	Tyrone	10:17	10:17
Elizabethtown	14:06	14:06	Huntingdon	10:44	10:44
Harrisburg	14:26	14:36	Lewistown	11:21	11:21
Lewistown	15:46	15:46	Harrisburg	12:55	13:05
Huntingdon	16:22	16:22	Elizabethtown	13:23	13:23
Tyrone	16:48	16:48	Lancaster	13:40	13:40
Altoona	17:06	17:06	Exton	14:12	14:12
Johnstown	18:00	18:00	Paoli	14:24	14:24
Latrobe	18:41	18:41	Philadelphia - 30th St Station	14:55	15:25
Greensburg	18:52	18:52	Trenton	15:56	15:56
Pittsburgh	20:05		Newark	16:30	16:30
			New York - Penn Station	16:50	

Source: Amtrak

Westbound passengers may transfer to the Capitol Limited in Pittsburgh, which continues to Chicago. This train departs Pittsburgh at 11:59 P.M., a layover of nearly four hours. Eastbound passengers transferring to the Pennsylvanian from the Capitol Limited are scheduled to arrive at 5:05 A.M. with a scheduled layover of nearly two and a half hours.

Table 2 gives the passenger totals for each station between Pittsburgh and Harrisburg. In each fiscal year, the number of passengers includes the number of passengers getting on and off the Pennsylvanian. In Pittsburgh, passengers board and alight from the Pennsylvanian as well as the Capitol Limited. Passengers in Harrisburg include the Pennsylvanian as well as the 13 round trip Keystone trains. If the increase in service of the Pennsylvanian falls outside the current staff hours, an increase in staff hours will become necessary. At a flag stop, the train will stop only if there are ticketed passengers, otherwise the train will continue without stopping. Since stopping and starting a train requires more time and fuel than to keep it going, this practice saves both.

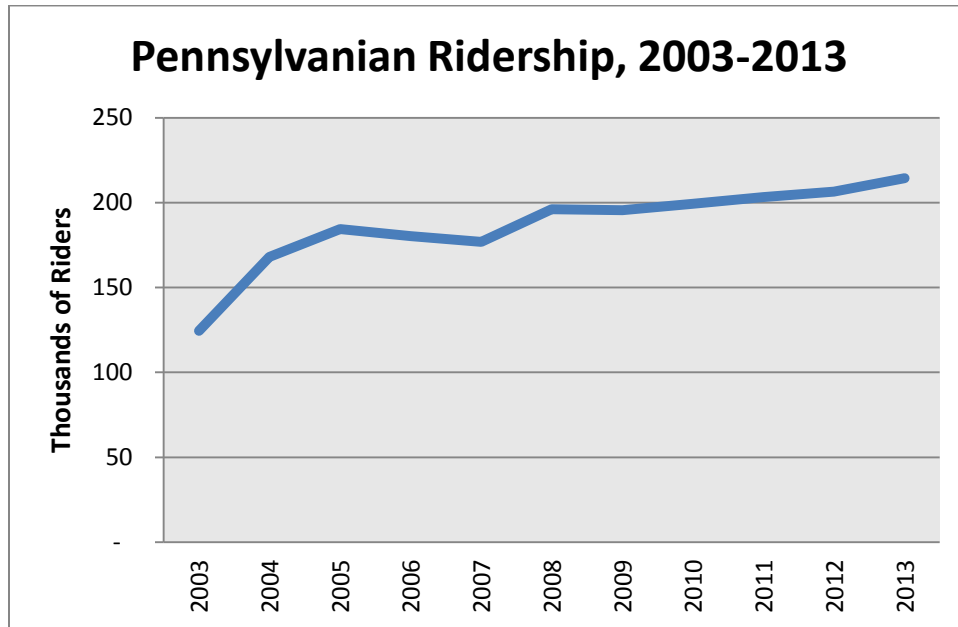
Table 2: Pennsylvanian station information, west of Harrisburg

Station	Passengers FY2011	Passengers FY2012	Passengers FY2013	Staff Hours
Pittsburgh	133,855	129,372	135,137	All day, every day
Greensburg	13,097	13,395	14,248	-
Latrobe	4,384	4,669	4,447	Flag stop
Johnstown	23,573	23,964	23,615	Daily, 8:15am - 6:15pm
Altoona	25,800	26,978	26,025	Daily, 9:00am - 5:30pm
Tyrone	2,923	3,108	3,215	Flag stop
Huntingdon	5,975	5,837	6,392	-
Lewistown	8,200	8,315	9,102	-
Harrisburg	543,423	571,217	571,940	M-F, 4:30pm - Midnight Sa-Su, 6:30am - 9:00pm

Source: Amtrak and PRIIA Section 224 Pennsylvania Feasibility Studies Report

A March 2013 report from the Brookings Institution notes that Amtrak nationwide ridership grew by 55% since 1997, faster than any other travel mode, GDP growth, and population growth.¹² Ridership of the Pennsylvanian has nearly doubled in the past ten years.¹³ The Pennsylvanian had record ridership and revenues in 2013.¹⁴ These increases have occurred despite a lack of state support in the line since 1993 and a stagnant or declining population in communities west of Harrisburg.

Figure 6: Pennsylvanian Ridership, 2003-2013



Source: National Association of Railroad Passengers (NARP)

¹² Puentes, Tomec, and Kane

¹³ National Association of Railroad Passengers (NARP)

¹⁴ Amtrak

While Amtrak does not collect demographic information about riders, certain demographic groups are recognized to utilize the Pennsylvanian at higher rates than others. During Pennsylvania House Transportation Committee hearings, testifiers identified several of these specific groups: seniors, higher education students, Amish, and individuals living in group quarters such as nursing homes, college dormitories, and prisons.¹⁵ In 2012, 18% of residents in counties served by the Pennsylvanian west of Harrisburg were 65 or older. This group is likely to double in the next 20 years as people age; those aged 45-64 currently compose 29% of the population.¹⁶ Many students, especially international students in less urban areas such as Juniata College in Huntingdon, PA, rely on the Pennsylvanian to reach school and to experience Pennsylvania outside of the school area. Residents in group quarters often lack access to a personal vehicle and so are also reliant on the Pennsylvanian. Lastly, two of the twelve largest Amish settlements in North America lie on the Pennsylvanian line west of Harrisburg in Mifflin County and Indiana County.¹⁷ With a population of nearly 30,000, the second-largest Amish settlement is in Lancaster, PA, which lies east of Harrisburg also on the Pennsylvanian line.

Table 3: Populations in counties west of Harrisburg reliant on the Pennsylvanian, 2012

Total Population	Seniors (65+)	Upcoming Seniors (45-64)	Higher Ed Enrollment	Group Quarters Residents	Amish
2,953,621	525,763	867,978	200,854	90,434	5,145
	17.8%	29.4%	6.8%	3.1%	0.2%

Source: Census Bureau and Mifflin County Comprehensive Plan, 2013

¹⁵ Pennsylvania House of Representatives Transportation Committee Hearings transcripts

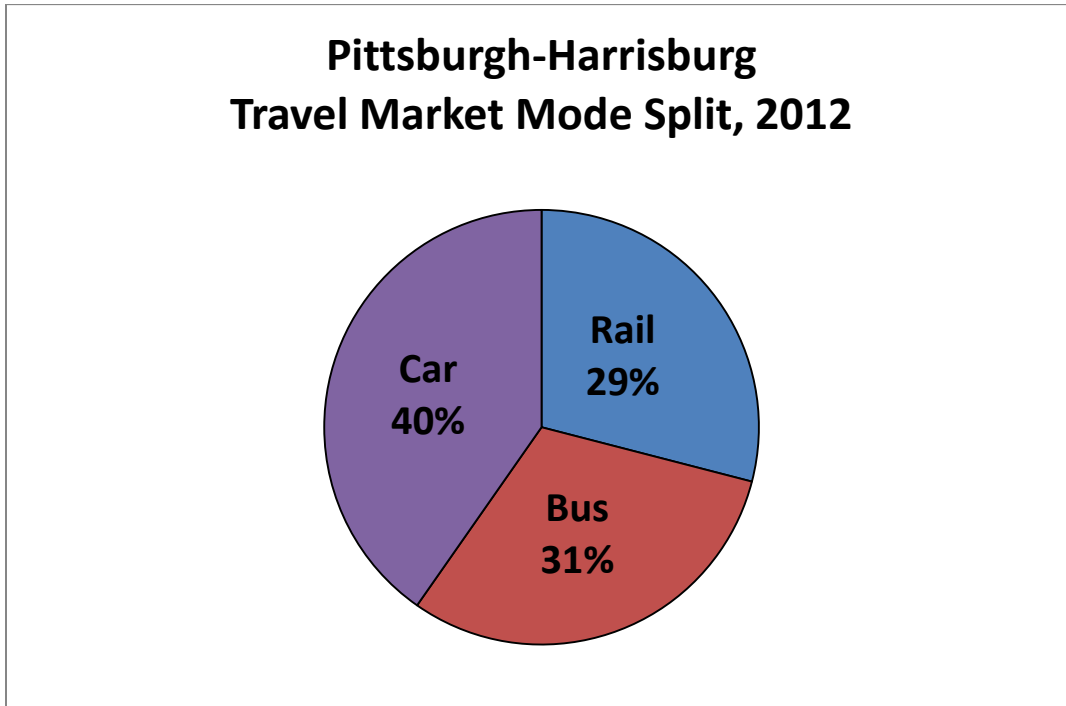
¹⁶ Census Bureau

¹⁷ Mifflin County Comprehensive Plan, 2013

INTERCITY TRAVEL MARKET SEGMENTATION

There are different modes of intercity travel that a traveler may consider. Aside from rail, one may travel by car, air, or bus. There are advantages and disadvantages to each which depend upon the traveler’s circumstances. Because the primary effect of increased service will occur between Pittsburgh and Harrisburg, Figure 7 presents the estimated share of intercity travelers by travel mode between these cities in 2012.

Figure 7: Pittsburgh-Harrisburg Travel Market Mode Split, 2012



Sources: Greyhound, Megabus, Harrisburg International Airport, Amtrak¹⁸

While Harrisburg International Airport offers passenger flights to fourteen destinations, including Philadelphia and Newark, there are no passenger flights to the Pittsburgh airport.¹⁹ Megabus and Greyhound operate between Pittsburgh and Harrisburg three to six times daily.²⁰ Together, they are estimated to account for 31% of intercity trips. Since neither bus carrier responded to requests for ridership data, this report assumes that buses average 75% capacity over the year. The Pennsylvania Turnpike Commission collects Average Annual Daily Traffic Counts (AADT) for each off-ramp and on-ramp in their network and distinguishes between cars and large trucks. The Turnpike entrance and exit AADR were used as a proxy for the origins and destinations of intercity personal vehicle travel market

¹⁸ Greyhound and Megabus do not publish ridership data. Ridership data was assumed by multiplying the number of daily buses by the number of seats on each bus by the number of days in 2012.

¹⁹ Harrisburg International Airport

²⁰ Greyhound operates more routes between the major cities but only two daily buses between the smaller towns west of Harrisburg which are also served by the Pennsylvanian.

subset.²¹ Intercity person-trips by personal vehicle are also estimated to account for 40% of the total. Amtrak publishes annual ridership statistics for each route and 70% of Pennsylvanian riders have an origin or destination west of Harrisburg.²² The Pennsylvanian carries 29% of intercity travelers between Pittsburgh and Harrisburg.

PERFORMANCE AND BENCHMARKING

Understanding the Pennsylvanian’s performance relative to other lines highlights areas where the route is either strong or needs improvement. The Pennsylvanian was compared with 17 other lines in Amtrak’s system: Adirondack, Blue Water, Capitols, Cascades, Ethan Allen, Heartland Flyer, Hiawatha, Hoosier State, Illini/Saluki, Illinois Zephyr, Keystone, Lincoln Service, Missouri River Runner, Pere Marquette, Piedmont, and San Joaquins. Like the Pennsylvanian, these lines are short-distance routes which did not experience route alterations in 2012, the year benchmarked. Four metrics are used: On-Time Performance (OTP), Utilized Capacity, Average Speed, and the level of state support. The complete tables are in Appendix A.

Table 4: Rankings of the Pennsylvanian, 2012

Rank	Metric	Pennsylvanian	Low	High
5	On-Time Performance	92%	47%	98%
2	Utilized Capacity	60%	29%	80%
13	Average Speed	47 MPH	35 MPH	59 MPH
18	State Support	\$ 0	\$ 0	\$ 32.8 M

Sources: Amtrak and Puentes

The Pennsylvanian ranks fifth in OTP, the number one driver of customer satisfaction of Amtrak.²³ It ranks a highly efficient second in Utilized Capacity, which is the ratio of used seat-miles to available seat-miles. However, at 13th, it ranks just below the middle for average speed, not surprising given the terrain, the host railroad’s usage, and lack of investment. At zero, the Pennsylvanian ranks lowest in state support.²⁴ PRIIA has mandated state support for the line so Pennsylvania will provide \$3.8 million this fiscal year. On the basis of this comparison with seventeen other short distance routes, the Pennsylvanian is highly reliable and efficient at moving people.

²¹ Pennsylvania Turnpike Commission

²² Pennsylvania House Transportation Committee Hearing, May 23, 2013

²³ Ibid.

²⁴ Puentes, Tomec, and Kane

BENEFITS

DIRECT BENEFIT: RIDERSHIP & REVENUE

Between Harrisburg and New York City, the route of the Pennsylvanian overlaps with the Keystone route, which operates 13 round trips in this corridor. Because of this high level of service, the benefit of two additional Pennsylvanians will primarily affect riders who have an origin or destination west of Harrisburg.

Riders boarding or alighting west of Harrisburg composed 70% of Pennsylvanian riders in 2012 and that proportion is assumed to be similar in 2013.²⁵ After isolating these populations, the model forecasts ridership in the short term using a multiple linear regression with annual ridership as the dependent variable and the number of trains and population within 25 miles as the independent variables. Data points are from years 2011-2013 for the same 17 routes to which the Pennsylvanian was benchmarked and include the Pennsylvanian's riders and population west of Harrisburg. Ticket prices, trip duration, and track structures were assumed to be constant. It should be noted that revenue increases at a higher rate than ridership. This is because more people from major cities will travel farther than those from minor population centers. This assumption is supported by an increasing ratio of annual revenue per passenger. Table 5 shows ridership and ticket revenues for Fiscal Year 2013 and the projection with increased service for the Pennsylvanian.

Table 5: Projected increase in ridership and ticket revenue from riders west of Harrisburg

	2013	Net Increase	Total
Ridership	218,917	195,117	414,034
Revenue	\$ 11,100,000	\$ 10,523,021	\$ 21,623,021

INDIRECT BENEFIT: REDUCED EMISSIONS

The federal government requires its agencies to incorporate the “social cost of carbon” (SCC) when applicable into their regulatory decision-making process. “The SCC is an estimate of monetary damages associated with an incremental increase in carbon emissions in a given year. It is intended to include (but is not limited to) changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services due to climate change.”²⁶ The SCC in 2012 was estimated at \$38.75 per metric ton of carbon dioxide (CO₂).

Amtrak first calculated its annual CO₂ equivalent emissions in 2010 through the Climate Registry including direct, indirect, and purchased emissions.²⁷ The Pennsylvanian is estimated to have contributed 1,523 metric tons of CO₂ in 2012, costing \$59,015.²⁸ However, if the Pennsylvanian did not

²⁵ Pennsylvania House Transportation Committee Hearing, May 23, 2013

²⁶ Interagency Working Group on the Social Cost of Carbon

²⁷ Amtrak Ink

²⁸ Climate Registry data. Emissions for the Pennsylvanian were estimated as a proportion of annual miles traveled relative to the Amtrak system.

exist, more than half of the passengers would have made their trip by car,²⁹ costing \$300,321, so the Pennsylvanian saved \$241,306 in emissions in Pennsylvania in 2012.

Table 6: Current Emissions Savings, 2012

Social Cost of Carbon per metric ton	\$ 38.75
Estimate of Pennsylvanian's CO2e Emissions (metric tons)	1,523
Environmental cost of the Pennsylvanian	\$ 59,015
Estimate of personal vehicles' CO2e Emissions (metric tons) ³⁰	7,751
Environmental cost of personal vehicles	\$ 300,321
Current Savings	\$ 241,306

With the increase in service, it is estimated that 195,117 more people will use the rails in the following year. The increase in service removes 72,844 vehicles from Pennsylvania highways and saves 16,608,359 vehicle-miles. This will save Pennsylvanians an additional \$165,716 in emissions.

Table 7: Projected Emissions Savings

Ridership increase	195,117
Cars off road	72,844
Vehicle Miles Saved	16,608,359
Average CO2e per mile (grams) ³¹	441
Additional Projected Savings	\$ 165,716

INDIRECT BENEFIT: PREVENTED ACCIDENTS

The Federal Highway Administration (FHWA) assigns values to property damage, lost household production, medical costs, administrative costs, legal costs, emergency services, travel delay, vocational rehabilitation, workplace costs, pain, and quality of life. These calculations do not include property damage-only accidents but only cases in which at least one casualty occurred. The FHWA estimates that the average cost of a single motor vehicle fatality in 2009 was \$6 million and an average injury cost \$126,000.³² There were 2,521 crashes on the Pennsylvania Turnpike in 2012, with 18 fatalities and 1,120 injuries.³³ Adjusting for inflation, this cost Pennsylvanians \$254,748,130. This does not include other state roads, highways, or local roads because the data were not available.

²⁹ Texas Transportation Institute and Economic Development Research Group, Inc. These organizations conducted on-board surveys of the Heartland Flyer and the Downeaster, respectively. Their findings with regard to an alternative trip mode were standardized and applied to the Pennsylvanian as an estimate; without the train, 56% of riders would drive.

³⁰ EPA and Greene

³¹ Ibid.

³² Cambridge Systematics

³³ PennDOT

Table 8: 2012 Pennsylvania Turnpike Crash Data

2012 Turnpike Crashes (2,521)	
2012 Turnpike Fatalities (18)	\$ 110,439,940
2012 Turnpike Injuries (1,120)	\$ 144,308,190
Cost to Pennsylvanians	\$ 254,748,130

In fiscal year 2013, the Pennsylvanian removed an estimated 81,729 vehicles from the Turnpike. Assuming the same crash and casualty rate if those vehicles were on the road, the train saved 4 fatalities, 270 injuries, and \$ 59,330,791. With the projected increase in service, *an additional* 4 fatalities and 241 injuries will be avoided, saving Pennsylvanians \$55,594,240 more.

Table 9: The Pennsylvanian's current and projected savings from personal vehicle accidents

	<u>2013</u>	<u>Projected Increase</u>	<u>Total</u>
Ridership	218,917	195,117	414,034
Vehicles Removed from Turnpike	81,729	72,844	154,573
Fatalities Avoided	4	4	8
Injuries Avoided	270	241	511
Crash Savings	\$ 59,330,791	\$ 55,594,240	\$ 114,925,031

INDIRECT BENEFIT: HIGHWAY MAINTENANCE

Appropriations within governing bodies are based on perceived need and availability of funds. Based on the assumption that PennDOT increases investment in Highway and Bridge Maintenance with a proportionate increase in Vehicle Miles Traveled (VMT), we can construct a metric through which to measure projected savings. Table 10 shows the ratio of inflation-adjusted annual investment in Highway and Bridge Maintenance to VMT since 2007.

Table 10: Investment in Maintenance to VMT

	2007	2008	2009	2010	2011	2012	2013
INVESTMENT (MILLIONS) (2013\$)	\$ 1,725	\$ 1,859	\$ 1,876	\$ 1,733	\$ 1,429	\$ 1,552	\$ 1,412
VMT (MILLIONS)	135	133	127	123	123	144	144
INVESTMENT/VMT	\$ 12.78	\$ 14.01	\$ 14.81	\$ 14.08	\$ 11.64	\$ 10.80	\$ 9.83

Sources: Pennsylvania Budgets and PennDOT

Accounting for the estimated proportion of Pennsylvanian riders who would make their trip by personal vehicle if the train did not exist and the average trip-mileage on the train,³⁴ Investment/VMT is used to estimate how much the Pennsylvanian saved in Highway and Bridge Maintenance. In 2013, Pennsylvania saved nearly \$182 million in spending to maintain state-owned highways and bridges. In the increased service scenario, Pennsylvania will save an additional \$201 million.

³⁴ Texas Transportation Institute, Economic Development Research Group, Inc., and NARP

Table 11: Current and Projected Maintenance Savings

	<u>2013</u>	<u>Projected Increase</u>	<u>Annual Total</u>
Ridership	218,917	195,117	414,034
Saved VMT	18,506,718	16,494,723	35,001,441
Savings	\$ 181,934,002	\$ 201,353,229	\$ 427,267,141

INDUCED BENEFIT: HOUSEHOLD SAVINGS

To estimate household transportation savings, it is useful to model differences in direct intercity transportation costs of an individual traveling round trip between Pittsburgh and Philadelphia by different modes. In different scenarios, the traveler may be budget-conscious or budget-lassiez-faire and might value her time to account for different levels of stress and productivity. Travel cost calculations include the ticket price, tolls, maintenance, the possibility of delay, and time. For detailed tables and explanations showing the direct costs associated with travel mode choice, see Appendix B.

All households traveling between Pittsburgh and Philadelphia by car or plane would save money traveling by rail, whether they are budget-conscious or budget-lassiez-faire, whether there are delays, and whether they value their time or not. Travel costs by car assume 1.5 occupants per vehicle. Taking the bus may save money. Table 12 shows how much each traveler saves by mode and by temperament.

Table 12: Projected Rail Travel Savings per Trip by Mode and Temperament

	Car v Rail Savings	Plane v Rail Savings	Bus v Rail Savings (Costs)
Budget-conscious, no time valuation	\$ 277	\$ 106	\$ (68)
Budget-lassiez-faire, no time valuation	\$ 218	\$ 312	\$ (56)
Budget-conscious, time valuation	\$ 587	\$ 216	\$ (28)
Budget-lassiez-faire, time valuation	\$ 658	\$ 542	\$ 24
Average	\$ 435	\$ 294	\$ (32)

On-board surveys of other American rail lines suggest that if the Pennsylvanian did not exist in 2013, 125,525 riders would make the trip by car, 10,840 by plane, and 31,047 by bus.³⁵ The remaining 50,501 are rail-induced riders- they would not make the trip at all without the train.³⁶ In 2013, riders of the Pennsylvanian saved \$38.6 million by taking the Pennsylvanian instead of an alternative mode between Pittsburgh and Philadelphia. In the increased service scenario, riders would save *an additional* \$34.4 million. These projected savings could be spent purchasing other goods and services.

³⁵ Ibid.

³⁶ These mode shift populations might not add up to the total number of rail riders in 2013 due to rounding.

Table 13: Aggregate Pennsylvanian Household Savings

	<u>2013 Without Pennsylvanian</u>	<u>Shift After Service Increase</u>	<u>Household Savings</u>	<u>2013 Aggregate Savings</u>	<u>Increased Service Aggregate Savings</u>
Car	125,525	111,847	\$ 435	\$ 36,375,590	\$ 32,411,913
Plane	10,840	9,659	\$ 294	\$ 3,187,008	\$ 2,839,735
Bus	31,047	27,664	\$ (32)	\$ (993,496)	\$ (885,240)
Induced	50,501	44,999			
Total				\$ 38,569,101	\$ 34,366,408

With increased household spending, businesses increase their wealth and so can hire more and increase business-to-business purchases. This enhanced activity subsequently promotes economic development along the line. Moreover, with increased service, these businesses have increased access to labor markets. These factors all contribute to improving the attractiveness of the region, stimulating investment, and promoting growth.

BENEFITS SUMMARY

Ridership is expected to increase by 195,117 tickets within a year of implemented service expansion. Revenue from these tickets, food and beverage service, and increased spending from existing riders will increase by \$10,523,021.

	2013	Net Increase	Total
Ridership	218,917	195,117	414,034
Revenue	\$ 11,100,000	\$ 10,523,021	\$ 21,623,021

Pennsylvania will also realize indirect and induced benefits of increased service. Travelers utilizing the train instead of their car will create savings for the State through emissions, accidents, and highway and bridge maintenance reductions. Additionally, individual households will save money that they could spend supporting other sectors of the economy. Below is a summary of the benefits.

Table 14: Summary of Projected Additional Benefits

<u>Benefit</u>	<u>Net Benefit</u>
Revenue	\$ 10,523,021
Emissions	\$ 165,716
Accidents	\$ 55,594,240
Highway Maintenance	\$ 201,353,229
Household Savings	\$ 34,366,408
Total Projected Additional Benefits	\$ 302,002,614

COSTS

To realize the benefits of increased service, the State of Pennsylvania must make capital and operational investments. The PRIIA Section 209 Cost Methodology Policy governs financing structures for these investments. This policy is an agreement reached between the States Working Group and Amtrak. According to the policy, Pennsylvania is responsible for a pro rata share of the capital and operating costs after revenue associated with increased service.

CAPITAL COSTS

For the purposes of this report, it is assumed that Amtrak has no suitable locomotives or passenger cars available for the service increase. The electric Keystone rolling stock cannot run on the non-electric tracks west of Harrisburg and do not integrate with the Pennsylvanian rolling stock. To increase service, Amtrak and Pennsylvania must purchase additional locomotives and passenger cars. The Pennsylvanian operates on 353 miles in Pennsylvania and 91 miles on the NEC between Philadelphia and New York City. Pennsylvania is responsible for 79.5% of the price of new locomotives and passenger cars operating as the Pennsylvanian.

In December, 2013, the Illinois Department of Transportation published the results of a multi-state request for proposals to build 32 new locomotives.³⁷ The purchasing states will pay the winning bidder \$7 million per locomotive with funding from the American Recovery and Reinvestment Act. The cost of passenger and cafe cars is assumed to be \$2.75 million. Since four train sets can achieve three daily round trips in a four day rotation, Amtrak needs only two more sets. It is assumed that each new train set would include five passenger cars and a cafe car, like the current Pennsylvanian. See Appendix C for a possible schedule and rotation.

Table 15: Rolling Stock Pricing, Scenario 1

	<u>Unit Price</u>	<u>Units</u>	<u>PA's Portion</u>	<u>PA's Cost</u>
Locomotive	\$ 7,047,181	2	79.50%	\$ 11,205,653
Passenger Car	\$ 2,750,000	12	79.50%	\$ 26,236,486
Total				\$ 37,442,139

Amtrak purchases rolling stock with Congressional appropriations. The table above reflects the cost if Pennsylvania followed this model. Alternatively, the State may elect to finance this purchase with debt. Assuming a 30 year term and 5% interest rate, the annual payment is estimated to be \$2.4 million.

Table 16: Financing Cost, Scenario 1

Loan Amount	\$ 37,442,139
Interest Rate	5.0%
Periods (Years)	30
Annual Payment	\$ 2,435,665

³⁷ Illinois Department of Transportation

The possible schedule in this report contains two day trips and one overnight trip in each direction. However, Amtrak and PennDOT may implement a different schedule, necessitating the purchase of four additional train sets and doubling the capital and annual financing costs.

Table 17: Rolling Stock Pricing, Scenario 2

	<u>Unit Price</u>	<u>Units</u>	<u>PA's Portion</u>	<u>Cost</u>
Locomotive	7,047,181	4	79.50%	\$ 22,411,305
Passenger Car	2,750,000	24	79.50%	\$ 52,472,973
Total				\$ 74,884,278

Table 18: Financing Cost, Scenario 2

Loan Amount	\$ 74,884,278
Interest Rate	5.0 %
Periods (Years)	30
Annual Payment	\$ 4,871,330

OPERATING COSTS

In addition to describing financing for capital and operational investments, PRIIA Section 209 Cost Methodology Policy also describes the responsibilities for payment of operating costs. Each year Pennsylvania will pay next year’s projected deficit, which is the difference between costs and revenues. The Pennsylvanian falls in the category of Base-Increment NEC Trains as its route is partly on the Northeast Corridor and partly state-supported. Because they share customers, Pennsylvania receives “through-revenue” from Amtrak when a passenger’s origin or destination lies on the Northeast Corridor. Pennsylvania must pay Third Party Costs, Route Costs, and Support Fees. These include payments to the host railroad, fuel and electric power, on board and station labor, and equipment maintenance. Because most labor costs are already assumed to triple with the increased service, there are no operating cost changes in an alternative schedule scenario. These are all included in the cost and revenue calculations.

Based on PRIIA cost estimates and revenue forecasts, Pennsylvania is paying \$3.8 million to fill the operating deficit of the Pennsylvanian in fiscal year 2013-14. To illustrate this state support, in FY2013, the Pennsylvanian cost \$15.9 million to operate and made \$11.1 in revenue.³⁸ If PRIIA had been in effect during this time, the State would have paid \$4.8 million to cover the deficit. Based on data provided by Amtrak and the projections in this analysis, the net marginal increase in the deficit to triple service is estimated at \$4.2 million per year. This figure accounts for the increase in revenues, increase in variable operating costs and assumes no track improvements, no marketing strategy, and no station upgrades, each of which could increase ridership and thereby decrease the price tag. The figure also does not include the financing cost associated with the purchase of rolling stock.

³⁸ Amtrak Monthly Performance Report, September 2013. These amounts are preliminary and unaudited. The costs exclude OPEB’s, Capital Charge, and other costs.

Table 19: Projected Pennsylvanian Operating Deficit to Increase Service

FY14 Operating Deficit	\$ 3,800,000
Marginal Operating Deficit	\$ 4,222,000
Total Projected State Operating Support	\$ 8,022,000

COSTS SUMMARY

Rolling stock costs are estimated at \$37.4-74.9 million, depending on the train schedule that Amtrak and PennDOT pursue. The State could finance the capital investment with debt, costing \$2.4-4.9 million annually. In fiscal year 2014, Pennsylvania will pay expected operating support of \$3.8 million. With increased service, operating support is expected to increase by \$4,222,000.

Table 20: Summary of Projected State Support to Increase Service

<u>Cost</u>	<u>Net Cost (Low)</u>	<u>Net Cost (High)</u>
Capital Cost, debt-financed	\$ 2,435,665	\$ 4,781,330
FY14 Operating Deficit	\$ 3,800,000	\$ 3,800,000
Marginal Operating Deficit	\$ 4,222,000	\$ 4,222,000
Total Annual State Support	\$ 10,457,665	\$ 12,803,330

CONCLUSIONS

Passenger rail in Pennsylvania is a vital component of the transportation network. It provides a reliable and cost-effective option for intercity travel in the communities it serves. Substantial investment in the passenger rail network in eastern Pennsylvania, attention from the Federal Railroad Administration, and the recent Comprehensive Transportation Bill, PA Act 89, all support this idea. In western Pennsylvania, there were 12 round trip trains 45 years ago whereas now there is just one.

Despite the drop in service, ridership of the Pennsylvanian has nearly doubled over the past ten years and occupies 29% of the intercity travel market in western Pennsylvania. While some riders are reliant upon the train for lack of other options, others choose to use it due to its reliability, comfort, ease, and other benefits. Passenger rail offers these benefits to riders of all ages, abilities, and incomes.

In addition to the qualitative benefits, the Pennsylvanian saves Pennsylvania and residents \$285 million in reduced vehicle emissions, prevented accidents, reduced highway maintenance, and household savings. These indirect but real benefits are a direct consequence of the State's \$3.8 million support in fiscal year 2014.

Tripling service of the Pennsylvanian will improve Pennsylvania's attractiveness for investment as well as improve the quality of life benefits for its residents. The indirect benefits mentioned in the above paragraph will double, and direct revenue will also double to \$21.6 million. This potential increase in revenue requires \$10.5-\$12.8 million in State support. While the direct cost to the State is roughly proportional to the service increase, the indirect benefits more than outweigh the investment.

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Appendix A – Complete Rankings

On-Time Performance in FY2012

Rank	Route	OTP
1	Illinois Zephyr	98.3%
2	Capitols	96.3%
3	Missouri River Runner	95.8%
4	Keystone	93.0%
5	Pennsylvanian	91.7%
6	Downeaster	90.3%
7	Hiawatha	89.8%
8	San Joaquins	88.6%
9	Blue Water	85.0%
10	Lincoln Service	82.1%
11	Cascades	79.6%
12	Illini/Saluki	75.0%
13	Piedmont	74.6%
14	Hoosier State	70.6%
15	Ethan Allen	65.0%
16	Adirondack	63.3%
17	Pere Marquette	53.3%
18	Heartland Flyer	46.7%

Source: Amtrak

Average Speed

Rank	Route	MPH
1	San Joaquins	59
2	Illinois Zephyr	57
3	Hiawatha	57
4	Illini/Saluki	56
5	Piedmont	56
6	Keystone	56
7	Capitols	54
8	Lincoln Service	54
9	Missouri River Runner	50
10	Blue Water	49
11	Heartland Flyer	48
12	Hoosier State	48
13	Pennsylvanian	47
14	Cascades	46
15	Downeaster	46
16	Pere Marquette	44
17	Ethan Allen	42
18	Adirondack	35

Source: Amtrak

Utilized Capacity

Utilized Capacity is calculated as the ratio of passenger seat-miles to available seat-miles. As such, it depends partially on the length of segments for which tickets are purchased. For example, fewer purchased tickets can yield a higher utilized capacity if the riders ride for longer segments. Similarly, two passengers may occupy the same seat if their routes do not overlap. The utilized capacity does not account for the spread of riders on specific trains; on a commuter-oriented line, rush-hour trains may be over-capacity while others may be under-utilized.

Rank	Route	Utilized Capacity
1	Adirondack	80%
2	Pennsylvanian	60%
3	Pere Marquette	58%
4	Cascades	54%
5	Missouri River Runner	50%
6	Piedmont	48%
7	Lincoln Service	48%
8	Hoosier State	47%
9	Blue Water	46%
10	Heartland Flyer	46%
11	Illini/Saluki	43%
12	Illinois Zephyr	41%
13	Keystone	40%
14	San Joaquins	39%
15	Hiawatha	38%
16	Downeaster	38%
17	Ethan Allen	33%
18	Capitols	29%

Source: Amtrak

Level of State Support

Rank	Route	State Support, 2011 (\$m)
1	San Joaquins	\$ 32.8
2	Capitols	\$ 28.1
3	Lincoln Service	\$ 14.9
4	Downeaster	\$ 13.5
5	Cascades	\$ 12.6
6	Keystone	\$ 9.2
7	Missouri River Runner	\$ 8.6
8	Illinois Zephyr	\$ 8.5
9	Hiawatha	\$ 7.7
10	Adirondack	\$ 7.6
11	Illini/Saluki	\$ 6.7
12	Blue Water	\$ 5.4
13	Heartland Flyer	\$ 3.8
14	Piedmont	\$ 2.7
15	Pere Marquette	\$ 2.6
16	Ethan Allen	\$ 1.5
17	Pennsylvanian	\$ 0
18	Hoosier State	\$ 0

Source: Puentes, Tomec, and Kane

Appendix B – Cost of Travel Mode Choice

These cost estimates are based on travelers between Pittsburgh and Philadelphia with varying priorities for price and time and the chance of delay. It is assumed that ticket prices by rail and bus do not fluctuate. “Budget-conscious” is the lowest cost estimate while “budget-lassiez-faire” is the highest cost estimate, including delay and tolls. Each type of traveler may or may not value their time according to their stress and productivity levels during the journey.

Car

The distance between Pittsburgh and Philadelphia is 305 miles using the Turnpike. The low toll is for a driver with an EZ-Pass while the high toll is for a driver without it.³⁹ Maintenance was calculated using the 2013 IRS rate of \$0.565 per mile.⁴⁰ The IRS rate includes the fixed and variable costs of operating an automobile including fuel consumption. With high stress and unproductive use of time, the time valuation of driving is estimated at \$70 per hour. Driving time varies; it is estimated to take 4.5-6 hours with the “budget-conscious” traveler driving faster.

Air

Ticket prices by air are based on data from the FAA for the most recent 18 quarters for which data are available (1Q 2009-2Q 2013). For the budget traveler, the price is the 25th percentile and for the budget-lassiez-faire traveler, it is the 75th percentile price. Flying time varies between the budget-conscious and lassiez-faire traveler. At the low end, it takes 1.3 hours of flying, two hours in both airports, and one hour between the airport and origin or destination. At the high end, a two hour delay in each direction is added. With high stress and the possibility of some productive time, the time valuation of flying is estimated at \$50 per hour.

Rail

With very little stress and the possibility of very productive time, the time valuation of riding the train is estimated at \$20 per hour. At the low end, the train takes eight hours between Pittsburgh and Philadelphia. At the high end, a two hour delay in each direction is included.

Bus

With moderate stress and a possibility of some productivity, the time valuation of riding a bus is estimated at \$30 per hour. The bus takes eight hours in each direction. At the high end, a two hour delay is included.

³⁹ PA Turnpike

⁴⁰ Internal Revenue Service

Budget-conscious, no time valuation

	Rate	Car	Plane	Rail	Bus
Ticket		-	\$ 216	\$ 110	\$ 42
Tolls		\$ 42	-	-	-
Maintenance (IRS mileage rate)	\$ 0.565	\$ 345	-	-	-
Total		\$ 387	\$ 216	\$ 110	\$ 42

Budget-Laissez-faire, no time valuation

	Rate	Car	Plane	Rail	Bus
Ticket		-	\$ 498	\$ 186	\$ 130
Tolls		\$ 59	-	-	-
Maintenance (IRS mileage rate)	\$ 0.565	\$ 345	-	-	-
Total		\$ 404	\$ 498	\$ 186	\$ 130

Budget-conscious, with time valuation

	Rate	Car	Plane	Rail	Bus
Ticket		-	\$ 216	\$ 110	\$ 42
Tolls		\$ 42	-	-	-
Maintenance (IRS mileage rate)	\$ 0.565	\$ 345	-	-	-
Time (Car, \$/hour)	\$ 70	\$ 630			
Time (Plane, \$/hour)	\$ 50		\$ 430		
Time (Rail, \$/hour)	\$ 20			\$ 320	
Time (Bus, \$/hour)	\$ 30				\$ 360
Total		\$ 1,017	\$ 646	\$ 430	\$ 402

Budget-Laissez-faire, with time valuation

	Rate	Car	Plane	Rail	Bus
Ticket		-	\$ 498	\$ 186	\$ 130
Tolls		\$ 59	-	-	-
Maintenance (IRS mileage rate)	\$ 0.565	\$ 345	-	-	-
Time (Car, \$/hour)	\$ 70	\$ 840			
Time (Plane, \$/hour)	\$ 50		\$ 630		
Time (Rail, \$/hour)	\$ 20			\$ 400	
Time (Bus, \$/hour)	\$ 30				\$ 480
Total		\$ 1,244	\$ 1,128	\$ 586	\$ 610

Appendix C – Sample Route Schedule and Rotation

Westbound				
New York	Dep	7:00 AM	12:00 PM	9:00 PM
Newark		7:18 AM	12:18 PM	9:18 PM
Trenton		7:52 AM	12:52 PM	9:52 PM
Philadelphia	Arr	8:20 AM	1:20 PM	10:20 PM
	Dep	8:50 AM	1:50 PM	10:50 PM
Paoli		9:20 AM	2:20 PM	11:20 PM
Lancaster		10:00 AM	3:00 PM	12:00 AM
Elizabethtown		10:14 AM	3:14 PM	12:14 AM
Harrisburg	Arr	10:34 AM	3:34 PM	12:34 AM
	Dep	10:44 AM	3:44 PM	12:44 AM
Lewistown		11:54 AM	4:54 PM	1:54 AM
Huntingdon		12:30 PM	5:30 PM	2:30 AM
Tyrone		12:56 PM	5:56 PM	2:56 AM
Altoona		1:14 PM	6:14 PM	3:14 AM
Johnstown		2:08 PM	7:08 PM	4:08 AM
Latrobe		2:49 PM	7:49 PM	4:49 AM
Greensburg		3:00 PM	8:00 PM	5:00 AM
Pittsburgh	Arr	4:13 PM	9:13 PM	6:13 AM

Eastbound				
Pittsburgh	Dep	7:00 AM	12:00 PM	9:00 PM
Greensburg		7:41 AM	12:41 PM	9:41 PM
Latrobe		7:51 AM	12:51 PM	9:51 PM
Johnstown		8:34 AM	1:34 PM	10:34 PM
Altoona		9:31 AM	2:31 PM	11:31 PM
Tyrone		9:47 AM	2:47 PM	11:47 PM
Huntingdon		10:14 AM	3:14 PM	12:14 AM
Lewistown		10:51 AM	3:51 PM	12:51 AM
Harrisburg	Arr	12:25 PM	5:25 PM	2:25 AM
	Dep	12:35 PM	5:35 PM	2:35 AM
Elizabethtown		12:53 PM	5:53 PM	2:53 AM
Lancaster		1:10 PM	6:10 PM	3:10 AM
Exton		1:42 PM	6:42 PM	3:42 AM
Paoli		1:54 PM	6:54 PM	3:54 AM
Philadelphia	Arr	2:25 PM	7:25 PM	4:25 AM
	Dep	2:55 PM	7:55 PM	4:55 AM
Trenton		3:26 PM	8:26 PM	5:26 AM
Newark		4:00 PM	9:00 PM	6:00 AM
New York	Arr	4:20 PM	9:20 PM	6:20 AM

Day A						
Train	PGH-NYP			NYP-PGH		
Dep	7:00 AM	12:00 PM	9:00 PM	7:00 AM	12:00 PM	9:00 PM
Arr	4:13 PM	9:13 PM	6:13 AM	4:20 PM	9:20 PM	6:20 AM
1	x					x
2		x				
3			x	x		
4					x	

Day B						
Train	PGH-NYP			NYP-PGH		
Dep	7:00 AM	12:00 PM	9:00 PM	7:00 AM	12:00 PM	9:00 PM
Arr	4:13 PM	9:13 PM	6:13 AM	4:20 PM	9:20 PM	6:20 AM
1		x				
2			x	x		
3					x	
4	x					x

Day C						
Train	PGH-NYP			NYP-PGH		
Dep	7:00 AM	12:00 PM	9:00 PM	7:00 AM	12:00 PM	9:00 PM
Arr	4:13 PM	9:13 PM	6:13 AM	4:20 PM	9:20 PM	6:20 AM
1			x	x		
2					x	
3	x					x
4		x				

Day D						
Train	PGH-NYP			NYP-PGH		
Dep	7:00 AM	12:00 PM	9:00 PM	7:00 AM	12:00 PM	9:00 PM
Arr	4:13 PM	9:13 PM	6:13 AM	4:20 PM	9:20 PM	6:20 AM
1					x	
2	x					x
3		x				
4			x	x		