National University Rail Center - NURail
US DOT OST-R Tier 1 University Transportation Center

**NURail Project ID:**
**NURail2012-MIT-R02 High-Speed Rail and Productivity**

# Intercity Passenger Rail Productivity in the Northeast Corridor: Implications for the Future of High-Speed Rail

**By**

**Andrés Felipe Archila Téllez**

**Supervised by Professor Joseph M. Sussman**

**10/1/2015**
**Grant Number: DTRT12-G-UTC18**

*DISCLAIMER*

*The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the information presented herein. This document is disseminated under the sponsorship of the U.S. Department of Transportation's University Transportation Centers Program, in the interest of information exchange. The U.S. Government assumes no liability for the contents or use thereof.*

National University Rail Center - NURail
US DOT OST-R Tier 1 University Transportation Center

## TECHNICAL SUMMARY

### Title

Intercity Passenger Rail Productivity in the Northeast Corridor:
Implications for the Future of High-Speed Rail

Author: Andrés Felipe Archila Téllez

### Introduction

The ongoing discussion about the future implementation of high-speed rail (HSR) in the Northeast Corridor (NEC) is full of questions on the feasibility of HSR and the ability of Amtrak to implement it. Indeed, the introduction of the Acela Express in the past decade was not free from operating problems, but even with trains running below their full potential, the Amtrak NEC had substantial market growth. Thus, it is not clear if a true HSR service is feasible in the NEC, and if the current prospects are potentially effective.

This report uses classical productivity analysis to consider the future potential of HSR in the NEC as further discussed below.

### Approach and Methodology

To evaluate the performance of the NEC and its main services in FY 2002-2012, and make inferences about HSR in the NEC for the next 30 years, we use productivity analysis. We employ a non-parametric single factor productivity (SFP) Törnqvist trans-log index approach with several metrics. We set ridership, revenue, revenue passenger-miles (RPM), and available seat-miles (ASM) as outputs, and operating costs as input. In this way, we provided guidelines and a robust structure of analysis that can be useful for subsequent passenger rail productivity studies.

### Findings

The findings of this research are described below:

- *Productivity analyses are useful for assessing performance and determining the drivers of performance in intercity passenger rail transportation, but the literature is sparse.*

Productivity analyses allow managers and decision-makers to understand the behavior and the drivers of productivity change in the NEC, and to better prepare or respond to potential realizations of the future. In general, productivity improvements explain long-term improvements in intercity passenger transportation. In the past, they have translated into benefits to operators and users. For the future, they can reveal if a strategy is realistic or not, and even if a strategy is preferred over another. However, the literature on passenger rail transportation productivity is not extensive, is sparse, and the myriad of approaches to productivity analyses, selected by various researchers, make it hard not only to comprehend, but also to compare results across studies.

- *Not only is the productivity literature sparse, but also has guidelines that are confusing, sometimes contradictory, and rarely specific for transportation studies. Thus the following (not exhaustive) guidelines for analyzing productivity and communicating results in intercity passenger transportation may be useful for subsequent studies.*

Reference explicitly and (where possible) jointly the output and input data categories, the productivity metrics, and the method of a productivity analysis, in order to prevent confusion and to understand if results are comparable across studies.

Select the output and input data categories, then the productivity metric(s), and finally the method of productivity analysis.

**DATA:** Keep in mind that it is unclear exactly which are the outputs and inputs of a transportation process (unlike in economic studies, where at least there is a consensus on GDP, labor, and capital). For intercity passenger transportation, different outputs (not to be mistaken for multiple outputs) coexist and have different meanings: Available Seat-Miles are a proxy for transportation capacity, Revenue Passenger-Miles measure the ability to use the available capacity, and Revenue measures the ability to economically exploit the capacity.

The inputs are even more ambiguous than the outputs. There are many possible input (or cost) breakdowns, which, as with outputs, will give different meanings to the productivity metrics derived. Previous analyses have used the economic approach to inputs (labor, capital) with an additional category for fuel. The input breakdown is relevant when working with MFP and TFP, but not when using SFP.

We encourage developing alternative outputs and/or inputs in order to measure the quality of the service provided (LOS) and to account for the quality of the inputs. However, we recognize that the data might not be readily available, as they do not correspond to incumbent managerial reporting schemes.

Select physical outputs and inputs over monetary quantities where possible, but keep in mind that they are harder to get. Deflate monetary quantities as detailed as possible.

**METRICS:** Do not use partial productivity interchangeably with SFP, and MFP with TFP. Partial productivity is an arbitrary metric in multi-output multi-input or multi-output single-input processes that necessarily excludes some outputs or inputs. SFP, instead, is a metric of a single-output single-input process; MFP is used in single-output multi-input processes; and TFP is used in multi-output multi-input processes. SFP, MFP, and TFP do not exclude (at least intentionally) factors of production. Partial productivity does.

SFP is the preferred choice in single-output single-input processes and in multi-output multi-input processes that can be unmistakably reduced to a single output single-input process. MFP and TFP are definitively preferred over the (inappropriate) partial measures of productivity in multi-output multi-input processes that cannot be unmistakably reduced to a single output single-input process.

**METHOD:** Select the method to analyze productivity depending on the question of interest, the type of data, the data availability, the computational resources, and additional context-specific constraints. Robustness and computational easiness are desired attributes of a method of analysis. Parametric methods are very powerful; they can provide detailed information on the drivers of productivity change, but are data-intensive and computationally complex. Non-parametric methods may sacrifice the amount of information they return, but are less data-intensive and computationally friendlier than parametric methods.

Use complementary analysis, like reviewing historical events or using various productivity metrics, to compensate for the disadvantages of a particular method.

Obtain the cumulative SFP by compounding year-to-year SFP instead of by directly computing an inter-year SFP.

- *In FY 2000-2012, there was substantial but not uniformly distributed ridership and revenue growth for Amtrak. Currently, system-wide unprofitability and capacity constraints in the NEC remain as two of the most pressing challenges that Amtrak faces.*

Amtrak's system-wide ridership and real ticket revenue grew 55% and 38%, respectively, in FY 2000-2012. Short and special routes became more profitable and utilized than longer routes. The NEC contributed nearly half of Amtrak's ridership. Even with HSR trains running below their full potential, the NEC showed increasing revenue, ridership, operating profits, and air/rail market shares. Similarly, the incremental ridership of the Acela Express proved to be highly profitable, much more than that of the Northeast Regional and other services.

However, Amtrak still requires about $1.2 billion annually in governmental subsidies (to which they respond that other modes are heavily subsidized as well). The NEC, the most heavily utilized railway corridor of the U.S., is still facing capacity constraints, aging infrastructure, and maintenance backlogs. Frequently, the political issues of the entire Amtrak system transfer to the NEC and make it difficult for the NEC to be discussed independently.

- *Route changes, technical problems with train sets, targeted capital investments, and economic recession and recovery in the NEC translated into volatile, but considerable productivity growth in FY 2002-2012.*

The analysis of four distinct SFP metrics (i.e., ridership, revenue, revenue passenger-miles, and available seat-miles SFP with respect to operating costs) through a non-parametric Törnqvist trans-log index showed that the NEC had very volatile, but upward productivity growth in FY 2002-2012. Overall, the NEC was less productive by FY 2010 than in FY 2005, had substantial productivity dips in FY 2006 and FY 2009 (-10% to -20%), but boosted its productivity in the last three years (as high as 20% in one year). As shown in Table 5.1, the yearly average SFP growth of the NEC was in the range of ~1-3%. Although results are not directly comparable with previous studies of rail transportation in the U.S., the NEC experienced higher average productivity improvements in FY 2002-2012 than the U.S. railroads (combined freight and passenger outputs) in 1951-1974 (2.5% RPM SFP v. 1.5% [RPM & RTM] TFP) (Caves et al. 1980).

**Table 5.1- Summary of NEC SFP Growth in FY 2002-2012**

| Yearly | Ridership | Revenue | RPM SFP | ASM SFP |
|---|---|---|---|---|

| Average SFP Growth | SFP | SFP | | |
|---|---|---|---|---|
| | | 2005-2012 | | |
| NEC | 0.9% | 2.8% | 2.5% | 0.4% |
| Express | 1.3% | 2.9% | 2.8% | -1.1% |
| Regional | 1.0% | 2.1% | 2.4% | 1.3% |
| | | 2002-2012 | | |
| NEC | 2.4% | 2.0% | --- | --- |
| Express | 2.0% | 1.7% | --- | --- |
| Regional | 3.0% | 2.4% | --- | --- |

- *In the past decade, Amtrak increased its ability to fill up and economically exploit the available capacity in the NEC. On the other hand, supply-side productivity did not follow it.*

The NEC became cumulatively ~20% more productive on RPM SFP (demand side) and only ~3% more productive on ASM SFP (supply side) in the past seven years. In fact, the ASM SFP of the express services actually decreased. Amtrak was far more effective at using the available capacity in the NEC (by filling up trains with more passengers over longer distances) than at generating it (running trains cheaper).

- *The NEC-spine trains were volatile to external events, had large economies of scale, and presented slow adjustment of capacity that were not homogenous, but rather depended on specific routes.*

Even though the effect of the economic recession of 2009 was a regrettable 2-3-year setback in ridership and revenue for all routes in the NEC, the effects of lost or gained ridership on ticket revenue were more pronounced for express services than for regional services. Also, the SFP of express services was more volatile than that of regional services. This shows that the Acela Express is more sensitive than the Northeast Regional to external factors, thus revealing risks but also opportunities for improved performance of future HSR.

The increased demand combined with a low marginal cost per RPM was evidence of economies of scale that boosted productivity on the demand side in recent years. Most of the new ridership was accommodated on existing capacity, at low extra costs. However, increasing load factors suggest that the productivity increments achieved through economies of scale might be limited in the future unless the capacity of the corridor is enhanced. Such capacity enhancements remain an unmet challenge for the NEC.

- *NEC users are traveling longer distances by rail, and trains are becoming more competitive in traditional short-haul air markets.*

This is evidenced by the fact that cumulative RPM SFP exceeded ridership SFP over the last decade, and also by the increased air/rail market share of Amtrak in the New York-Washington and New York-Boston routes. In the Boston-Washington market, Amtrak is still not too competitive with air travel.

- *The ability to implement and operate HSR in the NEC is similar as the state of the regional economy so far as productivity concerns go; however, the demand side productivity of the NEC was more volatile with respect to external factors than the supply side.*

The reestablishment of the Acela Express in FY 2006 reduced productivity more than the economic recession of 2009, and ASM SFP only recovered after infrastructure investments in recent years.

The economic dip of 2009 greatly affected the demand side of the NEC (RPM, ridership, and revenue SFP) but had little influence on the productivity of the supply side (ASM SFP). Ridership, revenue, and RPM SFP also increased at higher rates than ASM SFP in favorable years.

Although the introduction of 40 additional Acela-Express coach cars to lengthen the train sets in FY 2014 is promising (Amtrak 2011c), it might not increase ASM productivity if not coordinated with infrastructure enhancements and modifications to maintenance facilities.

- *The characteristics of the NEC reveal a potential for the successful introduction of a true HSR service; however, determining a consensual implementation strategy is challenging but mandatory to move forward effectively.*

The extrapolation of the past productivity determined a ballpark estimate of what the productivity in the future could be, and suggested drivers of productivity change that could help sustain such productivity growth rates. Thus, productivity changes in the past suggested future improvements in the NEC, potentially driven by well-known internal and external factors.

Now, although the geographic and socioeconomic characteristics of the NEC make it an ideal candidate for HSR, it is a multi-stakeholder, multi-state, multi-purpose corridor under a funding-constrained scenario and a polarized debate. So, current initiatives and studies attempt to find a way to enhance the NEC, e.g., the NECMP (2010), the Amtrak Vision for HSR in the NEC (2010, 2012), the multi-stakeholder effort NEC FUTURE (2012-present), and Sussman et al. (2012a, 2012b).

However, most of the planning efforts are at the early stages of development. Alternatives are still to be scoped, consensus to be reached, and significant choices made. For some critics, substantial trip time reductions are scheduled to be realized too far in the future. Current estimates of investments are highly variable. Alignments, services, and institutional arrangements have not yet been determined. So, there is uncertainty in this long-term planning and implementing process, but a common strategy among stakeholders is still needed to advance HSR in the NEC effectively.

- *Amtrak's prospects for HSR in the NEC are realistic but perhaps not too ambitious. The NEC VISION may be risky.*

Our analysis of the NECMP of 2010 revealed that higher productivity levels could be expected, and that the prospects for bringing the corridor to a state of good repair and accommodate some capacity growth were feasible. However, such interventions will prevent the NEC from truly deploying an international-quality HSR service, and there might be a greater potential for increased productivity and services, which the NECMP did not consider.

Our analysis of the NEC VISION of 2012 showed that the performance on the NEC is still sensitive to many factors, and the projected productivity levels are volatile and especially low at the beginning of the proposed interventions. Thus, productivity benefits may take years to realize. If the financial leverage is not there to temporarily support adverse events, or if the market and managers take too much time to adapt to changing conditions, there might be reasons to doubt on a successful implementation of HSR.

Also the NEC VISION is in some ways a bit unambitious, since the projected cumulative productivity growth is low in comparison to the growth in the past decade (20--40% in the next 30 years v. 20% in the past 10 years). In addition, international comparisons of HSR in corridors similar to the NEC suggest that Amtrak's projections of ridership and revenue are reasonable, but might be on the low side.

**Conclusions**

After a process of data rationalization and scoping of the analysis at the route levels, we demonstrated that a non-parametric SFP Törnqvist trans-log index with varying metrics was useful to assess the productivity of the NEC-spine trains from FY 2002 to 2012. This structure of analysis is first of its kind for intercity passenger rail transportation productivity in the U.S., which has never been studied in isolation before, or for the selected time period (to the best of the author's knowledge). Despite data constraints and inconsistencies, the analysis provided robust results that could be associated to notable episodes of the past decade. It went on to evaluate specific sets of routes and it overcame various limitations of parametric methods through the use of multiple SFP metrics and year-to-year calculations. Within the limited productivity literature for rail transportation in general, the analysis has provided a robust platform for future productivity studies of passenger services. An immediate extension of this method could be the analysis of other routes or sub-networks of Amtrak in the same time period.

The productivity analysis was useful to understand the system's behavior. In general, the NEC experienced volatile productivity changes in FY 2002-2012; by FY 2010 it was less productive than in FY 2005, but in the last three years its productivity boosted. Several events provided reasons for that varying productivity: route changes, technical problems with train sets, capital investments in the NEC, and economic recession and recovery. The results suggested critical characteristics of the NEC: volatility to external events, large economies of scale, and slow adjustment of capacity. Such characteristics, however, were not homogenous and rather depended on specific routes. For instance, the productivity of express services was more volatile than that of regional services, thus showing a greater range of performance. In addition, increasing ALF suggest that the productivity increments achieved through economies of scale might be limited in the future unless the capacity of the corridor is enhanced. This is a worrisome situation for a corridor that exhibits slow capacity adjustments and that not until 2015 will define a clear capital investment strategy.

These results are useful in thinking about if and how to move forward with HSR in the NEC. Express services proved to have a wide range of performance, thus revealing risks and opportunities for an uncertain future. The fact that NEC users are traveling longer distances is promising for HSR, as it shows that trains are now more competitive in short-haul (<500 miles) air markets. When contrasted with previous studies of rail transportation in the U.S., Amtrak's results are impressive. Although results are not directly comparable, Amtrak experienced higher average productivity improvements in FY 2002-2012 than the U.S. railroads (freight and passenger) in 1951-1974 (2.5% RPM SFP v. 1.5% [RPM & RTM] TFP) (Caves et al. 1980). These are reasons to be optimistic with the potential for enhanced HSR service.

However, the ability to implement and operate HSR is similar as the state of the regional economy so far as productivity concerns go. For example, the reestablishment of the Acela Express in FY 2006 reduced productivity more than the economic recession of 2009, and ASM SFP only recovered after infrastructure investments in recent years. Although the introduction of 40 additional Acela-Express coach cars to lengthen the train sets in FY 2014 is promising (Amtrak 2011c), it might not increase ASM productivity if not coordinated with infrastructure enhancements and modifications to maintenance facilities.

Furthermore, productivity benefits may take years to realize. Perhaps productivity is expected to go down after the initial years of the establishment of a new HSR. If the financial leverage is not there to temporarily support adverse events, or if the market and managers take too much time to adapt to changing conditions, there may be reasons to doubt future HSR development in the NEC.

When designing a strategy for targeted investments in the NEC, it would be useful to analyze the northern and southern leg of the NEC spine independently. An analysis at a more disaggregate level would allow flagging potential areas for improvement, and could determine where enhancements would be the most effective.

We used three analyses to infer the future productivity of the NEC based on best publicly available data, which we plan to update.

The first case of analysis, our simple EXTRAPOLATION of recent market and productivity trends in the NEC, would optimistically (and perhaps naively) anticipate high productivity growth rates. However, this ignores future interventions that might take place on the corridor, and neither Amtrak nor the author claims that these performance rates are to be obtained. So, the value of the EXTRAPOLATION was in determining a ballpark estimate of what the productivity of in the future could be, and in suggesting drivers of productivity change that could help sustain such growth rates.

The second case of analysis, the qualitative analysis of the NECMP of 2010, revealed that while higher productivity levels could be expected, they are limited by the conservative interventions presented by the NECMP. Although the author is optimistic about the potential achievement of the prospects described in the NECMP, such interventions will also prevent the NEC from truly deploying an international-quality HSR service. As implied by the analysis, there might be a greater potential for increased productivity and services in the NEC that the NECMP is not exploiting.

Greater expectations for the corridor were in fact considered in the quantitative analysis of the NEC VISION of 2012. The analysis showed that the performance on the NEC is still sensitive to many factors, and that perhaps Amtrak's vision is both risky and in some ways a bit unambitious. On one hand, the projected productivity levels are volatile and especially low at the beginning of the interventions. On the other hand, the projected cumulative productivity growth is low in comparison to the growth in the past decade.

This reveals the need for an improved vision that both reduces risk and takes advantage of the opportunities of the NEC. In fact, international comparisons of HSR in corridors similar to the NEC suggest that Amtrak's projections of ridership and revenue are reasonable, but might be on the low side. An improved level of service in the NEC could attract more riders and bring additional revenue. Air/rail cooperation and competition could be key in shaping a more comprehensive vision for HSR in the NEC.

The results of the analysis in this chapter raised our confidence in the structure of analysis developed earlier. On one hand, the expected SFP growth was within the ranges of what the NEC has shown in the past, both in the cumulative and year-to-year values. The sensitivity analysis also revealed that results are robust to changes in key assumptions regarding data generation and uncertainty of forecasts. On the other hand, the interventions and market effects embedded in Amtrak's forecasts could reasonably explain future productivity growth. However, we think they ignored external factors, managerial changes, and unplanned interventions that might affect productivity in the future. Finally, comparisons of results across the cases of analyses were difficult, and there were tradeoffs between qualitative and quantitative analyses: The qualitative analysis allowed us to infer the behavior of several SFP metrics, but did not provide specific values. In contrast, the quantitative analysis gave specific results, but restricted the analysis due to lack of data to just two SFP metrics on the demand side of rail transportation: revenue SFP and ridership SFP, both with respect to operating cost.

Naturally, there is room for major improvements in the analysis. The introduction of available seat-miles SFP or any other metric on the supply side will allow us not only to understand the supply side of the services, but also to understand the implications for profitability and further growth when compared to the demand side. Additional cases of analysis could be included, e.g., cases with substantial ridership changes, or cases based upon the preliminary alternatives report of the NEC FUTURE. Another improvement would be the development of a way to allocate operating costs at the route level, which would permit a comparison of performance between regional and express services, and perhaps the refinement of a strategy to mix those services. Finally, more disaggregate data at the specific route-level or O-D-level, or additional information on the way in which Amtrak made the forecasts (which might be available in the "NEC Business and Financial Plan"), would allow a direct comparison between future and past productivity, and expand the analysis of the future productivity of the NEC.

## Recommendations

### Recommendations for the Prospects of HSR in the NEC

Amtrak set forth a myriad of short-, medium-, and long-term goals and objectives to advance its vision for HSR in the NEC. In addition, the ongoing NEC FUTURE planning process frequently receives public input. Thus, there are some ways in which the current prospects for HSR in the NEC could be enriched by the findings of this thesis, in order to reduce risk and to take advantage of the opportunities of the corridor:

- The projections of ridership and revenue should be revised, given that they might be underestimated. This is in line with Amtrak's short-term (6-12 months) goal to "Further refine and develop program alternatives as part of the capital expenditure re-profiling efforts…" (Amtrak 2012).

- Air/rail cooperation and competition should be explicitly considered in shaping a more comprehensive vision for HSR in the NEC. The FAA should be involved in the planning process. This builds on Amtrak's short-term goal to "Devise future market strategies and coordinate with rail industry experts…" (Amtrak 2012).
- The effect of improved management practices within Amtrak and other stakeholders of the NEC should be considered in the projections (in case it has not been considered already). This is aligned with the medium-term (1-3 years) goal to: "Develop appropriate program management capabilities and undertake staffing and resource assessments" (Amtrak 2012).
- From a productivity perspective, priority should be given to stages of the implementation that promise the highest productivity improvements. More concretely, efforts to accelerate the Gateway Program or to develop an alternative project that achieves such benefits should be included. This is in line with Amtrak's medium-term goal to: "Define and advance "pathway" projects to gain early support and momentum" (Amtrak 2012).
- The productivity of the NEC is quite sensitive to multiple factors, including large, unexpected regional events that were not explicitly considered in Amtrak's forecasts. Also, there is uncertainty related to political support, external events, or funding for HSR. These are strong arguments for a scenario-planning approach (see Schwartz 1996) and the design of flexibility in the proposed investment alternatives, which might be useful to be better prepared to unexpected (good or bad) circumstances (see Sussman et al. 2012a). For example, new policies could favor governmental funding of HSR over air infrastructure funding. Under appropriate economic conditions, express services should be expanded much more than regional services. This is in line with Amtrak's long-term (3-10 years) goal to "Review ongoing changes that may be needed in the structure of Amtrak and the current phased implementation strategy to effectively deliver the program" (Amtrak 2012).

## Publications

### Additional publications:

**Amtrak's Productivity in the Northeast Corridor: Past and Future (attached)**

Andres F. Archila and Joseph M. Sussman

**Productivity Of Passenger Rail Transportation Services In The Northeast Corridor (TRB, 2014)**

Andres-Felipe Archila, Ryusuke Sakamoto, Rebecca Cassler Fearing, and Joseph M. Sussman

**Primary Contact**

Professor Joseph M. Sussman
sussman@mit.edu
(617) 253-4430

**Principal Investigators**

Names: Andrés Felipe Archila Téllez, Joseph M. Sussman

Title: **Intercity Passenger Rail Productivity in the Northeast Corridor: Implications for the Future of High-Speed Rail**

Department: Civil and Environmental Engineering

University: Massachusetts Institute of Technology

Andrés Felipe Archila Téllez
archie77@gmail.com
(617) 690-9570

Joseph M. Sussman
sussman@mit.edu
(617) 253-4430

**Other Faculty and Students Involved**

Name: Professor Joseph M. Sussman

Title: JR East Professor of Civil and Environmental Engineering and Engineering Systems

Department: Civil and Environmental Engineering

University: Massachusetts Institute of Technology

sussman@mit.edu
(617) 253-4430

**NURail Center**
217-244-4999
nurail@illinois.edu
http://www.nurailcenter.org/

# Intercity Passenger Rail Productivity in the Northeast Corridor: Implications for the Future of High-Speed Rail

by

Andrés Felipe Archila Téllez

B. S. Mechanical Engineering, Universidad de los Andes, Colombia (2009)

Submitted to the Department of Civil and Environmental Engineering in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN TRANSPORTATION

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 2013



Signature of Author ………………………………………………………………………………..

Department of Civil and Environmental Engineering

February 10, 2016

Certified by ……………………………...……………………………………………………………

Joseph M. Sussman

JR East Professor of Civil and Environmental Engineering and Engineering Systems

Thesis Supervisor

Accepted by ………………………………………………………………………………………..

Heidi M. Nepf

Chair, Departmental Committee for Graduate Students

# Intercity Passenger Rail Productivity in the Northeast Corridor: Implications for the Future of High-Speed Rail

by

Andrés Felipe Archila Téllez

Submitted to the Department of Civil and Environmental Engineering on February 10, 2016, in partial fulfillment of the requirements for the degree of Master of Science in Transportation

## Abstract

The ongoing discussion about the future implementation of high-speed rail (HSR) in the Northeast Corridor (NEC) is full of questions on the feasibility of HSR and the ability of Amtrak to implement it. Indeed, the introduction of the Acela Express in the past decade was not free from operating problems, but even with trains running below their full potential, the Amtrak NEC had substantial market growth. Thus, it is not clear if a true HSR service is feasible in the NEC, and if the current prospects are potentially effective.

To evaluate the performance of the NEC and its main services in FY 2002-2012, and make inferences about HSR in the NEC for the next 30 years, we use productivity analysis. We employ a non-parametric single factor productivity (SFP) Törnqvist trans-log index approach with several metrics. We set ridership, revenue, revenue passenger-miles (RPM), and available seat-miles (ASM) as outputs, and operating costs as input. In this way, we provided guidelines and a robust structure of analysis that can be useful for subsequent passenger rail productivity studies.

We find that the NEC experienced highly volatile, but considerable productivity growth in FY 2002-2012 (in the range of ~1-3% per year). Amtrak increased its ability to fill up and economically exploit the available capacity, but did not perform equally well on the supply side. Service changes, technical problems with train sets, targeted capital investments, and economic recession and recovery were the main drivers of productivity change. The Acela Express and Northeast Regional were very sensitive to external events, had large economies of scale, and implemented slow adjustment of capacity via rolling stock and infrastructure improvements, which varied depending on the service.

The characteristics of the NEC reveal a potential for a successful introduction of HSR, but although Amtrak's Vision for HSR in the NEC is realistic (in terms of productivity), it is risky and perhaps the time scale is not ambitious enough. We recommend revising the current projections, incorporate additional planning approaches, accelerate key stages of the Vision and include the FAA in the planning process.

Thesis Supervisor: Joseph M. Sussman

Title: JR East Professor of Civil and Environmental Engineering and Engineering Systems

**Acknowledgments**

I would like to thank as briefly as I can those who made this thesis possible and also those who made my stay at MIT for the past two years a life-changing experience. I hope I didn't miss anyone, and if I did, I hope you forgive me. I'm sure I will thank you personally when the opportunity comes.

Thank you, above all, **Joe Sussman**!

I like *happy* stories. On August 31, 2011, the day before Orientation Day, I got my first email from Professor Sussman with the subject *"Possible position"* and the message *"There is a possibility for research support in my group. When can you come to see me to discuss this?"* Suffice to say that we scheduled a meeting on *very* short notice, and I came running down the hall of Building 1 just a minute before the scheduled meeting time. His assistant pointed at him behind me, and the first thing he told me was *"I saw somebody running down the hall just now and I thought 'Gee, that must be him!'… I admire your speed."* After writing a statement from our meeting notes on that evening, Professor Sussman wrote to me next morning: *"Nice paper with some good ideas. I invite you to join my HSR/ Regions group as a research assistant and hope you will accept"*. These words will be engraved in my mind forever.

Professor Sussman, you not only gave me the chance of a lifetime with my RA and TA appointments –for which I am immensely and eternally grateful—but, most importantly, your generosity, kindness, humility, intelligence, guidance, open-minded vision, and, yes, patience made this a life-changing experience for me in many dimensions.

I learned so much from Joe as an academic as well as from Joe as a person. He showed me many times the importance of values, which I never expected to learn when I daydreamt of coming to MIT. I am profoundly happy and honored to consider myself his friend and to have him as a mentor. Joe, you are a role model for me and one of my personal heroes. *Gracias*.

In addition, thank you, Becky Fearing, for your guidance in the productivity project; the sponsors of our research, the Speedwell Foundation and Shelter Hill Foundation; Amtrak officials Petra Todorovich Messick and Stephen Gardner for providing data for this research; and MIT freshman Zhengli Wang for his research support.

Thank you, members of our research group, especially our "darling", Naomi Stein; my "twin", Joel Carlson; and our tireless Maite Peña-Alcaraz, with whom I had the honor of sharing most of the past 21 months. Thank you as well, Ryan Westrom (another mentor), Ryusuke Sakamoto, Regina Clewlow, Soshi Kawakami, Iori Mori, Guineng Chen, Heather Jones, Luis Caetano, Taede Tillema, and José Linares.

Special thanks to my favorite lecturers, George Kocur, Richard de Neufville, Fred Salvucci, and again Joe Sussman, for inspiring talks that made my eyes shine, my brain work, and my creativity exploit.

Thank you, Carl Martland, Rebecca Heywood, and my 16 brilliant students of 1.011, spring 2012.

Thank you, 1-151, a communicative, entertaining, and multicultural office on MIT campus: Carlos Herrera, Serdar Colak, Jameson Toole, Kanchana Nanduri, Laura Viña, Carter Wang, and other guests I have mentioned before or accidentally forgot to mention now. (Figure 0.1 shows what I mean).

**Figure 0.1 – The Community of 1-151 in Academic Year 2012-2013**

Thank you, CEE staff, for the wonderful work you do: Kris Kipp, Nancy Cook, Christine Blackett, Jeanette Marchocki, Mira Parsons, Denise Brehm, Patricia Glidden, Kiley Clapper, Ginny Siggia, and many more. The department could not be run without you.

Thank you, members of the Colombian Association of MIT, for allowing me to be your President. To some extent you are a micro cosmos of Colombia.

Thank you, Carolina Osorio and Édgar Blanco, superb Colombian ambassadors to MIT, and Ralph Gakenheimer, honorary *colombianista*.

Thank you, TSG, T-club, other classmates, and friends, in particular, Diego Vargas, old high-school classmate who became my roommate, best friend, and confident in Cambridge. You are a role model.

Thank you, MIT.

Last, but certainly not least, thank you to my dear loving family and close friends. To my parents, César and Clemencia, for always allowing me to be what I wanted to be; and to my siblings, Francisco, Mónica and Santiago, for always believing in me with open criticism. You are my cornerstone.

This work is in memory of Alejandro Llano and Andrés Corredor, two beloved high-school friends who passed away in Bogotá, Colombia, during my time here at MIT.

# Table of Contents

## List of Figures

## List of Tables, Equations, and Boxes

**List of Acronyms and Abbreviations**

In alphabetical order:

| | |
|---|---|
| **4R** | Railroad Revitalization and Regulatory Reform Act |
| **AADA** | Amtrak Authorization and Development Act |
| **ALF** | Average Load Factor |
| **ARRA** | American Recovery and Reinvestment Act |
| **ASM** | Available Seat-Miles |
| **ATM** | Available Train-Miles |
| **CLIOS** | Complex, Large-Scale, Inter-Connected, Open, Sociotechnical (system or process) |
| **CFS** | Commercial Feasibility Study |
| **CPI** | Consumer Price Index |
| **EIS** | Environmental Impact Statement |
| **FAA** | U.S. Federal Aviation Administration |
| **FRA** | U.S. Federal Railroad Administration |
| **GAO** | U.S. Government Accountability Office, previously known as U.S. General Accounting Office |
| **GDP** | Gross Domestic Product |
| **HSGT** | High-Speed Ground Transportation |
| **HSR** | High-Speed Rail |
| **ISTEA** | Intermodal Surface Transportation Efficiency Act |
| **LD** | Long-Distance (Trains) |
| **LOS** | Level of Service |
| **MBTA** | Massachusetts Bay Transportation Authority |
| **MFP** | Multi Factor Productivity |
| **NEC** | Northeast Corridor |
| **NECIP** | NEC Improvement Program |
| **NECMP** | NEC Master Plan |
| **NEC-UP** | NEC Upgrade Program |
| **NEC NextGen HSR** | NEC Next Generation High-Speed Rail |
| **NR** | Northeast Regional (Service) |
| **O-D** | Origin-Destination |
| **OLS** | Ordinary Least Squares |
| **OPEB** | Other Post-Employment Benefits |
| **PRIIA** | Passenger Rail Investment and Improvements Act |
| **RPM** | Revenue Passenger-Miles |
| **RPSA** | Rail Passenger Service Act |
| **RT** | Route |

| | |
|---|---|
| **RTM** | Revenue Train-Miles |
| **SD** | Short-Distance (Trains) |
| **SDP** | Service Development Plan |
| **SFP** | Single Factor Productivity |
| **TFP** | Total Factor Productivity |

# Introduction

The Northeast Corridor (NEC) of the United States is the most densely settled region and the economic engine of the country. It has been plagued for decades with congestion on its intercity transportation system, and the expected population growth will most likely make worse this situation. Within this context, enhanced high-speed rail (HSR) service seems like a promising solution for improving mobility in the future, since it is suitable for the physical and economic characteristic of the NEC. Thus, the Obama administration's effort to prioritize HSR nationally was recently echoed by new plans and studies that look for ways to implement HSR in the NEC. But, multiple stakeholders and uses, aging infrastructure, the need for substantial capital expenditures, and the lack of trust in Amtrak's ability to manage the corridor pose complex upgrading challenges.

In informing if and how HSR could be implemented in the NEC, it is key to review the recent performance of the corridor and the implications for the future. This thesis uses productivity, a concept widely used in economic studies but not so much in passenger rail transportation, to assess the past performance of the NEC and make inferences on future HSR developments. The goal is to highlight characteristics of the corridor, identify drivers of productivity growth, and make recommendations for the ongoing planning processes.

This thesis is organized as follows:

- **Chapter 1** discusses the concept, the metrics, and the methods of productivity measurement, followed by a review of previous productivity studies in rail transportation, and a discussion of the implications for the research on productivity of intercity passenger rail transportation.
- **Chapter 2** reviews the history and performance of Amtrak, the passenger rail transportation system of the Northeast Corridor (NEC) of the U.S., and its high-speed rail (HSR) prospects for the next decades.
- **Chapter 3** lays out a structure to study productivity of passenger rail in the NEC, followed by an analysis of the productivity of the NEC-spine trains from FY 2002 to 2012

- **Chapter 4** uses the structure of analysis and findings of Chapter 3 to make inferences on the productivity of future HSR developments in the NEC as described in Chapter 2.
- **Chapter 5** summarizes key research findings and contributions, reflects on the recommended ways to move forward for HSR implementation in the NEC, and suggests potential areas of future research.

# 1. Productivity Review

## 1.1. Introduction

This chapter discusses the concept, metrics, and methods of productivity measurement drawing on the extensive subject literature. Then it reviews previous productivity studies in rail transportation. Finally it discusses the implications for the research on productivity of intercity passenger rail transportation.

## 1.2. Basic Concept

Productivity is a way of evaluating the performance of a country, industry, firm, system or process. At the most fundamental level, it is simply the relationship between outputs and inputs (Coelli et al 2005, Solow 1957).

**Box 1.1- Productivity: Basic Concept**

$$Productivity = \frac{Outputs}{Inputs}$$

Because productivity is a derived metric instead of a direct measured quantity, there are three basic ways of improving productivity:

- By producing the *same* outputs with *fewer* inputs
- By producing *more* outputs with the *same* inputs
- A combination of the two approaches

Increments in productivity are caused by *drivers* of productivity growth, which may be multiple and seldom self-evident. On one hand, there might be 'true' *shifts* of the production function caused by technological change (new technology), organizational change (changes in the process or managerial skills), or externalities (economic conditions, industry conditions). But on the other hand there might be effects due to non-technological progress like adjustment costs, economies of scale, cyclical effects, or pure changes in efficiency and measurement errors (OECD 2001, Coelli et al 2005, Oum et al 1992, Solow 1957).

Productivity is used to compare performance of processes, systems, firms, industries, regions or countries with respect to each other and over time. Applications include, for example, the comparison of the productivity of two railroads in one year, or the assessment of the productivity of the US railroad industry over time.

Productivity improvements are of importance to the economy. Economic growth, interpreted as the output of the economy, can be increased by either increasing input quantities or by improving productivity. Given that input quantities have well-known physical limits but innovation does not, long-term economic growth is achieved by productivity improvements rather than by surges in input quantities. Thus, productivity may be used to trace technological change or to assess the standard of living (OECD 2001, Solow 1957).

## 1.3. Productivity Metrics

Depending on the number of inputs and outputs, productivity metrics can be categorized as Single Factor Productivity (SFP), *Partial* Productivity, Multi Factor Productivity (MFP) and Total Factor Productivity (TFP). As will be shown later in Section 1.4 (Methods for MFP/TFP), the conceptual differences between these metrics are clear, but their empirical application is heavily dependent on the method of analysis.

### 1.3.1. Single Factor Productivity (SFP)

The concept of single Factor Productivity (SFP) is intuitive for a single-input single-output process:

**Box 1.2- SFP Definition**

- Single Factor Productivity (SFP): A one-to-one relationship defined as the ratio of the single output to the single input of a process.

The treatment of this metric is mostly unrestricted. It ranges from plots and tables of SFP, adjusted for inflation, that analyze the evolution of a process over time, to comparisons of different firms with the same kinds of output and input at one point in time.

The normalization of SFP with respect to the productivity on a base year, or the calculation of the changes in productivity from year to year, allows the comparison of productivity gains of single-input single-output firms producing a different output.

The general methods to be described in section 1.4: Methods for MFP/TFP can be simplified and extended to SFP in the case of single-output single-input processes.

### 1.3.2. Multi Factor Productivity (MFP) and Total Factor Productivity (TFP)

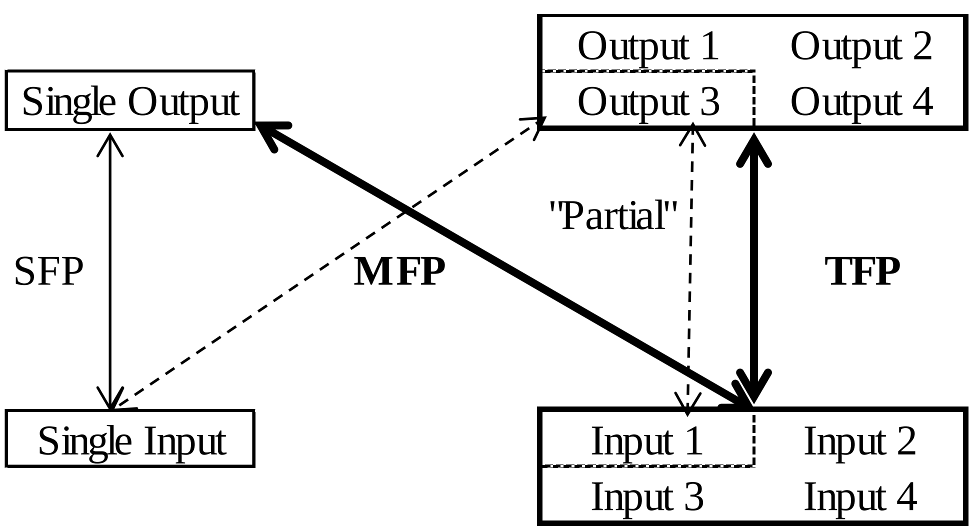
In multi-output multi-input processes, two aggregate measures of productivity are preferred over SFP:

**Box 1.3- MFP and TFP Definition**

- Multi-Factor Productivity (MFP): A relationship of a single output to a function that relates multiple inputs. A one-to-many relationship can involve all factors of production.
- Total Factor Productivity (TFP): A relationship of a function that relates multiple outputs to another function that relates multiple inputs. A many-to-many relationship that involves all factors of production.

It is a common mistake to use the terms MFP and TFP interchangeably. One could argue that MFP is a kind of TFP, but not vice versa. In a similar fashion, SFP could be a type of MFP, but not vice versa. This distinction is illustrated on Figure 1.1.

**Figure 1.1 - Categories of Productivity Metrics**



### 1.3.3. Partial Productivity

As implied above, a multi-output multi-input process *could* use SFP metrics. In this case, such measures are known as "*partial*" productivity metrics, because they take into account only one factor of production at a time (OECD 2001, Oum et al. 1992). This is why the terms *SFP* and *Partial Productivity* are commonly used interchangeably (and confusingly) in the literature. The author strongly recommends making the distinction between SFP (for a single-output single-input process) and partial productivity (for a combination of an output and an input of a multi-output multi-input process). That distinction is manifest in the rest of this document.

Although partial measures give an idea of productivity by relating a given output to a given input, they are inappropriate to determine the productivity of a multi-output multi-input process for the following reasons:

**Box 1.4- Disadvantages of Partial Productivity Metrics**

- They ignore deviations that are not explainable by the selected input.
- They ignore the interdependency of multiple inputs and outputs. For example, an increase in one input may be cancelled out by a decrease in other input.
- They can explain the correlation between a single input and a single output, but that does not imply nor demonstrate causality.

## 1.4. Methods for MFP/TFP

As mentioned earlier, MFP/TFP metrics need a method that relates multiple inputs and/or multiple outputs. Different methods can give MFP/TFP a different meaning, and decompose the productivity changes into one or more sources of growth.

Two main categories of methods are available: parametric and non-parametric methods.

*Non-parametric* methods combine the inputs (or outputs) into a single index before computing the productivity, or use a transformation for computing productivity gains without aggregating the inputs (or outputs) into a single index. These methods can be computed directly from data, without the need for any kind of statistical regression. They are more sensitive to year-to-year variations than parametric methods. They return *gross* measures of productivity; residuals that do not distinguish whether the changes are due to shifts of the production curve or to movements along the existing production curve. Furthermore, they cannot determine the specific sources or drivers of productivity growth. (Oum et al. 1992, Coelli et al. 2005).

*Parametric* methods estimate a production or cost function through regression analyses (least-squares econometric production models, stochastic frontiers). They are less sensitive to year-to-year variations than non-parametric methods. These methods can distinguish between true "technical" shifts in productivity and economies of scale or other phenomena related to the production process (i.e. movements along the production curve) (Oum et al 1992, Coelli et al. 2005).

Careful consideration must be given to the selection of the method. Methodological differences can cause substantially different results for MFP/TFP metrics[1] (Oum et al 1992). Analyses performed with different methods, outputs, or inputs may not be comparable, even if they study the same entity.

Before continuing, it is important to note that sometimes productivity is analyzed by manipulating incremental gains of inputs (or outputs) rather than their absolute value. An incremental gain is defined as the relative growth of an output (or input) during a given time period. It is a dimensionless unit.

### 1.4.1. Non-parametric Approaches

The *growth-accounting* approach, inspired by Solow (1957), is the most relevant non-parametric approach. It computes MFP/TFP productivity growth as the sum of incremental gains in output (or the sum of a linear combination of incremental gains of outputs) less a linear combination of incremental gains in inputs. The residual, i.e., MFP/TFP growth, represents the rate of change in output that cannot be explained by the rate of change in inputs. This is the combined effect of technological and non-technological progress, labeled as a *gross* productivity measure that cannot distinguish between those two categories of drivers of productivity change (Oum et al. 1992). For this reason, the index approach should be complemented by a review of historical events in order to conjecture about the causes of productivity change (OECD 2001).

A linear combination of incremental gains requires weights for the relative importance of input (or output) variables. The input weights are calculated as the share of each input on total input,

[1] Much confusion would be spared if researchers stop reporting SFP, MFP or TFP alone without specification, and rather report the metric put together with the method of application

and the output weights are calculated as the share of each output on total output, and both can be either fixed (constant weights) or variable (moving weights).

The various ways of defining incremental gains and determining the weighting coefficients required by the growth accounting method define the different available methods within this approach:

- In the *basic growth accounting method*, an incremental gain is simply expressed as the percentage growth of input in a time period. Input weights are calculated as the share of each input on operational expenses at a given year. Output weights depend on the share of operational revenues. For the case of MFP, this is written as:

**Equation 1.1- MFP, Growth Accounting Method**

$$\frac{\Delta T}{T} = \frac{\Delta Q}{Q} - \left(\alpha_1 \frac{\Delta input_1}{input_1} + \alpha_2 \frac{\Delta input_2}{input_2} + \alpha_3 \frac{\Delta input_3}{input_3}\right)$$

$$Where\text{:}\ \frac{\Delta T}{T} = growth\ of\ MFP,$$

$$\frac{\Delta Q}{Q} = growth\ of\ output,$$

$$\frac{\Delta input_i}{input_i} = growth\ of\ input\ i$$

$$\alpha_i = Share\ of\ cost\ of\ input\ i\ in\ total\ cost\ of\ inputs$$

- The *Törnqvist or translog index formula* is similar to the previous method, but it uses the natural logarithms of inputs and outputs to calculate the incremental gains. It uses average shares over the period of comparison as input/output weights. In this TFP example, taken from Cowie (2010), M = outputs, N = inputs, $R_i$ (or $S_i$) = average revenue (cost) share of output (input) *i* between years k and l.

**Equation 1.2- TFP, Törnqvist Translog Index**

$$\ln\left(\frac{TFP_k}{TFP_l}\right) = \sum_{i=l}^{M} \bar{R}_i \ln\left(\frac{y_{ik}}{y_{il}}\right) - \sum_{j=l}^{N} \bar{S}_j \ln\left(\frac{x_{jk}}{x_{jl}}\right)$$

- Other index number methods include variations of these two methods, but with similar concepts.

As implied by the above equations, the growth accounting method can be applied for different periods of time, for example, on a year-to-year basis (with respect to the prior year) or on a cumulative basis (with respect to the initial year).

### 1.4.2. Parametric Approaches

Parametric approaches use statistical methods to estimate cost or production functions from statistical regressions on available data. They require assumptions on model specification, functional form, and estimation method. The following are two common examples of parametric approaches:

**Box 1.5- Common Parametric Approaches**

- *Ordinary least squares* (OLS) estimation is a popular regression technique to estimate a cost or production function. It fits an average function to a set of data points.
- *Stochastic frontier* functions use the fact that some technological frontiers might be above the average line that is estimated by an average function, and estimate a production/cost function that is more efficient than what is implied by the average of the data set.

Unlike non-parametric approaches, the parametric approaches can distinguish between true shifts in the productivity function and effects related to scale or other non-technological progress. However, they are more data-intensive and computationally complex than the parametric methods.

## 1.5. Data Requirements

Disparities in measured productivity in empirical studies are not explained only by pure methodological differences. Another difference lies in the required data. Thus, a most important distinction is the measurement of input and output variables in physical quantities or in monetary terms.

Given that inflation plays a major role in productivity over extended periods of time, it must be considered in the calculations. If the data are in monetary terms, it becomes especially imperative to deflate the quantities accordingly. This calculation is also critical to non-parametric approaches that do not estimate a function, but rather make calculations directly from the available data (Coelli et al. 2005).

All in all, while physical quantities are preferred over monetary quantities, the ultimate choice depends on the confidence and availability of price and quantity data (Oum et. al. 1992).

## 1.6. Productivity in Passenger Rail Transportation

Economic studies of productivity outside the domain of transportation usually focus on partial productivity (labeled in most of those studies as SFP) and MFP metrics with monetary outputs and inputs. Economic studies at a firm or industry level usually use operational revenue as output and multiple inputs in the categories of labor, capital, and other intermediate inputs (e.g. energy, materials, or services). Parametric approaches are more common than non-parametric approaches.

Transportation productivity studies also use partial productivity (labeled in most of these as SFP), and MFP/TFP. MFP/TFP include additional outputs that account for the capacity produced and utilized, and additional inputs that are more specific to the particular transportation context. Both parametric and non-parametric approaches are used, and due to the several different methods available, a comparison of findings between studies is a difficult, if not unfeasible, task. The studies usually use partial productivity measures to specify particular factors of interest to operators and analysts, but not to economists.

The specific rail transportation productivity literature leans towards freight (MFP), or combined freight-passenger transportation (TFP). Few studies address the rail passenger transportation problem in isolation. Lamentably, there are few published studies of productivity for the U.S. passenger railroads.

Past productivity analyses in transportation can and have been used for many purposes: to evaluate the performance of a firm/industry over time, to compare firms within an industry, to compare firms/industries in different countries, or to compare different policy regimes.

### 1.6.1. Review of Studies of Productivity in Passenger Rail Transportation

In the most relevant study of US railroads, Caves et al. (1980) compared the TFP, for passenger and freight rail transportation, computed with different parametric and non-parametric methods. When using the growth accounting approach, they highlighted the importance of using adequate moving input and output weights from operational data, and not taken from national income data that understated the use of capital and overstated the use of labor in railroads. They concluded that the U.S. railroads TFP productivity increased 1.5% per year on average for the period 1951-1974.

Caves et al. (1981) further compared the US and Canadian railroads with a parametric TFP in the period 1955-1974. They concluded that the less regulated Canadian railroads achieved higher productivity gains than the more regulated US railroads. This research gave birth to a myriad of studies that used MFP/TFP with a non-parametric approach to analyze (rail) transportation performance.

Tretheway et al. (1997) used partial productivity measures (labeled by them as SFP), a revenue-weighted (non-parametric) index of TFP, and a parametric TFP to analyze the productivity of two Canadian railways, CN and CP, from 1956 to 1991. Their analysis includes a comparison of various factors like ownership, technological changes, deregulation, and is benchmarked with US railroads.

Cantos el al. (1999) used a non-parametric TFP Malmquist index to analyze the productivity of European railways from 1970 to 1995. The analysis distinguished between changes in efficiency and technical change. They concluded reforms that provided greater degrees of autonomy and financial independence in the sub-period 1985-1985 contributed greatly to increases in productivity.

Unlike previous studies, Cowie (2010) used a non-parametric MFP translog index approach to analyze the effect of privatization in the British passenger railway industry. He found that ownership structure and not ownership *per se* was relevant as a determinant of productivity gains. The nationalized British Rail experienced productivity gains comparable to those of railways in early stages of privatization, after the former adopted a more market-oriented structure. Labor reductions increased productivity for privatized railroads in the short-term, but infrastructure and rolling stock investment improved productivity for British Rail in the long run.

Most recently, Sakamoto (2012) used partial productivity measures (labeled by him as SFP) and the same approach as Cowie (2010) to determine the MFP productivity of the Tokaido Shinkansen line in Japan in the period 1964-2010. He concluded that MFP increased significantly after the privatization process of JR Central in 1987.

The existence of a study of Amtrak's productivity under any approach (SFP, partial, MFP or TFP) is unknown to the author to this date.

### 1.6.2. Outputs

In most transportation productivity analyses, the outputs are revenue and volume. The specific output metrics vary depending on the mode.

For rail transportation, available seat-miles (ASM) or available train-miles (ATM) are a proxy for transportation capacity, whereas revenue passenger-miles (RPM) or revenue train-miles (RTM) measure the ability to use the available capacity. Several authors use additional outputs, including average length of passenger trip (Caves et al. 1980), operating revenue, net income, gross ton-miles, locomotive miles, car-miles, train-hours, locomotive hours, or trailers loaded (Kriem 2011). These multiple outputs are interesting from an operational point of view, but impede comparisons among studies.

### 1.6.3. Inputs

In most transportation productivity analyses, the inputs are generally labor and capital. The specific input metrics also vary depending on the transportation mode.

In rail transportation, the inputs are generally labor, capital and fuel. Some studies include more detailed inputs such as infrastructure, equipment, cars, or stations (Kriem 2011, Martland 2011, Caves et al. 1981). Other studies discriminate inputs in a different way, for example, in personnel, non-personnel and capital expenditures (Sakamoto 2012). The data availability determines to some extent the breakdown of inputs.

### 1.6.4. Partial Productivity in Rail Transportation

As mentioned earlier (see section 1.6.1 Review of Studies), several studies used partial productivity metrics to identify firm/industry trends, or to get a sense of operational details that may be of interest to analysts. Such partial measures enable multiple permutations of outputs and inputs. For example, Martland (2011) and Kriem (2011) used several partial productivity metrics: labor, fuel, infrastructure, equipment, operations, capital or safety, with various combinations for each one.

A failing of productivity studies is that they often omit level of service (LOS). There are only tangential approaches to measuring LOS as an output of transportation. This is mostly done on partial productivity analyses that use performance indicators as productivity measures, (e.g. operational safety defined as injuries divided by number of employees).

As noted earlier (section 1.3.3 Partial Productivity), partial productivity is inappropriate for analyzing multi-output multi-input processes.

### 1.6.5. Factors that Influence Productivity in Passenger Rail Transportation

There are many factors that can change productivity in passenger rail transportation. Some of them can be related to technology change (use of improved equipment, improved maintenance techniques, use of IT to monitor and control trains, use of online ticket sales), others are related to organizational change (improved manager practices, mergers/acquisitions, changing legislation), and others are due to external events (industry and market behavior, single events).

Previous studies have shown the effects of some of this factor on productivity (see section 1.6.1 Review of Studies)

### 1.6.6. Limitations of Past Studies on Rail Transportation

The scope of analysis in past productivity studies on rail transportation was limited by the inherent tradeoff between parametric and non-parametric approaches. The former are harder to calculate and more data-intensive, but can distinguish between sources of productivity growth. The latter are easier to compute and less data-intensive, but cannot separate the causes of productivity gains (see section 1.4: Methods for MFP/TFP). Given that non-parametric approaches are more popular, the literature still relies on historical reviews that make inferences on the specific sources of productivity change.

Previous studies also failed to make conclusions on performance of railroads due to lack of reliable data. Sometimes researchers had problems obtaining disaggregate data from carriers, which they viewed as competitive information.

The great range of available methods and their incompatibility prevented researchers from building on previous studies. This resulted in a lack of continuity in the literature.

Finally, the selected inputs of previous studies in transportation did not account for the LOS, an important concept in transportation and one of the strongest arguments in favor of newer transportation technologies. In addition, the metrics generally measured the quantity but not the quality of inputs. However, the theory on productivity does allow the free selection of input and output variables, which may have the potential for evaluating the productivity from a level-of-service perspective.

#### 1.6.7. Implications for the Study of HSR

Higher productivity could translate into more utilization of HSR assets, lower fares to customers, higher employee compensation, potentially more profits for HSR owners, and perhaps even lower need for public funding.

Even though productivity is a poor proxy for profitability – given that financial performance depends on other factors, such as fares or competition— good productivity is in fact a precondition for profitability. Thus, a mode's productivity could give a boundary for profitability and perhaps even explain long-term profitability.

Calculations of productivity in the NEC could be done at the route (sub-firm) level (e.g. the Acela Express). However, the same data categories, metrics, and methods should be used to accurately compare distinct studies, regardless of whether the analysis is done for different routes, in different locations, or in different periods of time.

### 1.7. Chapter Conclusion

Productivity analyses are useful to study intercity passenger rail transportation because they can assess performance and provide insights into the sources of performance change, i.e., into the so-called drivers of productivity change. In intercity passenger transportation, productivity improvements may explain long-term improvements and translate into many benefits to users and producers of those services. Several studies have revealed that various factors related to technological change, organizational change, and external events affected productivity in intercity passenger rail transportation, mostly outside of the U.S. Thus, a successful productivity analysis of the Northeast Corridor may allow managers and decision-makers to understand the system's behavior, and to better prepare or respond to potential realizations of the future.

The basic definition of productivity and clarification of the intricate metrics and methods of productivity measurement presented in this chapter have provided an understanding of the concept of productivity and of the somewhat disorganized productivity literature, where no widely dominant approach is to be found, and only scarce, discontinuous, and incompatible studies of rail transportation are available. As a recommendation to prevent major future confusion, the data categories, the productivity metrics, and the method of analysis should be explicitly and jointly referenced in a productivity study.

The advantages, disadvantages, and tradeoffs of the wide range of available methods for productivity analysis make this a non-straightforward decision. Parametric methods can provide detailed information on the drivers of productivity change, but are data-intensive and computationally complex. Non-parametric methods may sacrifice the amount of information they return, but are less data-intensive and computationally friendlier than parametric methods. Complementary analysis, like reviewing historical events or using alternative metrics, may compensate for the disadvantages of a particular method. Ultimately, the selection of a method depends on the question of interest, the type of data, the data availability, the computational resources, and other context-specific constraints. Robustness, however, is a desired attribute of any method, given that distinct approaches may return great discrepancies in the estimation of productivity, even when applied to the same dataset.

The selection of productivity metrics is more direct than and usually precedes the selection of the method of analysis. SFP, partial productivity, MFP, and TFP metrics are used for a variety of analysis, ranging from single-output single-input to multi-output multi-input processes. In single-output single-input processes, or in processes where multiple inputs can unmistakably be combined into a single input, SFP is the preferred choice. In multi-output multi-input processes, MFP and TFP are definitively preferred over the (inappropriate) partial measures of productivity.

Although the selection of outputs and inputs in transportation productivity analyses is mostly constrained by data availability and reliability, this does not necessarily mean that alternative outputs and inputs cannot be selected or derived. Given that operators usually report financial data, several transportation productivity studies used monetary terms instead of physical input quantities. Moreover, physical outputs that can measure capacity and usage (ASM and RPM) are commonly reported by firms. However, these data respond to incumbent managerial reporting schemes that rarely account for LOS. In addition, the metrics generally measure the quantity but not the quality of inputs. Thus, there is a need for developing alternative outputs and/or inputs in productivity analysis in order to measure the quality of the service provided and to account for the quality of the inputs.

The next chapter discusses the passenger rail transportation system of the Northeast Corridor and the high-speed rail prospects for the next few decades.

### 1.8. Chapter References

Cantos, P., Pastor, J. M., & Serrano, L. (1999). *Productivity, Efficiency and Technical Change in the European Railways: A Non-Parametric Approach.* Transportation, 26(4), 337-357.

Caves, D. W., Christensen, L. R., & Swanson, J. A. (1980). *Productivity in US Railroads, 1951-1974*. The Bell Journal of Economics, 166-181.

Caves, D. W., Christensen, L. R., & Swanson, J. A. (1981). *Economic Performance in Regulated and Unregulated Environments: A Comparison of US and Canadian Railroads*. The Quarterly Journal of Economics, 96(4), 559-581.

Coelli, T. J., Rao, D. S. P., O'Donnell, C. J., & Battese, G. E. (2005). *An Introduction to Efficiency and Productivity Analysis*. Springer.

Cowie, J. (2010). *Subsidy and Productivity in the Privatised British Passenger Railway*.

Kriem, Y., & Massachusetts Institute of Technology. Dept. of Civil and Environmental Engineering. (2011). *Productivity of the U.S. Freight Rail Industry: A Review of the Past and Prospects for the Future*. (M. Eng., Massachusetts Institute of Technology, Dept. of Civil and Environmental Engineering).

Martland, C. D. (2011). *Productivity Improvements in the US Rail Freight Industry, 1980-2010*. MIT paper October 2011

Measuring Productivity, OECD (2001). *Manual: Measurement of Aggregate and Industry-Level Productivity Growth*.

Oum, T. H., Tretheway, M. W., & Waters, W. (1992). *Concepts, Methods and Purposes of Productivity Measurement in Transportation*. Transportation Research Part A: Policy and Practice, 26(6), 493-505.

Sakamoto, R., & Massachusetts Institute of Technology. Dept. of Civil and Environmental Engineering. (2012). *High Speed Railway Productivity: How Does Organizational Restructuring Contribute to HSR Productivity Growth?* (S.M. in Transportation, Massachusetts Institute of Technology, Dept. of Civil and Environmental Engineering).

Solow, R. M. (1957). *Technical Change and the Aggregate Production Function*. The Review of Economics and Statistics, 39(3), 312-320.

Tretheway, M. W., Waters, W., & Fok, A. K. (1997). *The Total Factor Productivity of the Canadian Railways, 1956-91*. Journal of Transport Economics and Policy, 93-113.

# 2. The Amtrak NEC Review

## 2.1. Introduction

This chapter reviews the passenger rail transportation system of the Northeast Corridor (NEC) in the U.S. and its high-speed rail (HSR) prospects for the next decades, providing the context for an assessment of its productivity in later chapters.

## 2.2. The Northeast Megaregion

The Northeast Corridor of the United States, by convention, stretches from Washington, D.C., to Boston, MA, lying in an essentially contiguous megaregion, which is the United States' largest. With over 55 million people and a $2.6 trillion economy one-fifth of the U.S. GDP, it is the most densely settled region and the economic engine of the country. However, it has been plagued for decades with congestion on its intercity transportation system, especially at airports and on highways, a condition that might worsen due to expected population growth, travel frequency increases, constraints on investment, and likely increasingly frequent large weather events (hurricanes, snowstorms). This poses challenges in upgrading a multi-state, multi-use and multi-operator corridor that is vital to the economy of the U.S. and even the world.

## 2.3. Amtrak

Amtrak, a portmanteau of "American" and "Track", is the accepted name of the National Railroad Passenger Corporation; a publicly-owned company operated and managed as a for-profit, private corporation, and currently the only intercity rail passenger operator in the NEC. The Rail Passenger Service Act (RPSA) of 1970 gave birth to Amtrak, which began operations on May 1, 1971, after the consolidation of several private passenger railroads of the time. Amtrak currently operates a 22,000-mile passenger rail nationwide system.

Table 2.1 displays a timeline with major events regarding the evolution of Amtrak and the NEC.

**Table 2.1- Amtrak and NEC Timeline**

| YEAR | EVENT |
|---|---|
| **1830-1917** | **NEC is built** |
| 1965 | High Speed Ground Transportation (HSGT) Act |
| 1968 | Establishment of Penn Central Transportation Co. |
| 1969 | Introduction of Metroliner and Turbotrain services |
| 1970 | Rail Passenger Service Act (RPSA) |
| **1971** | **Amtrak starts operations** |
| 1976 | Railroad Revitalization and Regulatory Reform Act (4R) |
| 1976-1982 | NEC Improvement Program (NECIP) |
| 1991 | Intermodal Surface Transportation Efficiency Act (ISTEA) |
| 1992 | Amtrak Authorization and Development Act (AADA) |
| 1995 | Northeast Regional starts operations |
| 1997 | HSGT Commercial Feasibility Study (CFS) Report |
| **2000** | **Acela Express stars operations** |
| 2001 | Terrorist attacks of 9/11 |
| 2008 | PRIIA, economic recession |
| 2009 | ARRA, “Vision for HSR in America” |
| 2010 | NEC MP, Amtrak's “Vision for HSR in the NEC” |
| 2012 - Present | NEC FUTURE, NEC Capital Investment Program |
| **2015-2025** | **NEC-UP (proposed)** |
| **2030-2040** | **NEC NextGen HSR (proposed)** |

#### 2.3.1. Outputs: Ridership, Revenue, Profit

Even though Amtrak’s ridership was relatively flat for about twenty years, the last decade has brought an upsurge in riders. In 1972, after the first year of operations, Amtrak’s carried 16.6 million passengers system-wide; that doubled by 2012, forty years later. In the first decade of operations, a period known as the *Rainbow Era*, system-wide ridership reached 21 million annual passengers, a figure that stagnated for nearly twenty years, until 2000. In the past ten years, however, Amtrak has broken its ridership records nine times, the only significant downturn coming during the economic recession in fiscal year (FY) 2009, October 2008-September 2009.

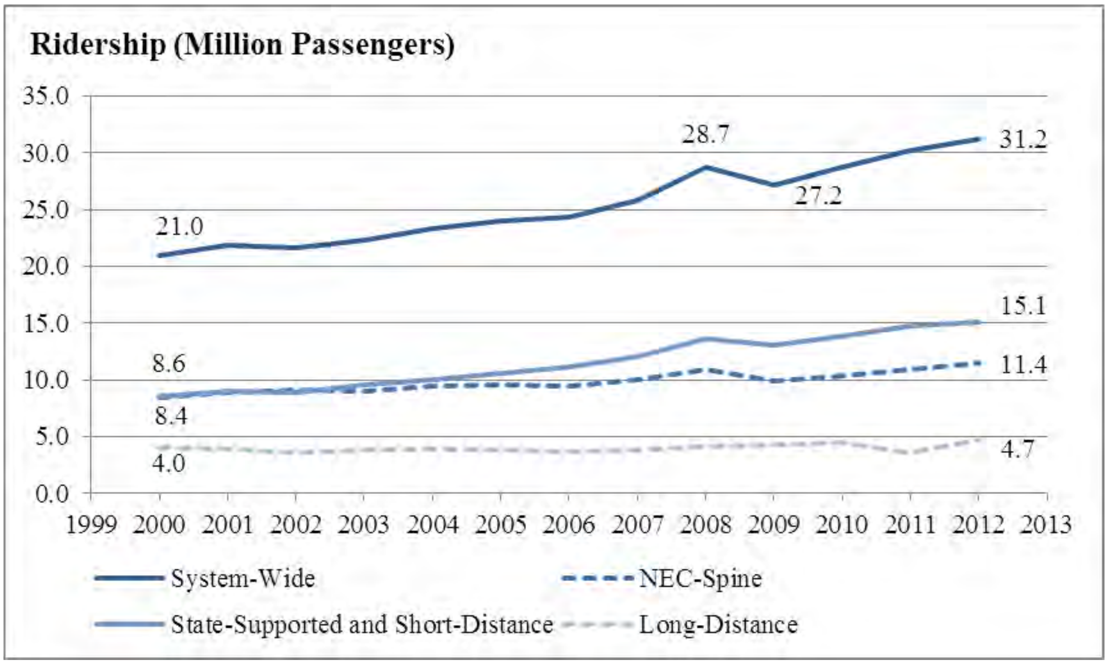
In the new millennium, Amtrak’s ridership, revenue, and profitability has exhibited mixed and contrasting experiences in different routes and regions. Short and special routes became more profitable and utilized than longer routes, while the latter continued to be heavily subsidized. Two thirds of Amtrak’s ridership in FY 2012 originated in the ten largest metropolitan areas

(Puentes et al. 2013). The Northeast Megaregion contributed nearly half of Amtrak's ridership and represented the most important passenger rail transportation sub-network in the nation.

#### 2.3.1.1. Ridership

The breakdown of Amtrak's ridership for FY 2000-2012 is shown in Figure 2.1 and includes NEC-spine trains (to be defined and discussed in Section 2.4.2: NEC Operations and Services), state-supported and other short-distance corridor trains (SD) (~<400 mi), and long-distance trains (LD) (~>400 mi).

**Figure 2.1- Ridership FY 2000- 2012 (Adapted from Amtrak 2011a, 2011b, 2009-2012)**



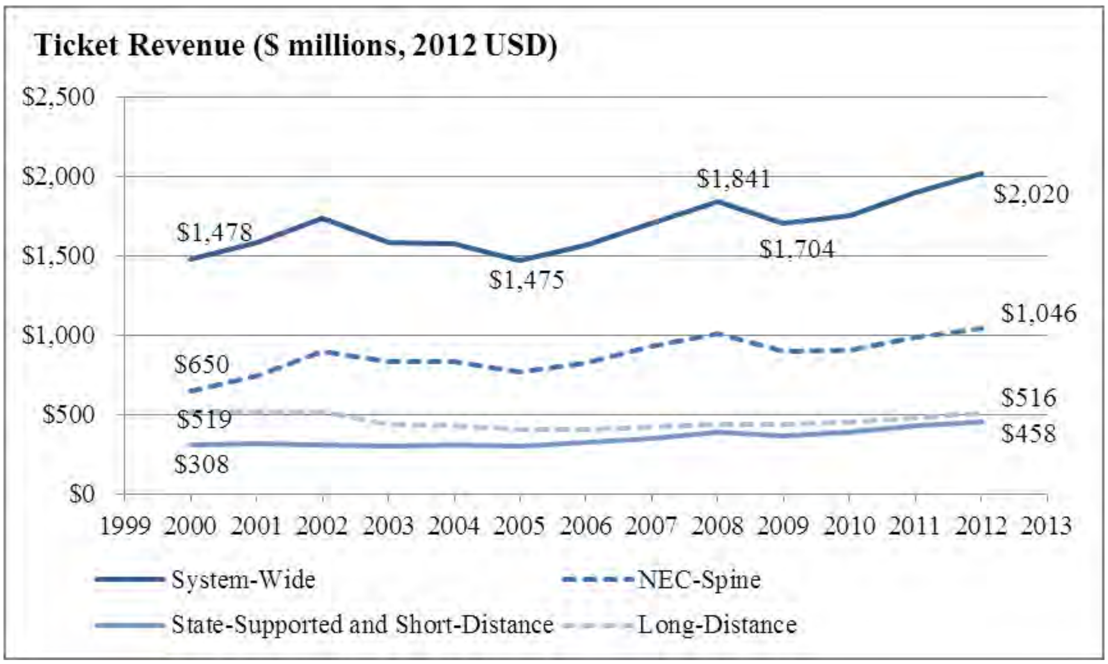

Amtrak's system-wide ridership grew 55%, from 21 million riders in FY 2000 to an all-time high of 31.2 million in FY 2012. This percentage increase was higher than that of other major travel modes in the U.S. (Puentes et al. 2013), and greatly exceeds the 11% increase in U.S. population since the beginning of the millennium (U.S. Census Bureau). The greatest ridership growth occurred in SD trains, from 8.6 to 15.1 million annual riders (+76%). NEC-spine ridership notably grew from 8.4 to 11.4 million riders (+36%), while LD ridership slightly increased from 4.0 to 4.7 million (+18%).

There are a number of reasons that explain this growth, including but not limited to the availability of government funding for capital improvements; the introduction of the Acela Express in FY 2001; external factors and events like 9/11, climate change awareness, airport congestion, and the surge in fuel prices, which shifted drivers from other transportation modes. In contrast, the economic recession of 2008-2009 reduced ridership growth, which had been increasingly ramping up in the three years before. The end-result of the recession was a 2-3-year setback in ridership.

#### 2.3.1.2. Revenue

Figure 2.2 shows Amtrak's ticket revenue in 2012 dollars, corrected for inflation with the transportation Consumer Price Index (CPI) series CUUR0000SAT 2002-2007 and CUUR0000SS53022 2007-2012 (USBLS 2013).

**Figure 2.2- Ticket Revenue FY 2000- 2012 (2012 USD) (Adapted from Amtrak 2011a, 2011b, 2009-2012)**




Amtrak's system-wide real ticket revenue increased 38% in the past 12 years. Revenue growth was nonetheless unsteady, especially affected by the 2008 dip. Real ticket revenue decreased at 4% per year in FY 2002-2005, recovered at 8% per year in FY 2005-2008, dropped 8% in FY 2008, and grew anew at 6% yearly since then.

Again, NEC-spine and SD trains grew in importance, while LD trains diminished their share of Amtrak's ticket revenue. NEC-spine trains contributed 52%, SD trains 23%, and LD trains 25% of Amtrak's $2 billion ticket revenue in FY 2012, whereas respective shares were 44%, 21%, and 35% of Amtrak's $1.1 billion (nominal) ticket revenue in FY 2000. Overall, the new millennium brought 63% more real revenue in the NEC-spine, 51% in SD, and a 1% in LD. The LD revenue remained essentially flat.

The NEC-spine showed large returns to scale. While the NEC-spine trains' incremental ridership was less than half of the SD trains' (3 v. 6.5 million riders), the associated incremental revenue was 2.5 times that of SD trains ($565 v. $230 million (nominal USD)).

#### 2.3.1.3. Profit

Table 2.2 shows the financial performance of Amtrak in nominal dollars.

**Table 2.2- FY 2002- 2012 Financial Performance, ($ millions, nominal) (Adapted from Amtrak 2003- 2012)**

| Year-End | Total Revenues | Total Expenses | Net Loss from Operations | Net Loss | Adjustment |
|---|---|---|---|---|---|
| **2002** | $2,212 | $3,224 | ($1,012) | ($1,148) | ($631) |
| **2003** | $2,057 | $3,178 | ($1,121) | ($1,264) | ($678) |
| **2004** | $1,631 | $2,917 | ($1,286) | ($1,286) | ($635) |
| **2005** | $1,855 | $2,962 | ($1,107) | ($1,107) | ($606) |
| **2006** | $2,502 | $2,450 | $52 | ($1,127) | --- |
| **2007** | $2,151 | $2,581 | ($429) | ($1,052) | --- |
| **2008** | $2,454 | $3,389 | ($934) | ($1,024) | --- |
| **2009** | $2,353 | $3,507 | ($1,155) | ($1,264) | ($788) |
| **2010** | $2,513 | $3,747 | ($1,233) | ($1,335) | ($898) |
| **2011** | $2,714 | $3,966 | ($1,251) | ($1,345) | ($887) |
| **2012** | $2,876 | $4,063 | ($1,186) | ($1,267) | ($878) |

Amtrak has shown persistent unprofitability. The net losses were $1.27 billion from $2.88 billion total revenue in FY 2012 (44%). Certainly, the boost in ridership and revenue stabilized and even reduced net losses in recent years, both in absolute and percentage terms. This trend was also to be seen in the years before the 2008 economic recession. Nevertheless, subsidies are familiar to Amtrak, which continuously received governmental support for operations since its inception back in 1971. For this reason, Amtrak's operational capabilities have been a matter of harsh criticism and public debate throughout decades. Amtrak counters that other modes have been more heavily subsidized; in forty years Amtrak received $36 billion from federal funding, whereas aviation received $421 billion and highways received at least a trillion (Amtrak 2011c).

Operational losses were, nonetheless, not ubiquitous. The NEC-spine trains were operationally profitable in FY 2012, with $289 million surplus (excluding capital charge, depreciation and interest), as well as a few short-distance routes, with $10 million surplus. This contrasted severely with the $760 million combined loss of the remaining routes (excluding capital charge, depreciation and interest) (Amtrak Monthly Performance Report, September 2012). The corresponding figures in FY 2010 showed a $61 million contribution for NEC-spine trains and $795 million loss for the rest of the system, and a year before, in the midst of the most serious economic recession since the Great Depression of the 1930s, a $25 million contribution and $766 million loss, respectively.

A factor that accentuated such contrasts is that most infrastructure costs were included in the performance of the LD and SD trains—as Amtrak paid usage fees to the infrastructure owners–but not in the almost entirely Amtrak-owned NEC–where Amtrak did not pay internal usage fees (i.e. there is vertical integration). In the first case, most infrastructure owners are freight railways. In the past, railroads had mixed traffic of freight and passengers. The latter were transferred to Amtrak upon its establishment in 1971, but not the infrastructure. This condition has made cooperative relationships difficult between Amtrak and the freight railways, which now have no incentives to carry passenger traffic on their tracks.

Hence, the NEC revealed a different story than the rest of Amtrak. NEC-spine outputs greatly improved in the past three years: 24% in ticket revenue, 14% in ridership, and tenfold in operational surplus (excluding capital charge, depreciation and interest). Outside of the NEC, Amtrak showed fluctuating losses, despite noticeable increases in ridership and revenue. It is important to note, though, that financial performance of routes is reported before capital charges, depreciation and interest, which would lower the above-reported figures once taken into account. The allocation of those costs, however, is problematic and sensitive to the selected method of charging users of shared infrastructure and services.

## 2.4. The Amtrak Northeast Corridor (NEC)

The Amtrak Northeast Corridor, hereon referred to as the NEC, is the railroad artery that spans the Northeast Megaregion. The NEC is a multi-state corridor that runs through twelve States and the District of Columbia. It is a multi-owner asset comprising 870 route miles and 2,340 track miles, a multi-operator network involving eight commuter operators with one intercity-travel operator (Amtrak), and a multi-use track alignment on which both freight and passenger trains run every day. The Federal Railroad Administration (FRA) oversees this orchestration.

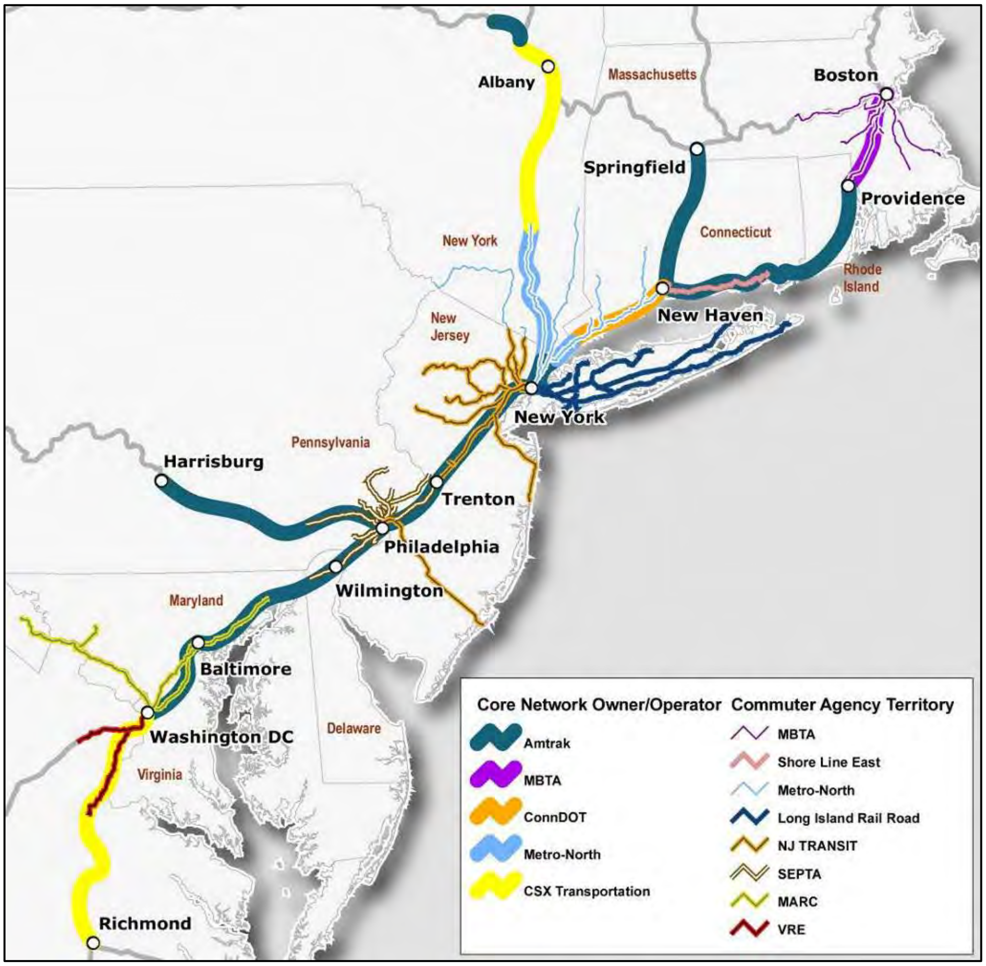
All these reasons make the NEC an intricate system that carries over 750,000 commuters and daily intercity travelers, with 2,272 daily train movements (154 from Amtrak), and increasing congestion and infrastructure maintenance requirements.

### 2.4.1. NEC Infrastructure and Ownership

The NEC rail infrastructure includes multi-track rail lines, bridges, stations, and signaling systems between Washington, D.C., and Boston, MA, with branches to Springfield, MA, Albany, NY, Harrisburg, PA, and Richmond, VA. Originally built between 1830 and 1917, and upgraded by the Northeast Corridor Improvement Program (NECIP) from 1976 to 1982, the NEC faces today aging infrastructure and maintenance backlogs.

Figure 2.3 shows the NEC infrastructure ownership and operations. Although the Railroad Revitalization and Regulatory Reform Act (4R) of 1976 allowed Amtrak to acquire much of the NEC infrastructure from Conrail, it remains a shared asset with multiple owners. Amtrak owns and maintains 363 of the 457 route miles of what is termed the “NEC spine”, the track alignment linking Washington’s Union Station to Boston’s South Station, roughly parallel to Interstate 95. This includes 17 tunnels, 1,186 bridges, and the entire track from Washington to New York. The Massachusetts Bay Transportation Authority (MBTA) owns the 38-mile segment in Massachusetts, and the States of New York and Connecticut own the segment linking New Rochelle, NY, and New Haven, CT, comprising 46 route miles (NEC MPWG 2010, Amtrak 2011a).

**Figure 2.3- NEC Ownership and Operations (NEC MPWG 2010)**




### 2.4.2. NEC Operations and Services

The NEC is the most heavily utilized railway corridor in the U.S. Every weekday, Amtrak operates 154 intercity trains, and eight commuter agencies run over 2,000 trains with more than 750,000 commuters on the shared infrastructure. Boston South Station (6$^{th}$), New York Penn Station (1$^{st}$), Philadelphia 30$^{th}$ Street Station (3$^{rd}$), and Washington Union Station (2$^{nd}$) rank among the top ten busiest rail stations in the U.S. (Amtrak National Fact Sheet 2011, NEC MPWG 2010, Amtrak 2011b)

In addition to passenger services, 70 daily freight trains from seven different companies run along the NEC spine at speeds of 30-50 mph (Amtrak 2011a). The difference in operating speeds and services on the shared tracks contributes to the reduced available capacity of the corridor. Moreover, infrastructure bottlenecks limit operational speeds in critical parts of the corridor, especially on the Boston-New York alignment and in the New York metropolitan area.

Amtrak offers multiple services along the NEC, two of which are of main importance:

The ***Acela Express*** runs from Boston to Washington via New York, Philadelphia, and Baltimore. It is the fastest rail service in the U.S., capable of achieving top speeds of 150 mph in short sections of the trip. Its average speed, though, is only on the order of 70-80 mph, which results in a scheduled travel time of approximately 6:30 h from Boston to Washington. The Acela Express, introduced in December 2000, currently offers various amenities such as first class (business class is the lowest option), on-board Wi-Fi access, and food services.

The ***Northeast Regional*** runs from Boston/Springfield to Washington and then to other cities in the State of Virginia (Richmond, Lynchburg, Newport News or Norfolk), via New York, Philadelphia, and Baltimore. While the top speed is 125 mph, the average speed remains at 60-65 mph. This results in a scheduled travel time of approximately 8 h from Boston to Washington. The Northeast Regional was introduced in 1995, and offers coach class and business class.

Table 2.3 shows certain trip characteristics of the Acela and Northeast Regional services.

**Table 2.3- NEC-Spine Trains (Adapted from NEC MPWG 2010, Amtrak NEC Schedule Jan 2013)**

| Service | Route | Distance (miles) | Weekday Round Trips | Scheduled Travel Time (hr:min) |
|---|---|---|---|---|
| **Acela Express** | Boston – New York | 232 | 10 | From 3:25 to 3:35 |
| | New York – Washington | 225 | 15 | 2:44 to 2:50 |
| | Boston – Washington | 457 | 10 | 6:30 to 6:40 |
| **Northeast Regional** | Boston – New York | 232 | 9 | 4:00 to 4:20 |
| | New York – Washington | 225 | 14 | 3:12 to 3:39 |
| | Boston – Washington | 457 | 9 | 7:40 to 8:05 |

Service on the southern leg of the NEC (New York-Washington) is 50% more frequent and 25% faster than service in the northern leg (New York-Boston). Infrastructure constraints (old bridges, short radii of curvature, etc.), along the northern leg of the NEC in particular, limit the capacity of the rolling stock for achieving and maintaining high speeds. For this reason, the Acela Express is just 18% faster than the Northeast Regional, saving, for instance, just 28 minutes in the 2-hour-45-minute-long New York-Washington trip.

In addition to the Acela Express and the Northeast Regional, there are a number of Amtrak services that operate partly on the NEC spine. The *Keystone* travels from New York to Philadelphia, and then branches out to Harrisburg. The *Pennsylvanian* travels the route New York—Harrisburg—Pittsburg. Amtrak also operates some NEC special trains for exceptional occasions. Other services originate in cities on the NEC, but do not travel along the NEC spine (e.g. the *Empire* service which covers the route New York—Albany—Toronto).

The Acela Express, Northeast Regional and NEC Special Trains, hereon referred to as the NEC-spine trains, will be the focus of the subsequent review.

#### 2.4.3. NEC Performance

In FY 2011, Amtrak's services captured 77% of the air/rail market from Washington to New York, and 54% of the New York – Boston market (Amtrak 2012). The NEC-spine trains carried 11.4 million passengers in FY 2012, a 36% growth since FY 2003, representing 36% of Amtrak's overall riders. NEC-spine trains generated $1.05 billion (52%) of Amtrak's $2 billion ticket revenue in FY 2012, a cumulative farebox increment of 45% in a decade. In contrast, the level of service has only marginally improved. Amtrak and the FRA have made incremental HSR improvements to the NEC, like electrification and procurement of HSR trains, but the 3-hour travel-time goal between Boston and New York required by the Amtrak Authorization and Development Act of 1992 is yet to be achieved (USGAO 2004). Surprisingly, Amtrak has achieved such impressive market share in the NEC without having a true HSR service by many definitions (see Section 2.5.1: A Note on the Definition of HSR)

Table 2.4 shows some performance metrics for the Acela Express and Northeast Regional in 2003-2012, a full decade. Despite a drawback in FY 2009, there were 1.0 (+44%) and 2.1 million (+37%) additional riders on the Acela and Northeast Regional, which increased ticket revenue by 47% and 36%, respectively. In FY 2011, for the first time, ticket revenue from the Acela Express was greater than the Northeast Regional's, despite having less than half the ridership.

The congestion in the corridor contrasts with the still low, relative to air travel, though increasing average load factor (ALF) of the trains: 63% on the Acela, up from 55% in 2009 and back to 2008 levels, and 48% on the Northeast Regional, up from 44% in 2009. With capacity constraints on the corridor, partly evidenced by the modest growth of ASM, most of the new riders are accommodated on the available capacity.

**Table 2.4- Performance of Acela Express and Northeast Regional (NR) FY 2003-2012 (Adapted from Amtrak 2003-2013)**

| | Ridership (millions) | | Ticket Revenue (2012 $ millions) | | RPM (millions) | | ASM (millions) | | ALF | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Year** | **Acela** | **NR** | **Acela** | **NR** | **Acela** | **NR** | **Acela** | **NR** | **Acela** | **NR** |
| **2003** | 2.4 | 5.9 | $346 | $393 | --- | --- | --- | --- | --- | --- |
| **2004** | 2.6 | 6.4 | $351 | $407 | --- | --- | --- | --- | --- | --- |
| **2005** | 1.8 | 7.1 | $244 | $439 | --- | 1,041 | --- | 2,410 | --- | 43% |
| **2006** | 2.7 | 6.8 | $376 | $454 | 473 | 961 | 923 | 2,307 | 51% | 42% |
| **2007** | 3.2 | 6.8 | $453 | $476 | 577 | 974 | 980 | 2,272 | 59% | 43% |
| **2008** | 3.4 | 7.5 | $497 | $511 | 631 | 1,100 | 1,006 | 2,200 | 63% | 50% |
| **2009** | 3.0 | 6.9 | $436 | $460 | 570 | 1,047 | 1,033 | 2,393 | 55% | 44% |
| **2010** | 3.2 | 7.1 | $443 | $461 | 611 | 1,105 | 1,015 | 2,394 | 60% | 46% |
| **2011** | 3.4 | 7.5 | $494 | $494 | 650 | 1,167 | 1,028 | 2,545 | 63% | 46% |
| **2012** | 3.4 | 8.0 | $508 | $536 | 647 | 1,234 | 1,034 | 2,550 | 63% | 48% |

Contrary to the overall financial performance of Amtrak, the NEC reported a $289 million operational contribution (excluding depreciation, capital charge and interest) in FY 2012: $209 million (72%) from the Acela Express, and $72 million (25%) from the Northeast Regional. While the Acela Express has been proven increasingly profitable since its inception, the Northeast Regional recovered from two years of losses after the economic recession, with a $28-million operational surplus (excluding depreciation, capital charge and interest) in FY 2011, a comeback from a $43-million loss the year immediately before (nominal USD).

Increased transportation demand, airport congestion, targeted investments from Amtrak, and availability of funding for capital investments have driven the recent boost in performance in the NEC. However, an infrastructure maintenance backlog of $8 billion is yet to be addressed. In 2010 Amtrak estimated the required investment to bring the Amtrak-owned NEC infrastructure to a state of good repair and to cope with the expected growth between 2010-2030, at $52 billion, including the replacement of several bridges over a century old (NEC MPWG 2010).

## 2.5. High-Speed Rail Experience in the NEC

Although the conversation about HSR in the U.S. is hardly new, it was recently reinvigorated by the Obama administration via launching of the "*Vision for HSR in America*", a HSR strategic plan, as part of the American Recovery and Reinvestment Act (ARRA) of 2009 (see Table 2.1). This was the first U.S. presidential administration to make HSR a nationwide initiative. ARRA authorized $8 billion to develop a national HSR system, and the NEC was selected as a strategic corridor for targeted HSR funding (FRA 2009).

Before ARRA, the Passenger Rail Investment and Improvements Act of 2008 (PRIIA) established the framework for development of HSR corridors, allocating $1.5 billion for capital improvements in the NEC for FY 2009-2013 (FRA 2013). Years before, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) authorized the NEC as a HSR corridor.

Governmental appropriations in the past two decades allowed track improvements and procurement of HSR train sets, which resulted in the inauguration of the Acela Express in December 2000.

### 2.5.1. A Note on the Definition of HSR

Before discussing the HSR experience in the NEC, it is important to review some definitions of HSR and understand differences in the meaning of the terms.

There is not an absolute, consensus definition, but multiple differing denotations of HSR. For example:

- The Council of the European Union Directive 96/48 provides a range of capital-oriented definitions of HSR. In terms of infrastructure, HSR means "specially built high-speed lines equipped for speeds generally equal to or greater than 250 km/h [156 mph], specially upgraded high-speed lines equipped for speeds of the order of 200 km/h [125 mph], and specially upgraded high-speed lines which have special features as a result of topographical, relief or town-planning constraints, on which the speed must be adapted to each case." The directive also has a complementary definition of the required rolling stock and some compatibility requirements. (UIC 2013)

- FRA's 2009 *"Vision for HSR in America"* provides an infrastructure- and service-oriented definition of HSR, accompanied by an aspiration to relieve other transportation modes. The definition included multiple categories:
  - "**HSR – Express**. Frequent, express service between major population centers 200–600 miles apart, with few intermediate stops. Top speeds of at least 150 mph on completely grade-separated, dedicated rights-of-way (with the possible exception of some shared track in terminal areas). Intended to relieve air and highway capacity constraints."
  - "**HSR – Regional.** Relatively frequent service between major and moderate population centers 100–500 miles apart, with some intermediate stops. Top speeds of 110–150 mph, grade-separated, with some dedicated and some shared track (using positive train control technology). Intended to relieve highway and, to some extent, air capacity constraints."
  - "**Emerging HSR**. Developing corridors of 100–500 miles, with strong potential for future HSR Regional and/or Express service. Top speeds of up to 90–110 mph on primarily shared track (eventually using positive train control technology), with advanced grade crossing protection or separation. Intended to develop the passenger rail market, and provide some relief to other modes."
- The previous definition contrasts with FRA's 1997 technology-based, competition-driven definition of high-speed ground transportation (HSGT): "HSGT is self-guided intercity passenger ground transportation—by steel-wheel railroad or magnetic levitation (Maglev)—that is time-competitive with air and/or auto for travel markets in the approximate range of 100 to 500 miles."
- Sakamoto (2012) identified an informal, operational, but popular definition of HSR, widely spread in the media and among rail advocacy groups, as: trains with maximum speed of at least 150 mph and running almost always at more than 120 mph. One could expand on this definition, noting that true international-quality high-speed rail is often meant to include trains with a maximum speed of at least 220 mph. This brings strong competitiveness in the range up to 500 miles.

What most definitions have in common is a mix of distances, infrastructure, rolling stock, and operational speeds. Some of them exhibit a range of HSR categories with terms that are not mutually agreed upon. Different agents may use the term HSR indiscriminately. This leads to confusion and debate. For example, someone might deem the Acela Express as HSR-Regional, according to FRA's 2009 definition, because it reaches top speeds of 110-150 mph. Nevertheless, these speeds are achieved only in short segments of the track between Boston and New York, and travel time is much longer than that in countries with full-fledged HSR lines and similar network structure. This diminishes the time-competitiveness with air travel of the Acela Express, particularly in the Boston-Washington market, and it fails the necessary condition be considered HSGT, according to FRA's 1997 definition. The Acela Express would most certainly fail Sakamoto's definition of HSR.

### 2.5.2. Prospects for HSR in the NEC

The NEC network structure–a main line with some branches–with high population density, intercity distances on the 100-500 mile range, economic power, and transit connections make it a natural fit for world-class HSR. For this reasons, there are a number of recent and ongoing efforts and studies for improving HSR service in the NEC.

Amtrak and the FRA launched the most relevant initiatives for HSR development in the NEC for the next 30 years: The NEC Master Plan, the Vision for High-Speed Rail in the Northeast Corridor, and the NEC FUTURE – Passenger Rail Corridor Investment Plan.

#### 2.5.2.1. The NEC Master Plan

The *"NEC Master Plan"* (NECMP) of 2010 was an Amtrak-led initiative coordinated with representatives from the FRA, 12 states, and the District of Columbia, commuter and freight operators, and other stakeholders in the Northeast Corridor. As a joint effort for a shared corridor, this plan estimated $52 billion expenditures from 2010 to 2030 to first bring existing infrastructure to a state of good repair, subsequently increase current capacity to accommodate expected growth of commuters, intercity travelers, and freight trains, and finally improve trip time between city pairs (NEC MPWG 2010).

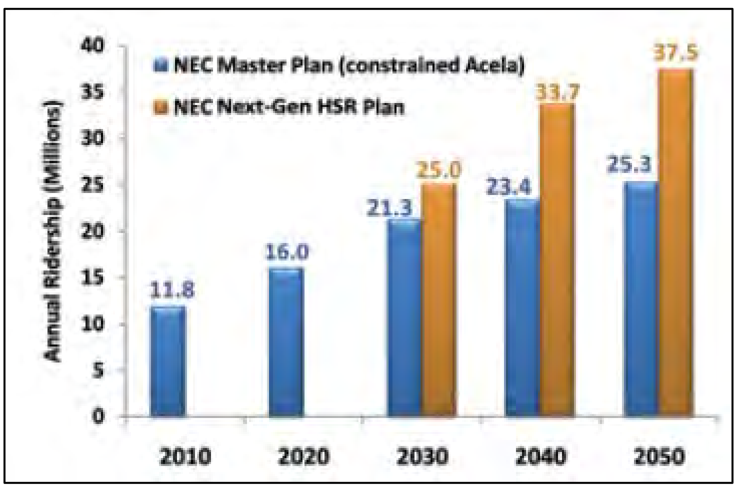
The NECMP anticipated 23 million annual intercity riders by 2030, a 76% cumulative increase (2.9% per year), and $1.84 billion revenue. However, this master plan did not consider an international-quality HSR deployment such as that developed in Japan or Europe. Projected trip-time reductions would not be significant. The Boston-New York trip would have been merely reduced from 3:31 to 3:08 h (23 min), and the New York-Washington from 2:45 to 2:15 h (30 min) (NEC MPWG 2010).

#### 2.5.2.2. Amtrak's Vision for HSR in the Northeast Corridor

After the 2010 NECMP was released, Amtrak thought more ambitiously and on a longer timeframe about an international-quality HSR system. Its "*Vision for High-Speed Rail in the Northeast Corridor*" depicted a Next-Generation HSR system (NextGen) on a new, fully dedicated track alignment from Boston to Washington, to be completed by 2040. The $117-billion estimated investment was to provide a range of frequent HSR services, reducing trip times down to 1:23 h from Boston to New York, and 1:36 h from Washington to New York. Traveling at top speeds of 220 mph with the NextGen HSR, the Washington-Boston trip would take 3:23 h, cutting current travel time in half. Annual ridership would be as high as 17.7 million on the NextGen HSR, and 16.1 million on regional services, five and two times the current ridership levels on the Acela and Northeast Regional, respectively. NEC revenue would rise threefold, yielding an annual operating surplus of $900 million (Amtrak 2010).

Figure 2.4 shows a comparison of the projected ridership under both plans.

**Figure 2.4- Projected Ridership NECMP and Vision 2010 (Amtrak 2010)**




Two years later, in 2012, Amtrak updated the Vision with the development of the *"NEC Capital Investment Program"*, reexamining capital investments and possible track alignments on the NEC. The result was a $150 billion stair-step phasing investment strategy, consisting of two sequenced programs: the NEC Upgrade Program (NEC-UP) and a revised NEC Next Generation

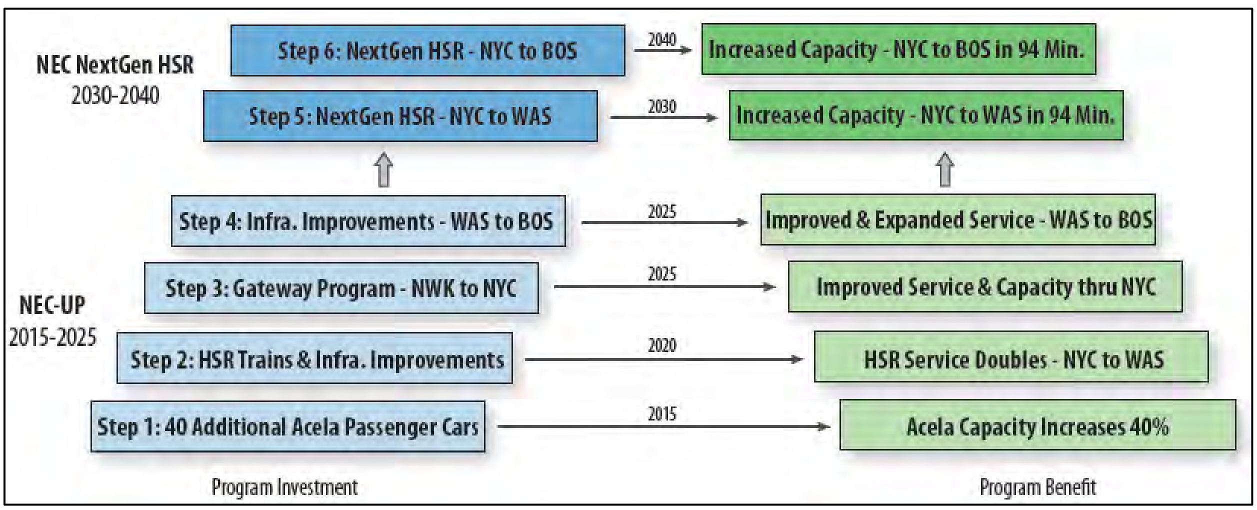
HSR (NextGen HSR). These two programs sought to reconcile the short-term needs of the NECMP with the previously proposed long-term vision for the corridor.

The NEC-UP, active from 2015 to 2025, encompasses a sequence of incremental improvements that would bring infrastructure to a state of good repair, enhance capacity of the NEC through procurement of additional Acela train sets, and reduce travel time through track improvements. It also includes the special Gateway Program in New York City, which would increase the tunnel and terminal capacity from New York to Newark. The top speed of the trains would be 160 mph and even though travel time would improve only slightly, reliability, capacity and frequency of the NEC services would be considerably enhanced.

The NEC NextGen HSR, to be achieved from 2025 to 2040, consists of new, fully dedicated HSR tracks to be implemented in two phases. The Washington-New York track would be completed by 2030, at a cost of $52 billion, followed by the New York-Boston link by 2040, at a cost of $58 billion. Still, funding for these projects is yet to be located. Traveling at top speeds of 220 mph, trip time between New York to either Boston or Washington would be 1:34 h each way.

Figure 2.5 shows the six steps that comprise the NEC stair-step capital investment program.

**Figure 2.5- NEC Capital Investment Program (Amtrak 2012)**




As a complement to the NEC Capital Investment Program, Amtrak produced the *"NEC Business and Financial Plan"* with revised projections of travel demand and revenue, estimating 43.5 million annual riders and $4.86 billion revenue by 2040.

#### 2.5.2.3. NEC FUTURE

The "*NEC FUTURE – Passenger Rail Corridor Investment Plan*" is an ongoing planning effort launched by the FRA to determine, assess and prioritize future investments on the NEC. The overarching goal is to develop a rail network as part of an integrated, multi-modal transportation solution in the NEC through 2040 (NEC FUTURE 2013a). The NEC FUTURE is a three-phase planning process to be completed by 2015.

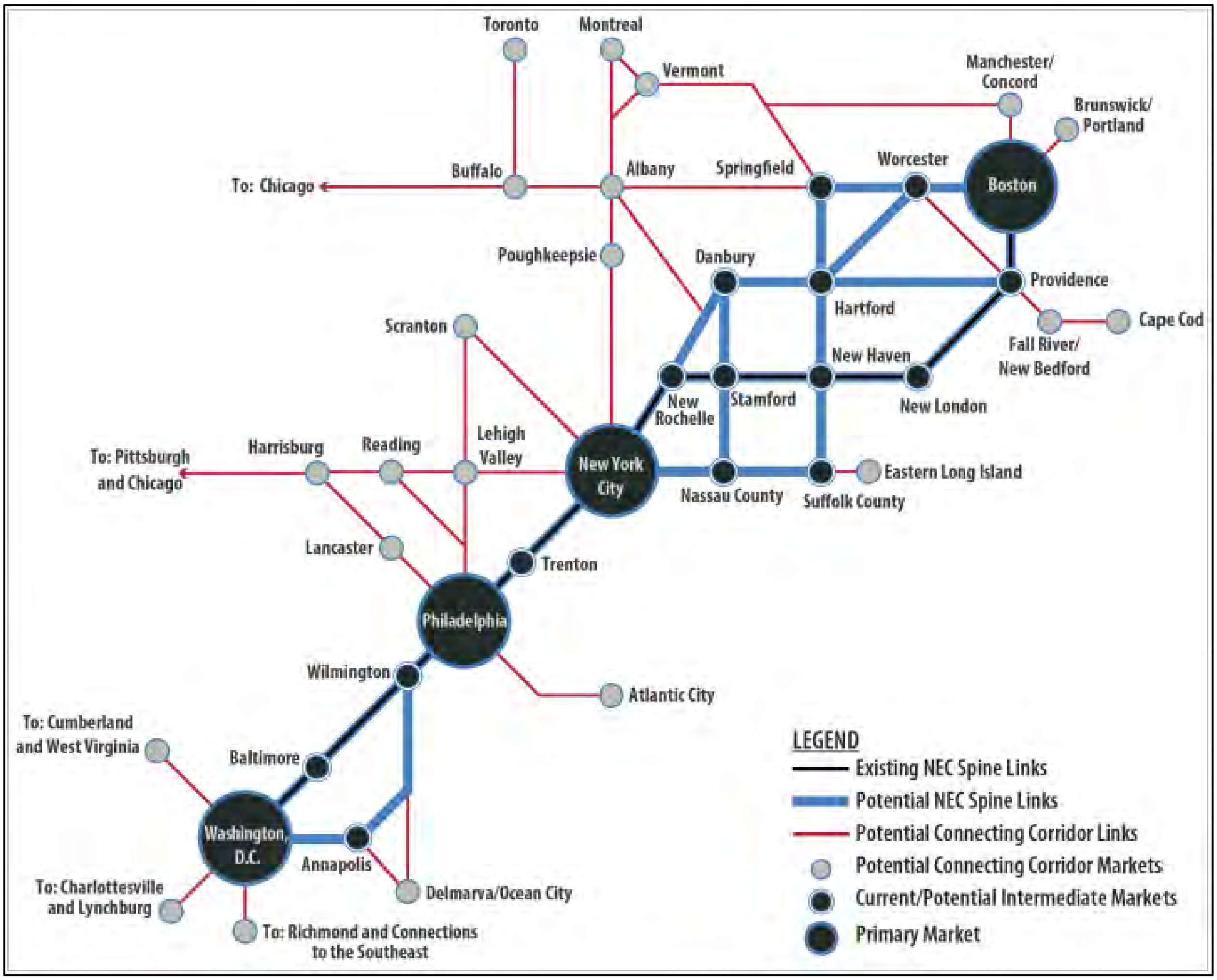
As a formal decision making process of a full range of service and alignment alternatives, the NEC FUTURE encompasses a service development plan (SDP) and a programmatic environmental impact statement (EIS), engaging multiple stakeholders, and developing a passenger rail corridor investment plan. Interestingly, the NEC FUTURE is an overall rail transportation planning process and not an exclusive HSR planning process, unlike Amtrak's current vision.

After an initial scoping process with several public meetings and comments, a preliminary report with fifteen possible alternatives was issued in April 2012. Notably, the alternatives do not consider institutional changes, focusing solely on different levels of investment, alignments, and services. The term "institutional-neutral" is used widely in this planning process as an opportunity to provide new services that are not provided today, for example: a new direct service between two cities, but not in the sense of not favoring an institutional structure over another (or a given stakeholder over another), if considering new institutional arrangements.

Although some alternatives are suitable for top speeds of 220 mph, alternatives that limit top speeds to 160 mph, including the do-nothing alternative, are also under consideration (NEC FUTURE 2013b). The study's end result could incorporate for prioritization many of Amtrak's prior recommendations or go another direction.

Figure 2.6 shows a summary of the networks of preliminary alternatives for the NEC in this study. The northern leg of the corridor is visibly more open to alternative alignments, including the developing of connecting corridor linkages. The southern part of the corridor has far fewer variations, thus resembling what Amtrak presented in its vision for the NEC.

**Figure 2.6- Initial Alternatives Networks for NEC Spine and Connecting Corridors (NEC FUTURE 2013b)**




### 2.5.2.4. Alternative Approach to HSR in the US

In addition to these three planning efforts, there have been studies that looked at the NEC with innovative methods and provided alternative ways to develop.

Sussman et al. (2012a, 2012b) use the CLIOS Process–an engineering systems framework for analyzing **C**omplex, **L**arge-Scale, **I**nter-Connected, **O**pen, **S**ociotechnical systems—, scenario planning, and flexibility analysis to study the implementation of HSR in the NEC. The analysis recognizes interactions between institutions and physical entities. In contrast with the NEC FUTURE, four strategic decisions comprise the bundles of strategic alternatives in HSR development, which, in fact, consider institutional decisions in the NEC: technology, ownership, vertical structuring, and competition.

The analysis notes a great deal of uncertainty in such a long-term planning process. To account for the tremendous political and economic uncertainty, the alternatives are analyzed under different scenarios (i.e. stories about the way the world might turn out but not predictions of the future or extrapolations of the past) that provide a wider range of possible futures. The result was a clear prevalence of uncertainty and a broad range of performance of the alternatives.

That motivates the incorporation of institutional and technological flexibility into the alternatives. Flexibility is the right but not the obligation to change a decision in order to respond dynamically to different realizations of the future (i.e. an option). In this sense, institutional flexibility was the option to change the institutional structure of Amtrak, and the technological flexibility was the option to change from implementing a fully dedicated HSR to making incremental upgrades on the existing network. The end-result of this qualitative analysis was that flexibilities, like insurance, may have a cost, but they improve the expected outcome of the system when uncertainty dominates. Furthermore, the flexibility may facilitate the implementation of HSR by enabling adaptation of the alternatives to uncertain futures.

### 2.6. Chapter Conclusion

Amtrak, the National Railroad Passenger Corporation established in 1971, has been harshly criticized over forty years of operations for its level of service, managerial practices, and continuous unprofitability, to the extent that critics call for an end of subsidies or alternative institutional arrangements. Amtrak responds that it has recently improved performance and that the stream of subsidies is much lower than that of other transportation modes. Indeed, in 2000-2012, there was substantial ridership and revenue growth at all levels, but the performance of the 22,000-mile nationwide system greatly contrasted with the performance of the 450-mile NEC sub-network. Today, nationwide unprofitability and capacity constraints in the NEC remain as two of the most pressing challenges that Amtrak faces. A productivity analysis could help settle the dispute between Amtrak and its critics by determining if productivity changes in the past may inform further improvements in the future. Furthermore, it could help identify routes or sub-networks of Amtrak with great potential for improvement that could be prioritized under a funding-constrained scenario.

The NEC, an intricate corridor stretching from Boston to Washington, and the preeminent face of Amtrak, is at a potential renaissance point. Thus far, the introduction of the Acela Express in 2000–perhaps not a true HSR service but an improved service—benefited Amtrak and mobility within the megaregion. Even with HSR trains running below their full potential, Amtrak showed increasing operating profits, ridership, and air/rail market shares in the NEC. Furthermore, the incremental ridership of the Acela Express was very profitable. These two reasons lead one to believe in the potential of future HSR developments.

However, the implementation of future HSR in the NEC is nonexempt from complex upgrading challenges. The characteristics of the corridor and the political support from the Obama administration to HSR across the country motivated enhancements to the NEC. However, a main challenge in upgrading this multi-stakeholder, multi-state, multi-purpose corridor under a funding-constrained scenario and a polarized debate is in managing the pressing issues and determining a consensual strategy for moving forward effectively. Some initiatives and studies attempt to do so: the NECMP (2010), the Amtrak vision for HSR in the NEC (2010, 2012), the multi-stakeholder effort NEC FUTURE (2012-present), and Sussman et al. (2012a, 2012b).

There are still alternatives to be scoped and significant choices to be made: investment levels, alignments, services, perhaps even institutional arrangements. Uncertainty dominates in such a long-term planning and implementing process. For some critics, substantial trip time reductions are scheduled to be realized too far in the future. To make things more complicated, but perhaps even more comprehensive, the NEC FUTURE seeks an integrated, multi-modal transportation solution in the NEC through 2040, potentially not even considering further HSR development. This planning process will not be completed until 2015. Again, a productivity analysis could help evaluate and shape such implementation strategy by determining if productivity changes in the past suggest future improvements in the NEC, or by prioritizing areas with great potential for improvement.

Finally, while recently improved performance may be attributed to a number of factors, at this moment it is difficult to point to specific drivers of performance and assess their impacts.

The next chapter lays out a structure to study productivity of passenger rail in the NEC and addresses the productivity of the NEC-spine trains from FY 2002 to 2012.

## 2.7. Chapter References


Amtrak (2003-2012). *Amtrak Year-End Monthly Performance Reports.*

Amtrak (2010). *A Vision for High-Speed Rail in the Northeast Corridor.*

Amtrak (2011a). *Amtrak's Northeast Corridor: FY 2011.*

Amtrak (2011b). *News Release ATK 133*, October 13, 2011.

Amtrak (2011c). *News Release ATK 11-020*, February 14, 2011.

Amtrak (2012). *The Amtrak Vision for the Northeast Corridor: 2012 Update Report.*

UIC (2013). *Council of the European Union Directive 96/48.* Accessed on March 2013 www.uic.org/spip.php?article971

Gardner, S. (2013). *Creating Capacity for Growth–New Approaches for Managing the Future of the NEC.* TRB 2013 Annual Meeting: Socioeconomic and Financial Aspects of Intercity Passenger Rail Subcommittee.

NEC Future (2013a). *NEC FUTURE – Passenger Rail Corridor Investment Plan.* Accessed on March 2013. www.necfuture.com

NEC Future (2013b). *NEC FUTURE – Passenger Rail Corridor Investment Plan. Preliminary Alternatives Report.*

Puentes, R., Tomer A., Kane, J. (2013). *A New Alignment: Strengthening America's Commitment to Passenger Rail*. Metropolitan Policy Program at Brookings.

Sakamoto, R., & Massachusetts Institute of Technology. Dept. of Civil and Environmental Engineering. (2012). *High Speed Railway Productivity: How Does Organizational Restructuring Contribute to HSR Productivity Growth?* (S.M. in Transportation, Massachusetts Institute of Technology, Dept. of Civil and Environmental Engineering).

Sussman, J., Archila, A.F., Carlson S.J., Peña-Alcaraz, M., Stein N. (2012a). *Transportation in the Northeast Corridor of the U.S.: A Multimodal and Intermodal Conceptual Framework.* web.mit.edu/hsr-group/documents/jiti.pdf

Sussman, J., Pena-Alcaraz, M., Carlson, S. J., Archila, A. F., Stein, N. (2012b) *Analysis of High-Speed Rail Implementation Alternatives in the Northeast Corridor: the Role of Institutional and Technological Flexibility.*

The NEC Master Plan Working Group (MPWG) (2010). *The Northeast Corridor Infrastructure Master Plan.*

U.S. Bureau of Labor Statistics (USBLS) (2013). *Consumer Price Index.* http://www.bls.gov/cpi/data.htm

U.S. Government Accountability Office (USGAO) (2004*). Intercity Passenger Rail: Amtrak's Management of Northeast Corridor Improvements Demonstrates Need for Applying Best Practices*. GAO---04---94, U.S. Government Accountability Office, Washington, D.C.

U.S. Census Bureau (2013). *Census Data*. Accessed on March 2013. www.uscensus.gov

U.S. Department of Transportation Federal Railroad Administration (FRA). (1997). *High-Speed Ground Transportation for America*. U.S. Department of Transportation: Washington, D.C.

U.S. Department of Transportation Federal Railroad Administration (FRA). (2009). *Vision for High-Speed Rail in America. High-Speed Rail Strategic Plan.* U.S. Department of Transportation, Washington, D.C.

U.S. Department of Transportation Federal Railroad Administration (FRA). (2013) *HSR overview*. Accessed on February 2013. www.fra.dot.gov/Page/P0140

# 3. Past Productivity in the NEC

## 3.1. Introduction

This chapter lays out a structure to study the productivity of passenger rail in the NEC. Then it addresses the productivity of the NEC-spine trains (as defined in Chapter 2) from FY 2002-2012.

## 3.2. Data, Scope, and Method of Analysis

The data and method of analysis are critical in a productivity study, and therefore must be carefully chosen (see Chapter 1). This analysis focuses on the evolution of four Single Factor Productivity (SFP) metrics, on the *Express*, *Regional*, and *Combined NEC-level* services. While three SFP metrics give insights into the productivity on the demand side (ridership, revenue, and RPM SFP with respect to operating costs), only one (ASM SFP with respect to operating costs) refers to the productivity on the supply side.

### 3.2.1. Sources of Data

Data were compiled for FY 2002-2012 from Amtrak’s year-end monthly performance reports. The Route Performance section (section C) of those reports included operational data at the individual route level, while the Financial Results section (section A) included data on ridership and revenue (see Appendix A: NEC Data FY 2002-2012). Most data were monetized (revenue, cost breakdown, and contribution/profit) except for ridership data. Auxiliary metrics such as Revenue Passenger-Miles (RPM), Available Seat-Miles (ASM) and Average Load Factor (ALF) were derived from reported, monetized data, where possible.

Amtrak changed the format of the monthly performance reports four times during the period of study: in FY 2005, 2006, 2009, and 2010. These format changes comprised different, sometimes incompatible cost breakdowns, allocation methods, or route definitions. Fortunately, data were reported for the current and past fiscal year in each document. This enabled valid year-to-year comparisons and calculations. In years with a format change, this also allowed us to check that data under different formats were comparable. In the face of conflicted data for a given fiscal year, after consideration of format changes, priority was given to audited over preliminary reports and to newer over older reports.

Accordingly, the analysis was divided into different time periods depending on the route definition and the productivity metric, as will be shown in Section 3.3.2: SFP Analysis.

### 3.2.2. Output and Input Data

Table 3.1 displays the output and input data categories retrieved from Amtrak's reports since FY 2002. White cells indicate data that were directly retrieved from Amtrak's reports; light-blue cells show indirectly calculated data; and gray cells point to data that were either not reported or that could not be computed at all.

**Table 3.1- Outputs and Inputs**

| Reports | 2003, 2004 | 2005 | 2006, 2007, 2008 | 2009 | 2010, 2011, 2012 |
|---|---|---|---|---|---|
| **FY** | **2002-2004** | **2004-2005** | **2005-2008** | **2008-2009** | **2009-2012** |
| **Outputs** | Ridership | | | | |
| | Revenue | Total Revenue | | | |
| | Ticket Revenue | | | | |
| | --- | | Revenue Passenger-Miles (RPM) | | |
| | --- | | Available Seat-Miles (ASM) | | |
| **Inputs** | Cost | Cost | Total Attributed Costs | Total Costs (Excl. Dep & Int) | Total Costs |
| | --- | FRA Defined Costs | Direct Labor | FRA Defined Costs | Total Costs excl. OPEB's, Capital Charge and Other Costs |
| | --- | Remaining Direct Costs | Other Direct Costs | Total Remaining Direct Costs | OPEB's – Other Post-Employment Benefits |
| | --- | Total Non-Direct Costs (Exclude Dep, Int & Discont Ops) | Total Shared Costs | Total Non-Direct Costs | Capital Charge* |

Categories of data varied according to the reporting format, and, in some fortunate cases, were comparable despite such format changes. As shown by the thick borders in Table 3.1, outputs were consistently reported with only minor name changes, while inputs were rarely so. "Revenue" and "Total Revenue" referred to the same output data.

On the inputs side, total costs were reported before depreciation, interest, capital charges, and discontinuous operations, despite showing different labels. However, the cost breakdown did present incompatible categories after each format change. For this reason, total costs were considered when calculating productivity metrics instead of the specific cost categories.

No input "quantity" data were reported; rather, all inputs were "monetized", a condition that allowed their aggregation into a single-input metric: *costs*. Thus, the production process of Amtrak could be considered as single-output single-input, with varying output categories but with costs as single input. Hence, the productivity metrics used are labeled *single factor productivity* (SFP) instead of *partial productivity* (see Figure 1.1).

### 3.2.3. Route Definitions

In addition to data categories, Amtrak also modified the route definitions of the NEC in the monthly performance reports, even within different sections of a single document. Furthermore, various Amtrak services ended operations in the past decade. This translated into data that were sometimes reported for combined routes, or that were untraceable to the present day due to discontinuity in the service offered.

For these reasons, the analyzed routes were scoped down to *Express*, *Regional,* and an overall *NEC* level. Table 3.2 shows the distinct route definitions in the NEC for FY 2002-2012, and a description of the routes follows.

**Table 3.2- NEC Route Definition**

<table>
<tr><th>Reports</th><th>2003, 2004</th><th>2005</th><th>2006, 2007, 2008</th><th>2009</th><th>2010, 2011, 2012</th></tr>
<tr><th>FY</th><th>2002-2004</th><th>2004-2005</th><th>2005-2008</th><th>2008-2009</th><th>2009-2012</th></tr>
<tr><td rowspan="2">Express</td><td colspan="2">01-Acela Express</td><td>01-Acela and 01/02-Acela/Metroliner</td><td colspan="2">01-Acela</td></tr>
<tr><td colspan="2">02-Metroliner</td><td colspan="3">---</td></tr>
<tr><td rowspan="2">Regional</td><td>05-Regional</td><td>05A-Regional/Federal</td><td>05-Regional(s)</td><td colspan="2">05-Northeast Regional</td></tr>
<tr><td>06-Federal</td><td colspan="4">---</td></tr>
<tr><td>Clocker</td><td colspan="2">13-Clocker Service</td><td colspan="3">---</td></tr>
<tr><td>Crew Labor</td><td colspan="2">---</td><td colspan="2">91-NEC Unknown (Crew Labor)</td><td>---</td></tr>
<tr><td>Special Trains</td><td colspan="2">---</td><td colspan="2">99 and 06/98/99-NEC Special Trains</td><td>99-(NEC) Special Trains</td></tr>
<tr><td>Bus Route</td><td colspan="2">---</td><td colspan="2">70-NEC Bus Route</td><td>---</td></tr>
</table>

**EXPRESS:** *Express* is comprised of two routes: the Acela Express and the Metroliner. The Acela (Route 01 – RT01) was described in Section 2.4.2: NEC Operations and Services. The Metroliner (RT02) was an express service that ran between New York and Washington, in the southern leg of the NEC, from January 1969 to October 2006, and is regarded as an important precursor of HSR (Goldberg 2006). Originally, the Metroliner was scheduled to be retired in the early 2000's, but extended its lifetime due to recurrent technical problems of the Acela train sets.

Upon the Metroliner's retirement, the Acela remained the only express service in the NEC, and its data were reported individually. While these two services were accounted separately in the FY 2003-2005 reports, they were jointly reported in the FY 2006 report, partly because the Metroliner replaced most of the Acela services in that year, due to technical problems of the latter.

**REGIONAL:** *Regional* is comprised of the (Northeast) Regional and the Federal. The (Northeast) Regional (RT05) was described in Section 2.4.2: NEC Operations and Services. The Federal (RT06) was a service that replaced a dedicated sleeper train on the NEC, and gradually merged operations with regional services until its retirement in 2006. The Federal was of little relative importance; for instance, it carried 3.7% of the passengers and collected 4.5% of the ticket revenue of RT05 in FY 2002.

In the FY 2003-2004 monthly performance reports, data for the (Northeast) Regional and Federal were reported separately. In FY 2005, both services were jointly reported as Regional/Federal (RT05A). By FY 2006, the Federal was completely out of service, a point from which the Northeast Regional (RT05) performance data were reported individually.

**CLOCKER:** The Clocker Service (RT13) ran between Philadelphia and New York, mostly serving commuters and day-travelers, from May 1971 until October 2005. In its last years of service, the Clocker carried close to 2 million passengers per year. Upon termination of the service those riders shifted mainly to regular commuter services not offered by Amtrak. Not until FY 2012 did Amtrak break the NEC ridership record that had been previously established in times of the Clocker (11.3 million annual passengers in FY 2004). Because the Clocker service is no longer available, it was removed from the scope of analysis but considered when assessing the overall NEC productivity.

**MISCELLANEOUS ROUTES**: In addition to the abovementioned services, there were miscellaneous routes running on the NEC: the NEC Crew Labor, NEC Special Trains, and NEC Bus Route. Some did not transport revenue passengers, and their incidence on costs and revenues was insignificant or non-existent at all. For this reason they were not analyzed individually. However, they were in fact considered in the calculations at the overall NEC level.

Table 3.3 shows a timeline of the main route changes in the NEC-Spine, which were just discussed.

**Table 3.3- Timeline of Routes in the NEC Spine**

| YEAR | EVENT |
|---|---|
| **1969** | January, Metroliner (RT02) starts operations |
| **1971** | May, Clocker Service (RT13) starts operations |
| **1995** | Northeast Regional (RT05) starts operations |
| **2000** | December, Acela Express (RT01) starts operations |
| **2002** | August, Acela Express braking system problems |
| **2005** | April-September Acela Express stoppage |
| **2005** | October, Clocker Service (RT13) ends operations |
| **2006** | October, Metroliner (RT02) ends operations |
| **2006** | Federal (RT06) ends operations |

Appendix A: NEC Data FY 2002-2012 includes tables with data for the NEC and exhibits of original data.

### 3.2.4. Method of Analysis

The choice of a method for calculating productivity depends on factors like purpose of analysis, type of data, data availability, computational resources and context-specific constraints. Robustness is a most desired attribute that a productivity analysis should have (see Section 1.7: Chapter Conclusion).

Price effects were removed by inflating monetized quantities by an appropriate consumer price index (CPI) to 2012 USD. This guaranteed that productivity changes could be attributed to changes in technical/managerial change, economies of scale, or external factors, and not to price effects plus some of these factors (see Section 1.5: Data Requirements).

Costs were inflated by the general CPI (series CUUR0000SA0), while revenues were inflated by the transportation CPI (series CUUR0000SAT 2002-2007 and CUUR0000SS53022 2007-2012) (USBLS 2013). Using the transportation CPI for expenditures would have ignored that Amtrak paid for goods and services that are not exclusively related to transportation, e.g., utilities. On the other hand, it was preferable to manipulate revenues with the transportation CPI over the general CPI, as Amtrak's output was indeed a transportation service. A specific CPI series for intercity train fare was available since 2007 (CUUR0000SS53022). For preceding years, the transportation CPI was used instead. This returns more reliable results for recent years, and, as a side note, results are robust enough relative to the use of one series or the other.

This productivity analysis selected a popular non-parametric (index number) approach (see Section 1.4: Methods for MFP/TFP). Although a non-parametric of approach cannot distinguish between the specific sources of productivity change, thus sacrificing the amount of information it returns, the alternative, a parametric approach, is more data-intensive and computationally complex. Moreover, it would have required the estimation of production functions that cannot be estimated with currently available data.

In order to strengthen the selected non-parametric approach, four distinct SFP metrics were analyzed: ridership, revenue, RPM, and ASM productivity with respect to operating costs. Each SFP metric had a different meaning that gave different insights into what the specific productivity changes were. Thus, using several metrics allowed making an inference on the drivers of productivity change without the need for a parametric approach.

Next, the year-to-year SFP was calculated by considering the total costs as the single input, and a varying output category as the single output. As mentioned earlier (see Section 3.2.2: Output and Input Data), the Amtrak's routes could be reduced to a single-output single-input process, thus labeling productivity metrics as SFP instead of partial productivity. This general formulation is shown in Equation 3.1.

**Equation 3.1- Year-To-Year SFP Formulation**

$$\ln\left(\frac{SFP_1}{SFP_0}\right) = \ln\left(\frac{y_1}{y_0}\right) - \ln\left(\frac{x_1}{x_0}\right);$$

$$Where\ y = output, \quad x = input, \quad 1 = current\ year, \quad 0 = previous\ year$$

This particular type of transformation is a non-parametric Törnqvist trans-log index. Several authors have praised it as a robust and convenient to compute method, preferable over other main index number methods like Laspeyres, Paasche or Fisher (OECD 2001, Coelli et al. 2005, Caves et al. 1981). Apostolides (2008) also stated that there was very little empirical difference between the Törnqvist trans-log index and the growth accounting method, the two most robust methods widely used in the literature. The Törnqvist formula is easier to compute.

As per recommendation of OECD (2001), the cumulative SFP was obtained by compounding the year-to-year variations instead of by directly computing an inter-year SFP. This has two advantages. First, year-to-year measures guarantee comparability of data, since these were retrieved from the same report. As mentioned earlier, there were changes in the cost-allocation method in some reports, which complicated valid multi-year comparisons. Second, for the (not-analyzed) case of multiple inputs, i.e., MFP or TFP, the year-to-year changes would handle changes in input/output weights more gradually than cumulative calculations with respect to a fixed base year (see Section 1.4: Methods for MFP/TFP).

Finally, FY 2005 was selected as the base year for compounding the cumulative SFP for two reasons. First, there was certainty of the route definitions from that year on. Second, it was the earliest that all productivity metrics were defined.

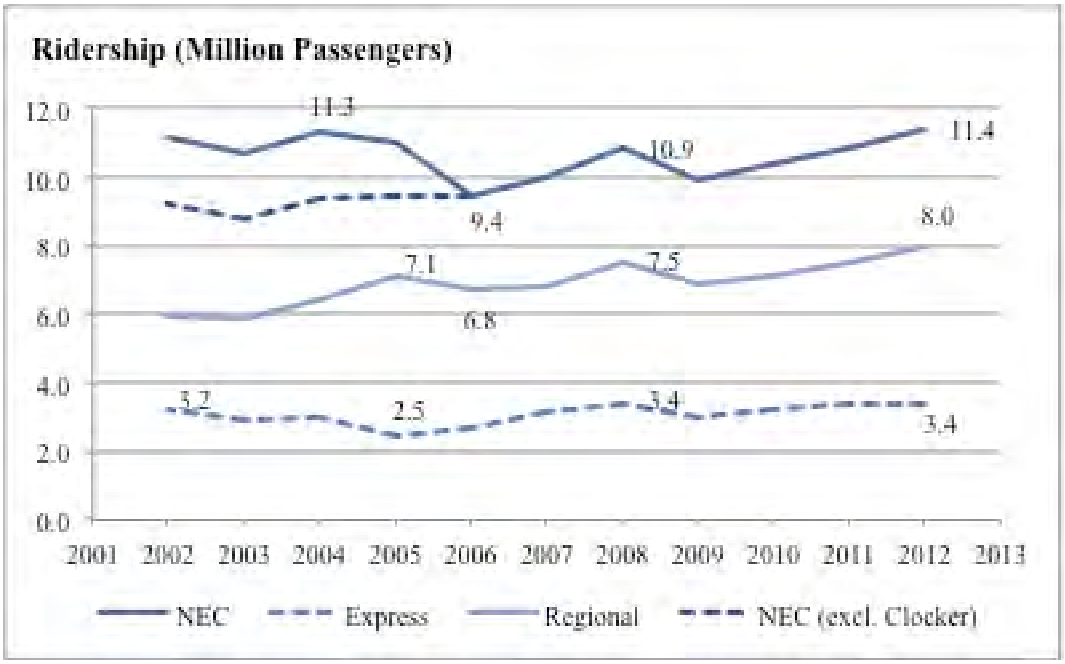
### 3.3. Past Productivity in the NEC

#### 3.3.1. Context of the Past Decade in the NEC 2002-2012

Four notable episodes marked the past decade in Amtrak's NEC. First, two important route changes took place: the removal of the Clocker Service in October 2005 (beginning of FY 2006) and the last run of the Metroliner in October 2006 (beginning of FY 2007) (see Table 3.3). Second, the Acela train sets experienced recurrent technical problems with its braking system in 2002 and 2005. The latter removed the entire fleet from April to July 2005, and reestablished full Acela service by September 2005. Third, a salient, external event occurred: the economic recession of 2008-2009, the most serious economic recession since the Great Depression of 1930. And fourth, the Obama administration allocated funding for targeted capital investments on the NEC starting in 2009.

Figure 3.1 shows the ridership breakdown of the NEC. Ridership on express services has been flat since FY 2002, at 3.0—3.4 million annual passengers, with a downturn in FY 2005 due to technical problems of the Acela train sets, and another in FY 2009 due to the economic recession. The former, a problem on Amtrak's side, coincided with a temporary surge in ridership on regional services, as those trains accommodated some of the spilled demand from express services.

**Figure 3.1- NEC Ridership Breakdown FY 2002-2012 (Adapted from Amtrak 2003-2012)**

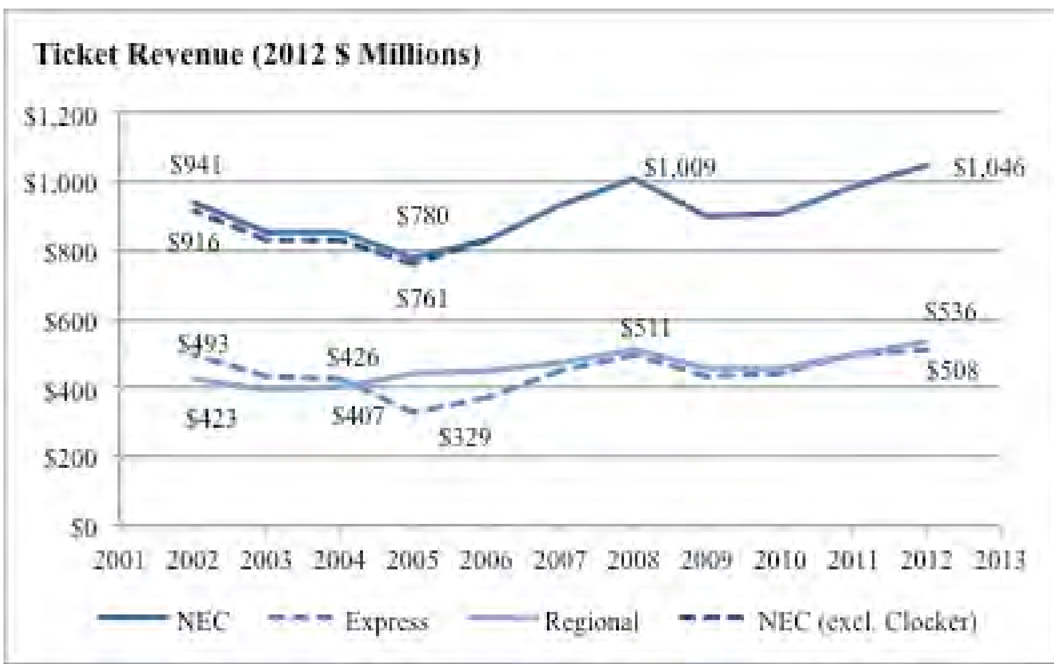


On the other hand, ridership on regional services has gone up almost steadily at about 200,000 riders per year, with some fluctuations along the way: the aforementioned surge in FY 2005, for better, and the economic downturn of FY 2009, for worse. Without considering the Clocker Service, ridership on the NEC has also increased at 200,000 riders per year, with some fluctuations, and most recently at 500,000 riders per year. While traffic growth is gratifying, it is a worrisome situation for an already constrained corridor.

Figure 3.2 shows the revenue breakdown of the NEC. Technical problems with the Acela Express resulted in lost revenue for the NEC, particularly in FY 2005. After that, express services repositioned in the market and continuously increased its revenue, with the exception of the FY 2009 setback.

Regional services, in contrast, grew steadily and were less sensitive to economic conditions than express services. Thus, the volatility of the NEC ticket revenue was explained mostly by the sensitiveness of express services, while the majority of the net revenue growth was explained by growth in regional services.

**Figure 3.2- NEC Ticket Revenue Breakdown FY 2002-2012 (Adapted from Amtrak 2003-2012)**




As implied by Figure 3.1 and Figure 3.2, the effect of the economic recession of 2009 was a regrettable 2-3-year setback in ridership and revenue, for all routes in the NEC. Overall, the effects of lost or gained ridership on ticket revenue were more pronounced for express services than for regional services, revealing that the former are more sensitive than the latter.

### 3.3.2. SFP Analysis

As mentioned earlier (see Section 3.2.4: Method of Analysis), four distinct SFP metrics were analyzed: ridership, revenue, RPM, and ASM SFP with respect to operating costs. For simplicity, the words "operating costs" will be removed from the productivity label, as it is the sole input of each metric. Only the most relevant SFP figures appear in this section but additional items are contained in Appendix B: Additional NEC SFP Figures and Tables FY 2002-2012.

Each SFP metric has a particular meaning. ASM SFP is a proxy for the effectiveness at generating transportation capacity, whereas revenue, ridership, and RPM SFP are measures of the effectiveness at exploiting the available capacity. Given that *ticket* revenue SFP and *total* revenue SFP had a facsimile behavior for all routes and years, they were named simply as *Revenue SFP*, and data from ticket revenue SFP were reported in its place. Revenue SFP reflects how effective Amtrak was at economically exploiting the available capacity.

#### 3.3.2.1. Usage and Capacity

Table 3.4 displays the year-to-year ridership SFP, revenue SFP, RPM SFP, and ASM SFP for the NEC, express, and regional routes in FY 2002-2012.

**Table 3.4- NEC, Express, and Regional Year-To-Year SFP Growth, FY 2002-2012**

| | NEC SFP | | | | Express SFP | | | | Regional SFP | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FY | Ridership | Revenue | RPM | ASM | Ridership | Revenue | RPM | ASM | Ridership | Revenue | RPM | ASM |
| 2011-2012 | 10% | 11% | 8% | 5% | 9% | 11% | 8% | 9% | 9% | 11% | 8% | 2% |
| 2010-2011 | 15% | 20% | 16% | 15% | 13% | 20% | 14% | 9% | 17% | 19% | 17% | 18% |
| 2009-2010 | 3% | 0% | 5% | -2% | 12% | 7% | 13% | 3% | -2% | -5% | 0% | -5% |
| 2008-2009 | -11% | -13% | -8% | 3% | -12% | -13% | -10% | 1% | -11% | -14% | -8% | 4% |
| 2007-2008 | 11% | 10% | 17% | 7% | 3% | 7% | 6% | 1% | 16% | 13% | 24% | 11% |
| 2006-2007 | 2% | 7% | 4% | -3% | 5% | 6% | 7% | -7% | 2% | 6% | 2% | -1% |
| 2005-2006 | -18% | -10% | -19% | -19% | -17% | -13% | -15% | -20% | -18% | -10% | -20% | -17% |
| 2004-2005 | 9% | 2% | --- | --- | 5% | -2% | --- | --- | 12% | 9% | --- | --- |
| 2003-2004 | 9% | 3% | --- | --- | 6% | 2% | --- | --- | 10% | 4% | --- | --- |
| 2002-2003 | 1% | -4% | --- | --- | 0% | -3% | --- | --- | 1% | -4% | --- | --- |
| **Yearly Average Growth** | | | | | | | | | | | | |
| 2005-2012 | 0.9% | 2.8% | 2.5% | 0.4% | 1.3% | 2.9% | 2.8% | -1.1% | 1.0% | 2.1% | 2.4% | 1.3% |
| 2002-2012 | 2.4% | 2.0% | --- | --- | 2.0% | 1.7% | --- | --- | 3.0% | 2.4% | --- | --- |

In general terms, there were productivity improvements in the past decade at all route levels – NEC, express, and regional— and in all metrics. Since 2005, the yearly average growth in ridership, revenue, RPM, and ASM SFP at the NEC level was 0.9%, 2.8%, 2.5%, and 0.4%

respectively. This means the NEC became cumulatively 20% more productive on the demand side (as measured by revenue SFP and RPM SFP) and 3% more productive on the supply side (ASM SFP) in the past seven years.

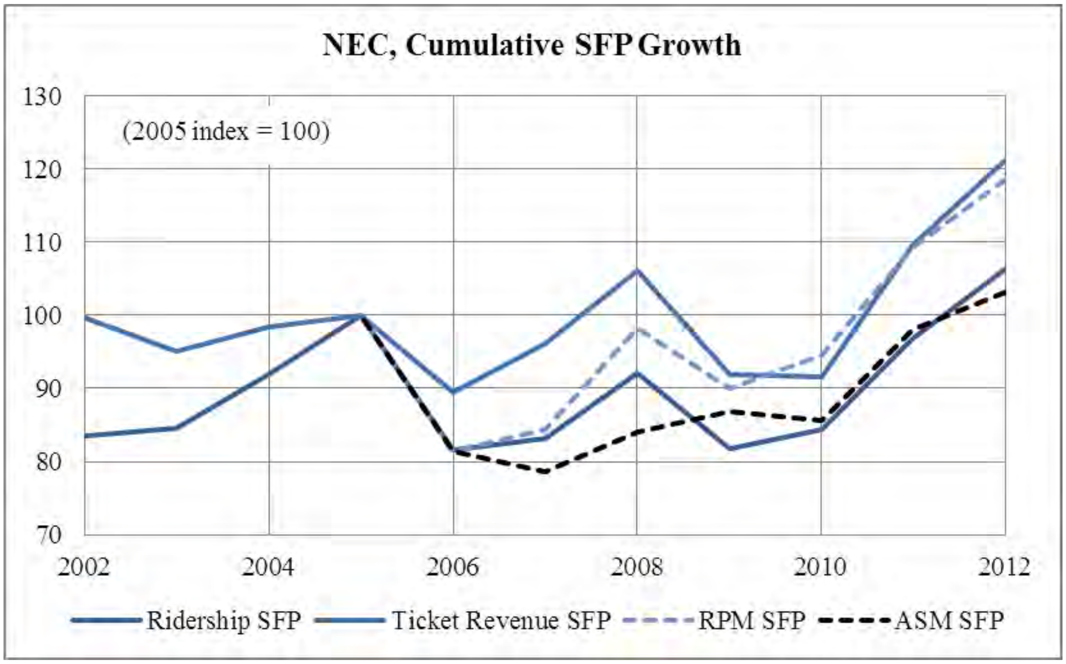
However, this was not a stable, upward trend, but rather a volatile one, boosted and overcompensated by notable productivity improvements in the past three years. Recent, favorable years resulted in yearly increments as high as 20% for some SFP metrics in the NEC, while unfavorable shocks in FY 2006 and 2009 resulted in yearly dips as low as -19%. Such dips setback what might otherwise have been an ever-increasing evolution of SFP. The end result from FY 2005 to 2010 was a flat or even negative SFP growth, which contrasted with previous, though modest, improvements in ridership and revenue SFP in the NEC.

The major episodes previously listed (see Section 3.3.1: Context of the Past Decade in the NEC 2002-2012) provided a number of reasons for this varying productivity. Remarkably, the economic downturn of 2009 was less impactful on the NEC productivity than the problems associated with the stoppage of the Acela services in some months of 2005. The economic recession was mostly troublesome on the demand side, whereas the train stoppage affected the supply, hence increasing costs and underserving demand. As evidence, the NEC ASM SFP dropped -19% in FY 2005-2006, but increased 3% during the economic recession, whereas the RPM productivity decreased -19% and -8% in the two situations, respectively.

Counterintuitively, the reestablishment of the Acela Express in FY 2006 largely reduced the productivity for all metrics, given that Acela train sets greatly increased the costs of producing transportation services. Unfortunately, data on RPM and ASM before 2005 were not available, which would have allowed assessment of the full effect of the stoppage and reestablishment of the Acela Express.

Figure 3.3 shows the cumulative SFP metrics in the NEC for FY 2002-2012, with FY 2005 as base year for all calculations.

**Figure 3.3- NEC, Cumulative SFP Growth FY 2002-2012**




The NEC was less productive in FY 2010 than in FY 2005 for all SFP metrics. However, by FY 2012, Amtrak was far more effective at using the available capacity in the NEC (by filling up trains with more passengers over longer distances) than at generating it (running trains cheaper) with respect to FY 2005. As evidence, cumulative ASM SFP has been lower than cumulative RPM SFP since FY 2006.

The increased demand combined with a low marginal cost per RPM evidences economies of scale that boosted productivity on the demand side in recent years. Most of the new ridership was accommodated on existing capacity, at low extra costs.

Naturally, these economies of scale have had little effect on the supply side. ASM productivity was improved, instead, by recent appropriations of funding that addressed critical infrastructure bottlenecks on the NEC. This allowed the NEC to become in FY 2012 just as ASM productive as it was in FY 2005. The difference now is that the increased costs of running HSR rolling stock are compensated for by a more efficient use of infrastructure.

Also, cumulative RPM SFP exceeded ridership SFP, implying that people were traveling longer distances on the NEC. This was also evidenced by the increased market share between the three major cities of the NEC over the last decade, with essentially the same number of passengers.

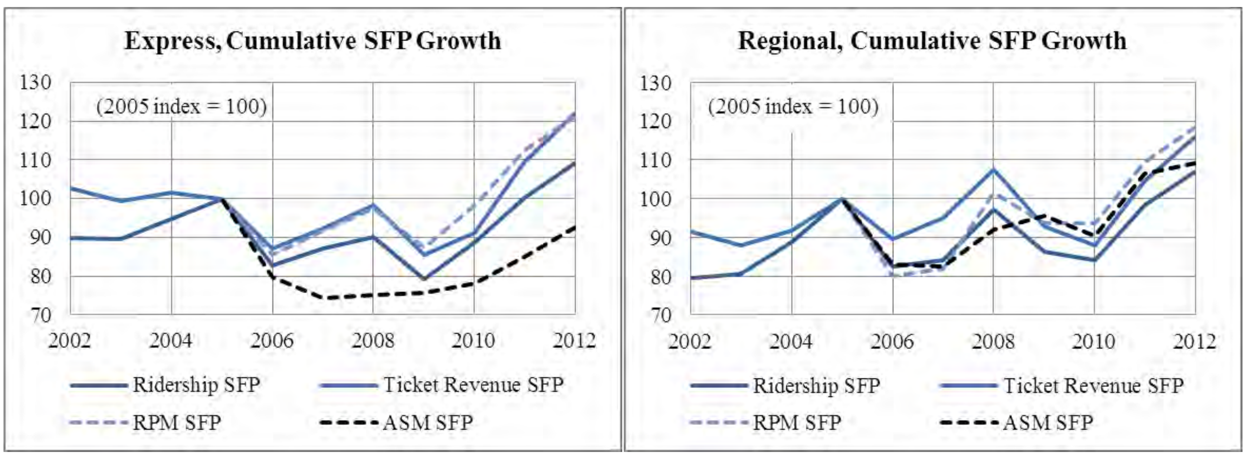
Finally, the usage of the capacity was more volatile with respect to external factors than the generation of capacity in the NEC. For instance, the economic dip of 2009 greatly affected the demand side of the NEC (RPM, ridership and revenue SFP) but had little influence on the productivity of the supply side (ASM SFP). Ridership, revenue, and RPM SFP also increased at higher rates than ASM SFP in favorable years.

Thus, such sensitive behaviors suggest a few critical characteristics of the NEC: volatility to external events, large economies of scale, and slow capacity adjustments, which varied depending on the route.

#### 3.3.2.2. Route Comparisons

Figure 3.4 shows the cumulative SFP metrics of the express and regional services for FY 2002-2012, with FY 2005 as base year for all calculations.

**Figure 3.4- a) Express and b) Cumulative SFP Growth FY 2002-2012**




There are two important observations. First, after FY 2006, the ASM productivity of express services kept going down while the regional recovered more rapidly. The introduction of more Acela services (newer rolling stock) and the removal of older trains (Metroliner) increased operating cost per train-mile. Such costs remained high for the express routes, i.e., low ASM productivity, until the recent capital investments on the NEC.

Second, the productivity of express services was more volatile than that of regional services, providing thus a greater range of performance, for better or worse.

### 3.3.3. Sensitivity Analysis

At this point, it is important to note that the results presented so far are robust to changes in key assumptions.

The route selection has little influence on productivity metrics. See Appendix B: Additional NEC SFP Figures and Tables FY 2002-2012 for tables that show that year-to-year productivity before 2005 was fundamentally similar, even after inclusion or exclusion of some routes.

Different calculations with alternative CPI for transportation return similar results. For instance, using the entire series CUUR0000SAT to deflate revenues for FY 2002-2012 would return comparable results to the calculations shown in this analysis.

## 3.4. Chapter Conclusion

After a process of data rationalization and scoping of the analysis at the route levels, this chapter demonstrated that a non-parametric SFP Törnqvist trans-log index with varying metrics was useful to assess the productivity of the NEC-spine trains from FY 2002 to 2012. This structure of analysis is first of its kind for intercity passenger rail transportation productivity in the U.S., which has never been studied in isolation before, or for the selected time period (to the best of the author's knowledge). Despite data constraints and inconsistencies, the analysis provided robust results that could be associated to notable episodes of the past decade. It went on to evaluate specific sets of routes and it overcame various limitations of parametric methods through the use of multiple SFP metrics and year-to-year calculations. Within the limited productivity literature for rail transportation in general, the analysis has provided a robust platform for future productivity studies of passenger services. An immediate extension of this method could be the analysis of other routes or sub-networks of Amtrak in the same time period.

The productivity analysis was useful to understand the system's behavior. In general, the NEC experienced volatile productivity changes in FY 2002-2012; by FY 2010 it was less productive than in FY 2005, but in the last three years its productivity boosted. Several events provided reasons for that varying productivity: route changes, technical problems with train sets, capital investments in the NEC, and economic recession and recovery. The results suggested critical characteristics of the NEC: volatility to external events, large economies of scale, and slow adjustment of capacity. Such characteristics, however, were not homogenous and rather depended on specific routes. For instance, the productivity of express services was more volatile than that of regional services, thus showing a greater range of performance. In addition, increasing ALF suggest that the productivity increments achieved through economies of scale might be limited in the future unless the capacity of the corridor is enhanced. This is a worrisome situation for a corridor that exhibits slow capacity adjustments and that not until 2015 will define a clear capital investment strategy.

These results are useful in thinking about if and how to move forward with HSR in the NEC. Express services proved to have a wide range of performance, thus revealing risks and opportunities for an uncertain future. The fact that NEC users are traveling longer distances is promising for HSR, as it shows that trains are now more competitive in short-haul (<500 miles) air markets. When contrasted with previous studies of rail transportation in the U.S., Amtrak's results are impressive. Although results are not directly comparable, Amtrak experienced higher average productivity improvements in FY 2002-2012 than the U.S. railroads (freight and passenger) in 1951-1974 (2.5% RPM SFP v. 1.5% [RPM & RTM] TFP) (Caves et al. 1980). These are reasons to be optimistic with the potential for enhanced HSR service.

However, the ability to implement and operate HSR is similar as the state of the regional economy so far as productivity concerns go. For example, the reestablishment of the Acela Express in FY 2006 reduced productivity more than the economic recession of 2009, and ASM SFP only recovered after infrastructure investments in recent years. Although the introduction of 40 additional Acela-Express coach cars to lengthen the train sets in FY 2014 is promising (Amtrak 2011c), it might not increase ASM productivity if not coordinated with infrastructure enhancements and modifications to maintenance facilities.

Furthermore, productivity benefits may take years to realize. Perhaps productivity is expected to go down after the initial years of the establishment of a new HSR. If the financial leverage is not there to temporarily support adverse events, or if the market and managers take too much time to adapt to changing conditions, there may be reasons to doubt future HSR development in the NEC.

When designing a strategy for targeted investments in the NEC, it would be useful to analyze the northern and southern leg of the NEC spine independently. An analysis at a more disaggregate level would allow flagging potential areas for improvement, and could determine where enhancements would be the most effective.

The next chapter will use the structure developed in this chapter to analyze the prospects of future HSR in the NEC.

### 3.5. Chapter References

Amtrak (2003-2012). *Amtrak Year-End Monthly Performance Reports.*

Amtrak (2011c). *News Release ATK 11-020*. February 14, 2011.

Apostolides, A. (2008). *A Primer on Multifactor Productivity: Description, Benefits, and Uses.* US Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, Office of Advanced Studies, Washington, DC.

Caves, D. W., Christensen, L. R., & Swanson, J. A. (1980). *Productivity in US Railroads, 1951-1974*. The Bell Journal of Economics, 166-181.

Caves, D. W., Christensen, L. R., & Swanson, J. A. (1981). *Economic Performance in Regulated and Unregulated Environments: A Comparison of US and Canadian Railroads.* The Quarterly Journal of Economics, 96(4), 559-581.

Coelli, T. J., Rao, D. S. P., O'Donnell, C. J., & Battese, G. E. (2005). *An Introduction to Efficiency and Productivity Analysis.* Springer.

Goldberg B. (2006). *Metroliner's Amazing Career*. TRAINS Magazine, June 2006. Retrieved on April 2013, from: http://trn.trains.com/en/sitecore/content/Home/Railroad%20Reference/Passenger%20Trains/2006/06/Metroliners%20amazing%20career.aspx

Measuring Productivity, OECD (2001). *Manual: Measurement of Aggregate and Industry-Level Productivity Growth*.

The New York Times (2005). *Amtrak Suspends Acela Trains After Finding Brake Problems*. Retrieved on April 20, 2013 from http://www.nytimes.com/2005/04/15/national/15cnd-amtr.html?_r=0

U. S. Bureau of Labor Statistics (USBLS) 2013. *Consumer Price Index.* Retrieved from http://www.bls.gov/cpi/data.htm

# 4. Future Productivity in the NEC

## 4.1. Introduction

This chapter uses the structure of analysis and findings of Chapter 3 to make inferences on the productivity of future HSR developments in the NEC.

## 4.2. Cases of Analyses

Three cases of analyses for the future productivity of the NEC were developed.

The first case of analysis is obtained by extrapolating the recent trends identified in Chapter 3. This case is referred to as **EXTRAPOLATION**.

The additional cases of analyses are based on Amtrak's and FRA's perspectives on HSR development in the NEC for the next 30 years, which represent the most well-documented initiatives for development of the corridor: the NEC Master Plan (NECMP) in 2010, the Vision for HSR in the Northeast Corridor in 2010 and updated in 2012, and the NEC FUTURE – Passenger Rail Corridor Investment Plan in 2012-2015 (see Section 2.5.2: Prospects for HSR in the NEC). The first two of those initiatives represent the two additional cases of analyses for this chapter: **NECMP**, and **NEC VISION**. The third initiative, the NEC FUTURE, was not considered as a case for analysis because it is at the early stages of development, where only preliminary alternatives without detailed information are available (see Section 2.5.2.3: NEC FUTURE).

The following is a brief description of the three cases of analyses to be discussed in this chapter.

1. **EXTRAPOLATION:** our 20-year projection of the trends for the four distinct SFP metrics analyzed in Chapter 3, i.e., ridership SFP, revenue SFP, revenue passenger-miles SFP, and available seat-miles SFP. This is a hypothetical example created by the author. Neither Amtrak nor the FRA claim to sustain such productivity growth rates. In addition, the EXTRAPOLATION does not specify what would be the interventions on the NEC that would allow it to sustain such productivity growth rates, but speculates on possible factors that might do so.

2. **NECMP:** The NECMP is an Amtrak-led multi-stakeholder initiative, a $52-billion expenditure plan from 2010 to 2030 to bring existing infrastructure to a state of good repair, increase capacity to accommodate expected growth of commuters, intercity travelers, and freight trains, and modestly improve trip time between cities along the corridor (see Section 2.5.2.1: The NEC Master Plan). Our analysis of the NECMP is predominantly qualitative due to lack of operating cost, ridership, and revenue data.
3. **NEC VISION:** The NEC VISION is *Amtrak's Vision for HSR in the NEC*, a $150-billion stair-step phasing investment strategy with two sequenced programs: the NEC Upgrade Program (NEC-UP) and the NEC Next Generation HSR (NextGen HSR) (See Section 2.5.2.2: Amtrak's Vision for HSR in the Northeast Corridor). Our analysis of the NEC VISION is quantitative.

It is worth noting that the NEC VISION is not only more ambitious than the NECMP in terms of the time frame (extending beyond 2030 to 2040) and total investments, but also different in its path towards 2030. The central difference is that the NECMP mainly focuses on bringing the NEC to a state of good repair, while the NEC VISION does seek to significantly improve HSR services.

### 4.3. First Case: EXTRAPOLATION 2012-2030

The first case of analysis is our 20-year projection of the trends for the four distinct SFP metrics analyzed in Chapter 3: ridership SFP, revenue SFP, revenue passenger-miles SFP, and available seat-miles SFP—as explained earlier (see Section 3.2: Data, Scope, and Method of Analysis), productivity on the demand side is measured by the first three metrics, whereas productivity on the supply side is only measured by available seat-miles SFP.

Chapter 3 concluded that after some oscillating productivity changes in FY 2002-2010, the productivity of the NEC was boosted in the last three years (FY 2010-2012). A simple extrapolation of these findings combined with the recent market success of the NEC would imply that productivity, and perhaps profitability, could keep growing in the next two decades.

Just to illustrate, ridership SFP, revenue SFP, revenue passenger-miles (RPM) SFP, and available seat-miles (ASM) SFP grew at 12%, 15%, 12% and 10% per year, respectively, in the past three years; and at a yearly average of 0.9%, 2.8%, 2.5%, and 0.4%, respectively, in the past seven years (see Section 3.3.2.1: Usage and Capacity). Taking the latter values as a reasonable estimate of long-term productivity growth—given that the former values would be very hard to sustain for long periods of time and would ignore possible oscillations in productivity growth— then, projected demand-side productivity would increase ~50% by 2030 (as measured by revenue SFP and revenue passenger-miles SFP) and supply-side productivity would increase 10% by 2030 (as measured by available seat-miles SFP). Ridership SFP, another metric of demand-side productivity, would not greatly increase (~20% by 2030), implying that the NEC would not simply accommodate new riders but also many new riders on longer-distance trips.

Figure 4.1 shows the extrapolated year-to-year productivity growth for 2013-2030, and Figure 4.2 shows the corresponding cumulative SFP growth (taking 2013 as the base year). The past (actual) values of productivity growth (FY 2005-2012) are shown for reference in both figures.

**Figure 4.1- EXTRAPOLATION, Year-to-Year SFP Growth FY 2005-2012 and 2013-2030**

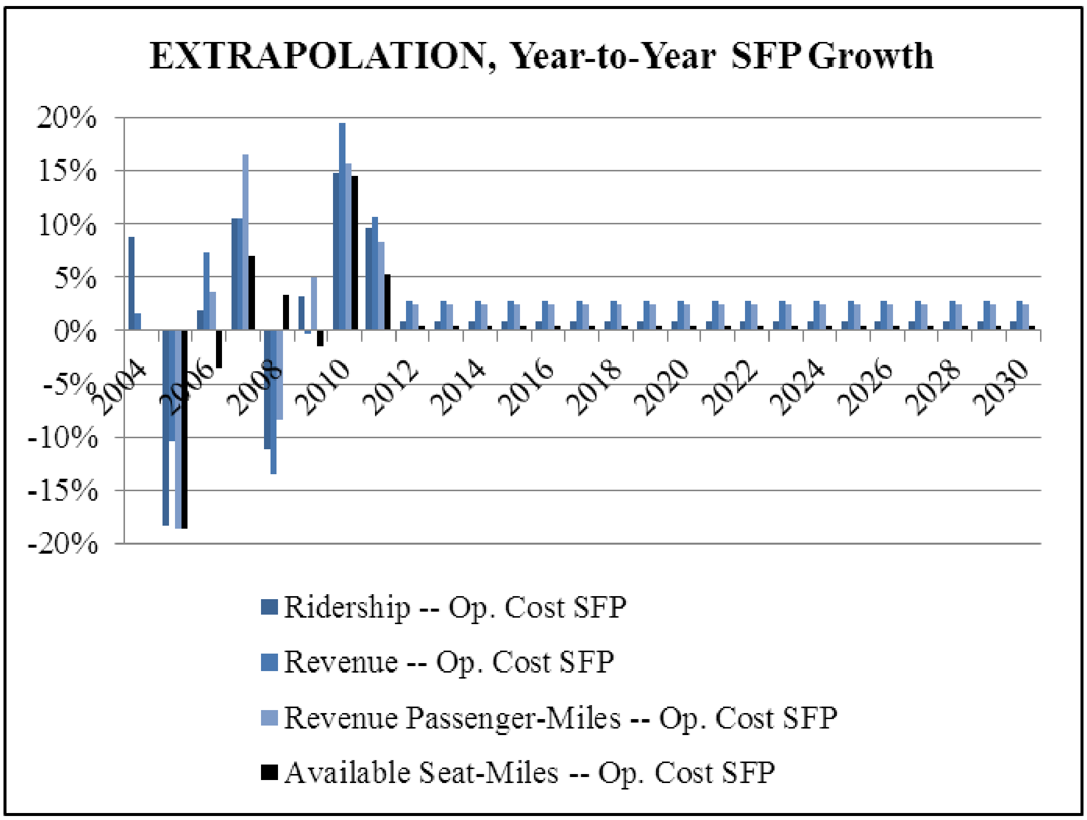
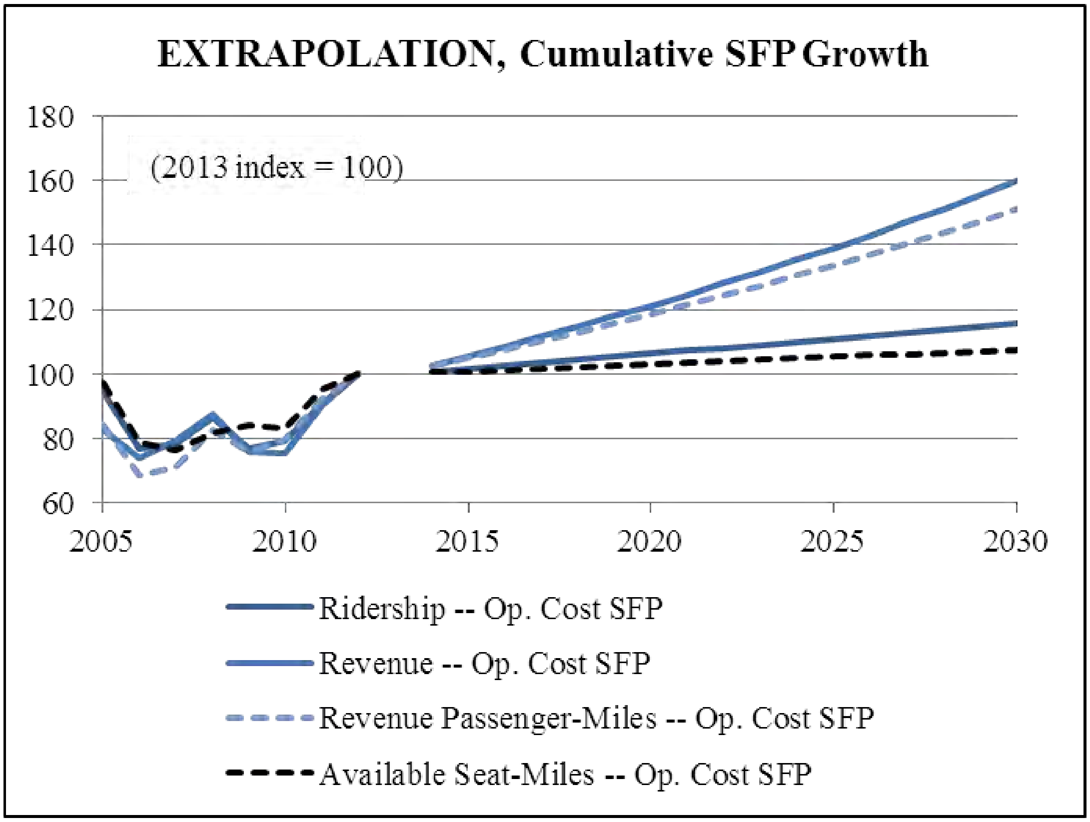


**Figure 4.2- EXTRAPOLATION, Cumulative SFP Growth FY 2005-2012 and 2013-2030**




While we ignore which specific drivers would sustain such productivity growth rates, we can certainly speculate on possible factors that could do so without exceeding physical limits of inputs (e.g. load factors cannot be more than 100%, train arrivals/departures must have a reasonable headway, there are capacity constraints in the corridor). For example, exploiting the economies of scale in the corridor (see Section 3.3.2: SFP Analysis) or having rising travel demand due to population growth and airport and highway congestion might help increase productivity in the NEC (see Section 2.2: The Northeast Megaregion). Additional factors and interactions which may drive productivity change in the NEC are Transport Funding and Investment, Federal and State Fiscal Policies, Taxes, Private and Foreign Investment, and Environmental Policies (see Sussman et al. 2012a, Chapter 1: CLIOS Representation of the NEC, and Chapter 5: Discussion of high-impact paths and their implications on the bundles of strategic alternatives).

Finally, we emphasize that Amtrak or the FRA does not claim to sustain these productivity growth rates, and that the analysis presented thus far serves only as a hypothetical case of analysis developed by the author.

### 4.4. Second Case: NECMP 2010-2030

The second case of analysis corresponds to an examination of the prospects described in the NECMP of 2010. This case of analysis is more valuable than the previous one (EXTRAPOLATION), since it analyzes the prospective plans for the future rather than simply an extrapolation of the past. However, the analysis is restricted to a qualitative assessment of productivity, due to lack of operating cost, ridership, and revenue data that would have permitted the calculation of productivity metrics.

If the recent trends found in Chapter 3 continue and the NECMP (as described by Amtrak in 2010) is indeed implemented, then the following is plausible:

> On the supply side, available seat-miles productivity is likely to increase for two reasons. First, the introduction of additional Acela coach cars to lengthen the existing train sets by FY 2014 will exploit the large economies of scale of the corridor. Second, the NECMP contemplates a number of capital expenditures to increase railroad capacity (i.e., the numerator of the productivity metric) and reduce operating costs (i.e., the denominator of the productivity metric): upgrades to tunnels, bridges, tracks, terminals, signals, catenaries, and other facilities.
>
> On the demand side, we speculate that revenue passenger-miles productivity would increase if the current trend of more riders on longer and longer train trips on the NEC persists (see Section 3.3.2: SFP Analysis).
>
> The NECMP assumed 76% growth in NEC ridership and revenue (to 23 million annual riders and $1.84 billion revenue) and 36% growth in daily trains (to 210 trains) by 2030. This might increase the gap between revenue productivity and available seat-miles productivity—as utilization increases much more than capacity—, potentially leading to higher profitability given the profitable incremental ridership of the NEC (see Section 2.3.1.2: Revenue).
>
> In the past, express services (Acela and Metroliner before 2006, Acela alone after 2006) showed productivity growth that was volatile. Thus, the anticipated good economic conditions and population growth in the NECMP would be promising for realization of corridor opportunities for HSR. However, the NECMP does not expand express services as much as regional services, which have less volatile productivity growth (see Section

3.3.2: SFP Analysis). This might be so because an expansion of express services would require large capital investments that the NECMP did not contemplate, although the market potential could be there. This investment decision would limit the potential for profitability in the NEC.

The recent reorganization of Amtrak's business lines and the additional improvements in management practices might increase the ability to effectively implement and operate enhanced HSR services. For example, the new six business lines are focused around key market segments, giving special attention to two critical aspects of the NEC, operations and infrastructure (Gardner 2013):

1) NEC Operations

2) NEC Infrastructure and Investment Development

3) Long-Distance Services

4) State-Supported Services

5) Commuter Services

6) Commercial Asset Development

Given that the ability to operate HSR is as important to productivity growth as the state of the regional economy (see Section 3.4: Chapter Conclusion), a successful management reorganization within Amtrak and other stakeholders of the NEC might lead to improved productivity, reduced risk, and, possibly, profitability.

All this is *ceteris paribus*, i.e., no major interventions beyond the incremental upgrades that would bring the NEC to a state of good repair and accommodate some capacity growth (as planned by the NECMP). The few anticipated targeted capital investments of the NECMP would not achieve substantial trip time reductions or an international-quality HSR service.

The NECMP is, in brief, a conservative case, not overly ambitious, but one that suggests future productivity increments that unfortunately could not be quantified due to lack of data. Those increments, however, ignore the uncertainty related to political support, external events, additional investments or management changes that might affect the NEC performance over the next two decades.

## 4.5. Third Case: NEC VISION 2013-2040

The third case of analysis corresponds to an examination of the NEC VISION developed by Amtrak in 2010 and 2012, with the structure of productivity analysis developed by the author in Chapter 3. This structure is applicable to many routes or sub-networks of Amtrak, and even to the future performance of the NEC. However, the (by definition) absence of real future data obliges us instead to study a projection of a possible future of the NEC, which requires credible data that will enable a quantitative analysis of productivity.

So, in short, this section uses the structure of analysis developed in Chapter 3 to analyze projected future data generated through examination of the vision for HSR in the NEC laid out by Amtrak. Then, it uses international comparisons and a sensitivity analysis to gain more confidence on the results.

### 4.5.1. Data for the NEC VISION 2013-2040

The foundation for data generation for the prospective future is *"The Amtrak Vision for the Northeast Corridor: 2012 Update Report"* (Amtrak 2012). Unfortunately, this documentation has only partial data presented in graphs and figures, not in tables, and the process by which Amtrak made its forecasts is not public. Instead, the data and assumptions of the forecasts are contained in the "NEC Business and Financial Plan", a confidential document that has not been disclosed at this time, but which we hope to have access to in the future; it can then be used to improve this analysis.

#### 4.5.1.1. Output and Input Data

Ideally, the same outputs and inputs used in Chapter 3—which were taken from historical disaggregate data—should be used in this analysis. However, data constraints only permitted the treatment of a reduced number of projected outputs and inputs. Still, the fact that similar outputs and inputs are used throughout this document permits a comparison of future productivity levels with those of the past.

**OUTPUTS:** The two outputs are *revenue* and *ridership*. Here, *revenue passenger-miles* and *available seat-miles* were excluded, so there are only outputs related to the demand side, and not to the supply side, in this analysis.

**INPUTS:** Exactly as in Chapter 3, the sole input is *total operating costs* (operation and maintenance), excluding capital expenditures, depreciation, and interest.

The output and input data were digitized from figures presented in Amtrak (2012). In the case of operating cost data, values for Total Net Operating Revenue were directly digitized from the graphs and used in the calculation of Total Operating Costs as:

[Total Operating Costs] = [Total Revenue] **–** [Total Net Operating Revenue][2]

Our analysis also required ridership and revenue data on 1-year intervals, which were not directly available from Amtrak and had to be reconstructed. The 1-year-interval estimates were linearly interpolated from the forecasted values given at each of the milestone years of the NEC VISION: 2015, 2020, 2025, 2030, and 2040 (see Appendix D: Baseline Figures NEC VISION).

#### 4.5.1.2. Scope and Limitations

Beyond the data constraints that limited the number of inputs and outputs, there are other aspects that influence the analysis and are worth pointing out explicitly.

Data constraints require scoping the analysis to an overall NEC level. The NEC VISION includes substantial route changes for which disaggregate data are not available. For example, under the NEC VISION, the Acela Express is to expire and to be replaced by a range of HSR services by 2030. Fortunately, the only routes considered in the NEC VISION are future regional and HSR services, which would correspond to the evolution of the regional and express routes analyzed earlier (see Section 3.2.3: Route Definitions). In addition, the operating and maintenance costs are available at the NEC level, not at the route level, and at this point there is not a way to reasonably allocate them. This does allows contrasting past productivity with future productivity, but only at the NEC level.

Revenue, ridership, and operating cost forecasts from Amtrak (2012) are assumed to be accurate (while, of course, recognizing that "the forecast is always wrong", be it by Amtrak or by anyone else). Also, the stair-step milestones are assumed to be implemented at the specified times. Thus, the uncertainty of the forecasts is ignored. Given the inherent inaccuracy of travel demand

[2] Amtrak did not report its projected operating costs directly. Instead, total revenue and total net operating revenue were reported. Total net operating revenue equals total revenue less operating costs. Thus, the author rearranged the equation to calculate the total operating costs.

projections and that large infrastructure projects usually have cost and schedule overruns, ignoring uncertainty is unrealistic, but unavoidable.

To the best of the author's knowledge, current forecasts omit technological or managerial improvements that might change productivity (see Section 1.6.5: Factors that Influence Productivity in Passenger Rail Transportation). It is possible, though, that such improvements were considered in Amtrak's forecasts, but, since their assumptions are not public, it is impossible to tell one way or the other.

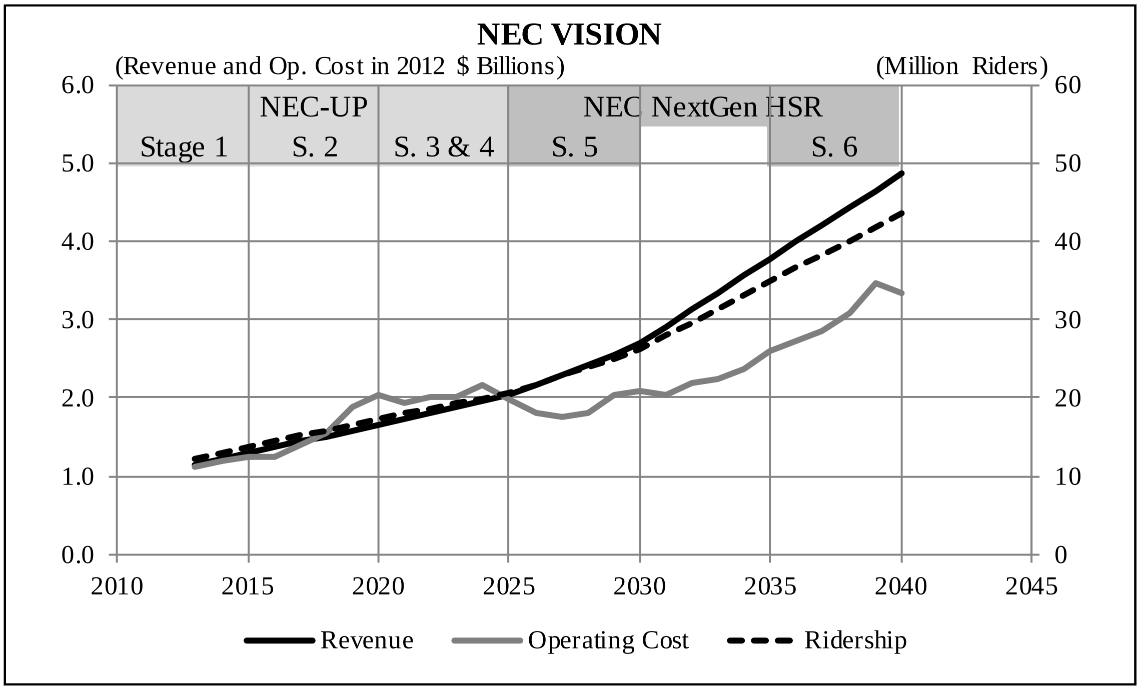
Large, unexpected regional events that might change productivity are not explicitly considered in Amtrak's forecasts. As shown in the past, performance on the NEC is quite sensitive to external events, so these are important (see Section 3.3.2: SFP Analysis). The only major single events included in Amtrak's projections are the capacity enhancements currently planned.

Thus, eventual access to the confidential information contained in Amtrak's NEC Business and Financial Plan would allow us to retrieve the projected data directly, instead of having to digitize it, and even to include projected outputs that at this point are excluded: available seat-miles and revenue passenger-miles. In addition, disaggregate data at the specific route- or O-D-level, or further information on the way in which Amtrak made the forecasts, would allow us to expand the analysis of the future productivity of the NEC, and to compare more directly future and past productivity. We hope to do this work in the future, once data become available to us.

#### 4.5.1.3. Characterization of the NEC VISION

Figure 4.3 shows the characterization of the outputs and inputs of the NEC VISION for the period 2013-2040, after following the procedure just described. The evolution of the outputs (ridership and revenue) and the input (operating cost) is overlapped with the two programs and six milestone stages of the NEC VISION. The figure has two vertical axes: the left axis shows revenue and operating costs in $ billions and the right axis shows ridership (dashed line) in million passengers. Appendix C: Future Data NEC VISION 2013-2040 includes the data tables that correspond to this case of analysis. Appendix D: Baseline Figures NEC VISION shows the original figures from which these data were retrieved and reconstructed.

**Figure 4.3- Characterization of the NEC VISION 2013-2040**




As described earlier (see Section 2.5.2.2: Amtrak's Vision for HSR in the Northeast Corridor), the two programs and six milestone stages of the NEC VISION encompass:

**NEC Upgrade Program (NEC-UP), 2015-2025:**

Stage 1) 40% additional capacity of the Acela Express achieved through additional passenger cars on existing train sets by 2015

Stage 2) Doubling of the HSR frequencies from New York to Washington by 2020

Stages 3) & 4) Improved and expanded service on the entire alignment, thanks to the Gateway program, track improvements, and additional HSR trains by 2025

**NEC Next Generation HSR (NextGen), 2030-2040:**

Stage 5) Completion of the New York-Washington NextGen HSR segment by 2030

Stage 6) Full establishment of the Boston-Washington NextGen HSR service by 2040

At this final stage, the trip time from New York to either Boston or Washington will be reduced to 94 min (Amtrak 2012). (Perhaps this was designed this way for marketing purposes, or just because the length of the alignments and the average operating speeds are projected to be the same.)

#### 4.5.2. SFP Analysis of the NEC VISION

The previous section carefully scanned the data that allow an original productivity analysis of the prospects described by Amtrak. Similarly as before (see Section 3.2.4: Method of Analysis), a SFP Törnqvist trans-log index formula for a single-output single-input process is used in this analysis. Again, year-to-year variations are compounded to obtain cumulative results, in this case, though, taking 2013 as the base year. Here, however, there is no need to deflate monetized outputs and inputs, since forecasts are in 2012 dollars.

Two distinct SFP metrics are analyzed: ridership SFP and revenue SFP, both with respect to operating costs. These relate to the demand side of rail transportation, not to the supply side, thus constraining the analysis. For simplicity, the words "operating costs" are removed from the productivity label, as those are the sole input of every productivity metric. Again, revenue passenger-miles SFP and available seat-miles SFP, a supply-side metric, could not be computed due to lack of data.

##### 4.5.2.1. Projected SFP

Figure 4.4 shows the predicted year-to-year ridership SFP and revenue SFP growth for the NEC in 2013-2040, and Figure 4.5 shows the corresponding cumulative productivity growth. For the sake of comparison, both figures are shown overlapped with the actual evolution of productivity in FY 2002-2012 (see Chapter 3) and the programs and milestones stages of the NEC VISION.

**Figure 4.4- NEC VISION, Year-to-Year SFP Growth FY 2002-2012 and 2013-2040**

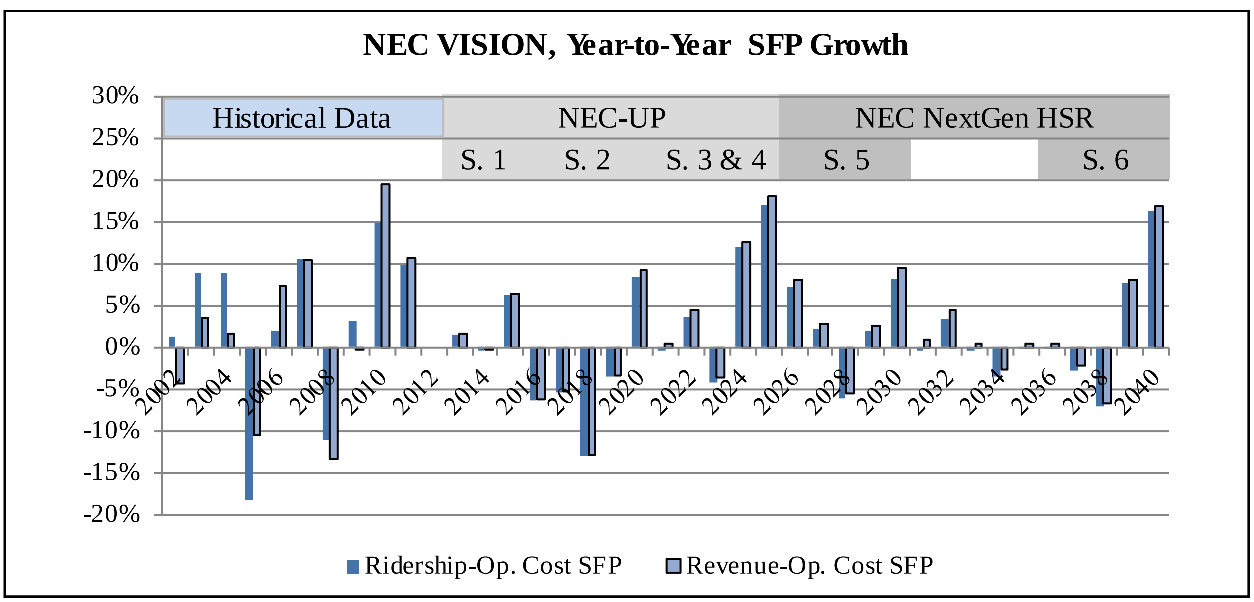
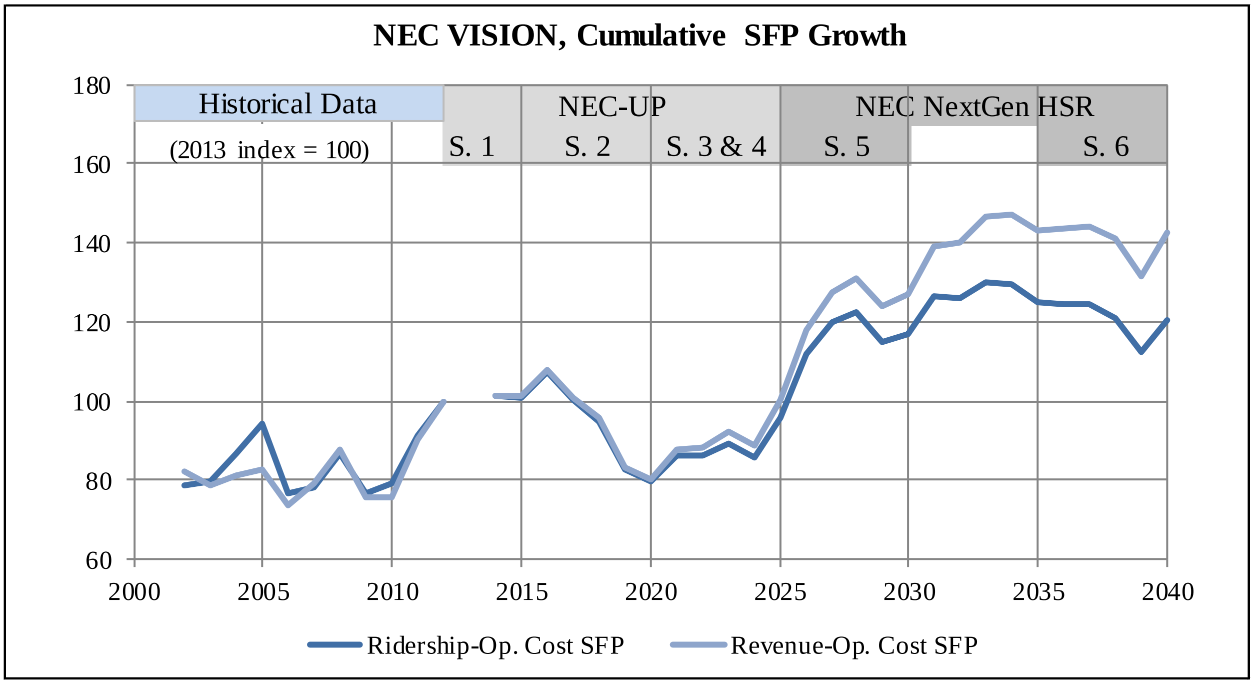


**Figure 4.5- NEC VISION, Cumulative SFP Growth FY 2002-2012 and 2013-2040**




In general terms, the NEC would become 20–40% more productive (on the demand side) by 2040 with respect to 2013. The expected yearly average growth in ridership and revenue SFP (0.7% and 1.3%, respectively) would be within the ranges of what the NEC achieved in the past (~0.5%–3.0%), though perhaps on the low side (see Section 3.3.2: SFP Analysis). But, again, the productivity increments would be highly variable and most likely occur in stages.

Perhaps counterintuitively, not every stage of the NEC VISION would increase ridership and revenue SFP. Productivity would go down after stage 1, with the additional capacity of the Acela, slightly increase after stage 2, with the higher frequency of HSR service between New York and Washington, boost after stages 3 and 4, with completion of the Gateway project and several capital upgrades, and will improve anew in the final stages, with the introduction of the NEC Next Generation (NextGen) HSR in the entire alignment.

The most significant productivity changes are the drop after 2015 and a substantial leap after 2024 (with a slight recovery from 2020-2024), which would cancel out to a zero net SFP growth in that decade. These peak changes, however, are within the ranges of productivity gains or losses that the NEC showed in the past: +/- 13–18% on peak years (compares with Table 3.4).

#### 4.5.2.2. Drivers of Future Productivity

We suggest the reasons for the fluctuations in productivity growth are pure operational and market effects, excluding major (unknown) external events or managerial changes.

For example, the increased HSR capacity in 2015–2020 would decrease ridership SFP and revenue SFP, as the new trains are immediately more expensive to operate per rider, while the market would take some time to respond to the stimulus of new services (we assume that Amtrak accounted for this in the forecasts).

The ever-increasing gap between revenue SFP and ridership SFP with respect to operating costs after 2020 may imply that Amtrak assumed that travelers pay higher fares, possibly due to a combination of effects. On one hand, we speculate that new HSR services are accompanied by a new fare structure and mix of business and leisure travelers embedded in Amtrak's projections. Again, it is currently unknown by the author if Amtrak used a selective or an across-the-board fare increase for the services in the revenue forecasts, or a fare increase at all. On the other hand, the trend of people traveling longer distances on the NEC could continue, thus increasing the average revenue per rider (see Section 3.3.2: SFP Analysis). At this point, the author cannot think of an alternative explanation of why this could have happened, but as pointed earlier (see Section 4.5.1.2: Scope and Limitations), more disaggregate data (O-D level or fare structure) could help explain these forecasted results.

A key stage in productivity growth is the Gateway Program to be completed in 2025, which would make it much easier for travelers to go through New York (see Section 2.5.2.2: Amtrak's Vision for HSR in the Northeast Corridor). Efforts to accelerate this project should be included in any reasonable strategy. We note that this stage would bring similar productivity increments as the surge in ridership of the past three years. So, from a productivity perspective, market behavior must be considered in addition to capital investments.

### 4.5.3. Comments on Amtrak's Projections

#### 4.5.3.1. Competition

Naturally, it is unknown what the competition (mainly the airline industry) will do, or if Amtrak anticipated the reaction of the competition in making its forecasts.

For example, there could be (fierce) competition. Air lobbyists could push Congress to block rail investments or lobby for airport expansions. Airlines could also improve their services or lower their fares in the NEC. On the other hand, the large air/rail market share of Amtrak in the NEC may have reduced the leverage the airline industry can exert on the NEC (see Section 2.4.3: NEC Performance). Governmental funding of HSR could be favored over air infrastructure funding, as energy and $CO_2$ emission savings of HSR could increase substantially if combined with more stringent environmental dictates or cleaner energy policies (Clewlow 2012).

There is also the possibility of cooperation between airlines and HSR, but the success of such an alliance depends on unique challenges to be addressed on the NEC, e.g., complex network economics and financing/funding for air/rail intermodal connections (Clewlow 2012).

Whether competition or cooperation would dominate the relationship between airlines and HSR is unknown. At this point, the NEC VISION opens the possibility for air/HSR intermodal connections, but do not provide details on how these will be developed (if at all). For example, the NEC VISION does consider intermodal stops at the Baltimore, Philadelphia, and Newark airports, but not on JFK, LaGuardia, Logan, Reagan or Dulles airports (Amtrak 2012). Likewise, the NEC FUTURE (which was not a case of analysis in this chapter) states that "these elements [airport access solutions] will be analyzed as overlays on the alternatives [of rail investment in the NEC]", but no specific information is currently provided (NEC FUTURE 2013b).

From the author's perspective, the relationship between air and rail is vital, not only to the success of HSR but to the mobility within the NEC as a whole. However, the current planning process of the NEC VISION and the NEC FUTURE lacks involvement of the FAA and other stakeholders of the airline industry.

#### 4.5.3.2. Underestimation of Projections

Once the NextGen HSR is introduced in 2030 (and thus the substantial trip time reductions begin to be realized) productivity of the NEC would not go up by a significant amount. When contrasted with the recent market success of the NEC (see Section 2.4.3: NEC Performance) and the fact that the introduction of HSR in some nations has "resulted in substantial decline in air traffic on short-haul routes" (Clewlow 2012), there is a possibility that current projections of ridership and revenue are underestimated. For instance, HSR amenities and add-ons (e.g., food services, baggage fees, Wi-Fi charges, or preferred seat assignments) could further increase revenue. Also, an improved level of service might be accompanied by a substantial increase in travel demand. Thus, given the characteristics of the NEC and the introductory effect of HSR, travel demand and revenue could be even higher than anticipated.

#### 4.5.3.3. HSR International Comparisons

Thus far, we have counted on Amtrak's projections to make our productivity estimates in the NEC. But, often, projections of ridership are overestimated while projections of costs are underestimated when compared with reality (Flyvbjerg et al. 2002). Thus, a benchmark of international experiences may suggest what could actually happen in the first years of operation of a new HSR in the NEC.

Table 4.1 summarizes the introduction of new HSR in corridors with similar physical characteristics to the NEC in Japan, France, South Korea, and Taiwan, and compares them with the projected introduction of the NextGen HSR in the Washington-New York segment by 2030. The international experiences are the first HSR implementation in such corridors, which have now been followed by (in some cases, substantial) extensions of the lines. For this reason as well, the comparison of the NEC is done in the Washington-New York alignment, which is the first segment planned to operate from 2030-2040, until the New York-Boston NextGen HSR alignment is finally introduced in 2040.

In all four international cases, the entrance of HSR significantly affected air traffic and other transportation modes. In three out of four cases, HSR presented considerable ridership increments above the forecasts made before the services were implemented. In fact, HSR services usually enjoy spectacular growth in the initial years, which later declines as the market becomes more mature (De Rus and Campos 2009). For example, revenue passenger-miles increased sevenfold in the first decade of HSR operations in Japan (Sakamoto 2012); ridership doubled in a decade in France (Vickerman 1997). However, in the case of Taiwan, HSR ridership was less than half of the forecasted, attributed to poor inter-modal connections, international economic conditions, and marketing (Cheng 2010).

**Table 4.1- International Comparisons of HSR Lines (Adapted from Sakamoto 2012, Thompson and Tanaka 2011 Cheng 2010, and Vickerman 1997)**

| HSR Line | Construction Time (years) | Start of Ops. | Initial Length (mi) | Actual Impacts on Traffic | Actual v. Forecast |
|---|---|---|---|---|---|
| **Japan (Tokyo-Osaka)** | 5 | 1964 | 320 | Traffic was diverted 23% from air, 16% from cars and buses and 6% induced demand (Cheng 2010) | Demand was higher than forecasted. In the first decade, RPM increased sevenfold, but then flattened (Sakamoto 2012) |
| **France (Lyon-Paris)** | 7 | 1981 | 260 | Most of the diverted passengers shifted from air. 49% induced demand (Cheng 2010, Vickerman 1997) | Demand was higher than forecasted. Total rail passengers in the corridor doubled in a decade (Vickerman 1997) |
| **South Korea (Seoul-Pusan)** | 12 | 2004 | 206 | Air traffic dropped 20-30%. Traffic on short distances (<100 km) increased ~20% (Cheng 2010) | Demand was higher than forecasted (Thompson and Tanaka 2011) |
| **Taiwan (Taipei-Kaohsiung)** | 9 | 2007 | 215 | Air transportation almost exited the market. Passengers were diverted from conventional rail and buses. 8% induced demand, but still low ridership (Cheng 2010) | Demand was 50% of forecast (Cheng 2010) |
| **US (Washington-NYC)** | **15 (projected)** | **2030 (projected)** | **225** | **N/A** | **Additional 6 million annual riders (+30%) (projected)** |

Currently, the NEC VISION forecasts 30% more ridership on the NEC after the first NextGen HSR segment is implemented in 2030 (with respect to 2025), and 66% more ridership once the full alignment is operating in 2040 (with respect to 2030). For the sake of comparison, ridership on the NEC-Spine trains grew 36% from FY 2003-2012, with only limited capacity enhancements (see Section 2.4.3: NEC Performance).

Thus, the international comparisons make two points. First, Amtrak's projections are within the range of what the international benchmark of *actual* performance suggests (and within what Amtrak has achieved in the past decade). Second, Amtrak's projections may be a bit low because the actual HSR ridership was higher than forecasted in three out of four international cases; and, in the case where it did poorly, it was largely due to poor planning and management. Therefore, even though the SFP analysis of the future of the NEC is done with projections, those are consistent with what international railroads experienced in the past, a fact that raises our confidence that Amtrak's projections are realistic. Moreover, our confidence is bolstered further because not only do the projections seem to be on the low side, but also the fact that in three out of four cases the projections were low with respect to reality suggests that the ridership in the NEC might be higher than forecasted. This international benchmark also reveals that HSR construction times were faster than those proposed in the NEC VISION. This could possibly motivate Amtrak to revise current projections of ridership and revenue, and perhaps even to accelerate or modify the vision, or, on the other hand, to warn them that a careful implementation of HSR infrastructure and service is necessary to secure ridership.

#### 4.5.3.4. Risks and Opportunities

In short, the lumpy productivity changes that we estimated from the NEC VISION would be due to stages of the implementation strategy and to market response, just as expected. However, the international benchmark and the past decade of the NEC suggest the possibility that Amtrak's projections of ridership and revenue are underestimated.

From a productivity perspective, we think there are some risks with going forward in this way with the NEC VISION. As the analysis revealed, productivity would go down initially. Since the NEC is volatile with respect to external events, an unexpected adverse major event could endanger the future development of HSR. Amtrak's critics might use this fact to question its ability to implement the strategy. The current optimism might fade out and jeopardize the long-term plans.

Also, productivity, especially on the supply side, is sensitive to management practices. (Naturally, availability of data on available seat-miles would permit the calculation of a supply-side productivity metric –available seat-miles SFP— which, lacking the data, we excluded from our analysis). The plan to improve management is not explicitly mentioned in the NEC VISION. Improved management practices within Amtrak and coordination with other major travel modes may reveal a greater potential for productivity improvements.

### 4.5.4. Sensitivity Analyses of the NEC VISION

The previous productivity analysis of the NEC VISION assumed, on one hand, that Amtrak's forecasts were accurate and, on the other hand, that we had a reasonable process for reconstructing missing data. Thus, the following sensitivity analyses test these two aspects: data generation and uncertainty of forecasts.

#### 4.5.4.1. Sensitivity to Assumptions Regarding Data Generation

The missing data for the base case of analysis (NEC VISION) were generated based on some key assumptions. A sensitivity analysis is now performed to test if the results (or at least the general behavior) persist after a change of assumptions.

Table 4.2 lists the assumptions regarding the generation of missing data points in both the base case and an alternative case of analysis of the NEC VISION.

**Table 4.2- Assumptions for Sensitivity Test**

| Category | Base Case (NEC VISION) | Alternative Case |
|---|---|---|
| **Ridership forecast on 1-year intervals** | Linear interpolation from ridership estimates given at each milestone year of the NEC VISION (2015, 2020, 2025, 2030 and 2040) | Linear growth of ridership as that experienced in the past five years in the NEC (about 500,000 passengers/year) |
| **Revenue forecast on 1-year intervals** | Linear interpolation from revenue estimates given at each milestone year of the NEC VISION (2015, 2020, 2025, 2030 and 2040) | Linear correlation with ridership, as determined by a regression of past ridership and revenue data on the NEC |
| **Operating costs** | [Total Operating Costs] = [Total Revenue] – [Total Net Operating Revenue] | |

To generate missing ridership and revenue data in 1-year intervals (as required by the analysis), estimates were now not linearly interpolated by joining the data points of the milestone years of the NEC VISION as before (see Section 4.5.1: Data for the NEC VISION 2013-2040). Instead, given the lumpy upgrades of the six stair-stage milestones, we assume sudden jumps in ridership, corresponding to the increase in train capacity in years 2015, 2020, 2025, 2030, and 2040, followed by a linear growth of ridership, similar to that observed in the past five years in the NEC (about half a million passengers per year in FY 2008-2012, in the absence of major external events).

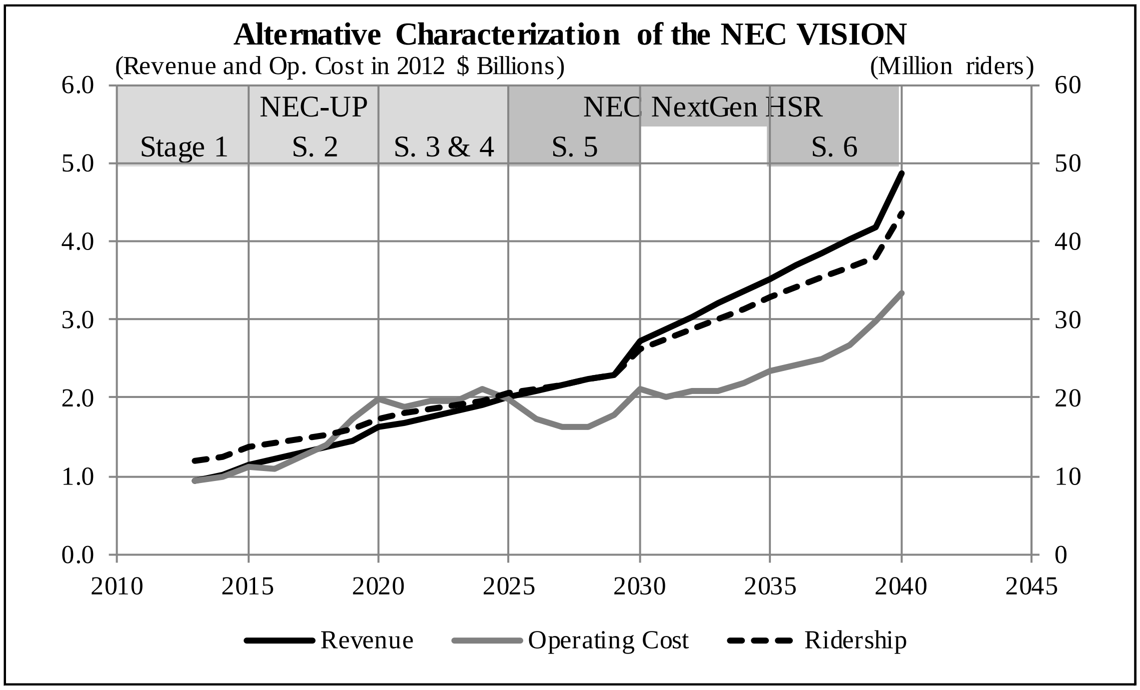
To estimate revenue at 1-year intervals, a correlation with ridership is assumed. This was reasonable, as the author's analysis of the base case projections from Amtrak discovered a good linear correlation between the two variables.

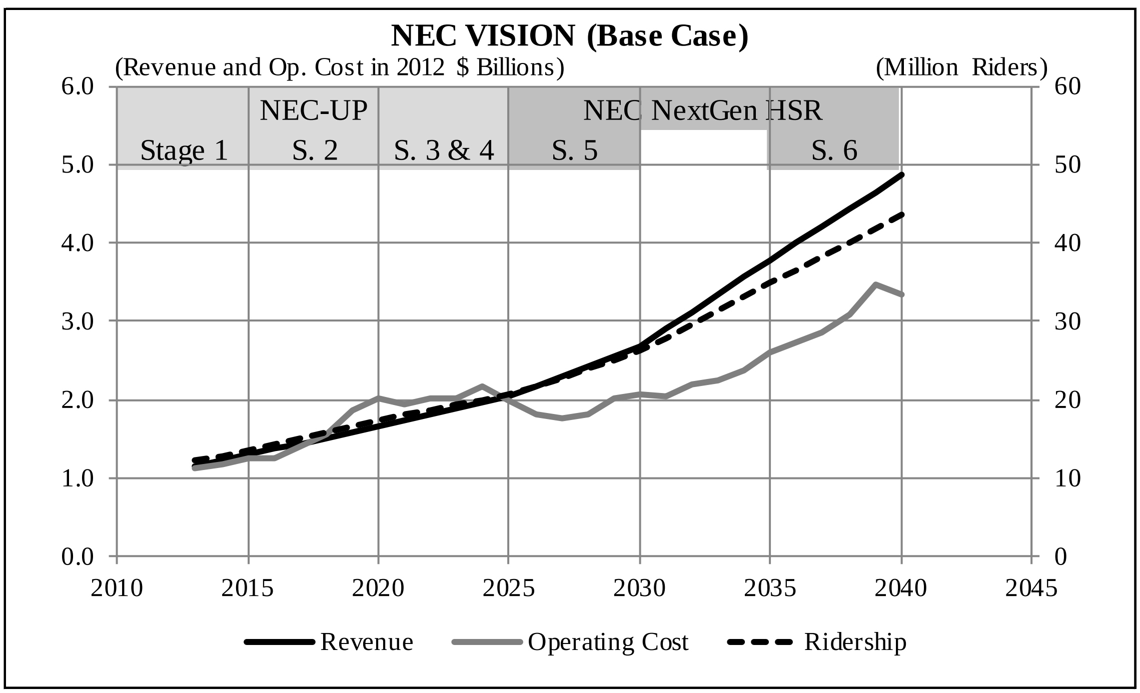
Finally, Total Operating Costs are calculated exactly as before, as:

[Total Operating Costs] = [Total Revenue] – [Total Net Operating Revenue].

Accordingly, Figure 4.6 shows an alternative characterization of the NEC VISION. Again, revenue and operating cost are plotted against the left vertical axis, and ridership is plotted against the right vertical axis. In contrast to Figure 4.3, the alternative representation displays surges in ridership and revenue after the completion of a new stage of the NEC VISION.

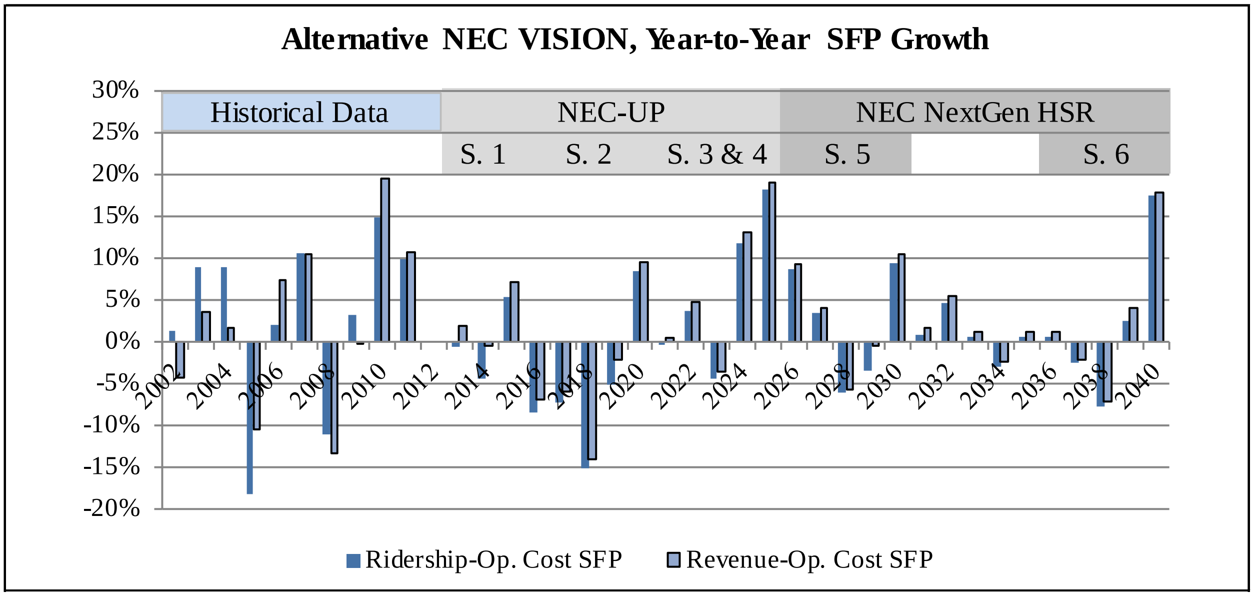
**Figure 4.6- a) Alternative Characterization of the NEC VISION 2013-2040 b) Base Case Characterization**



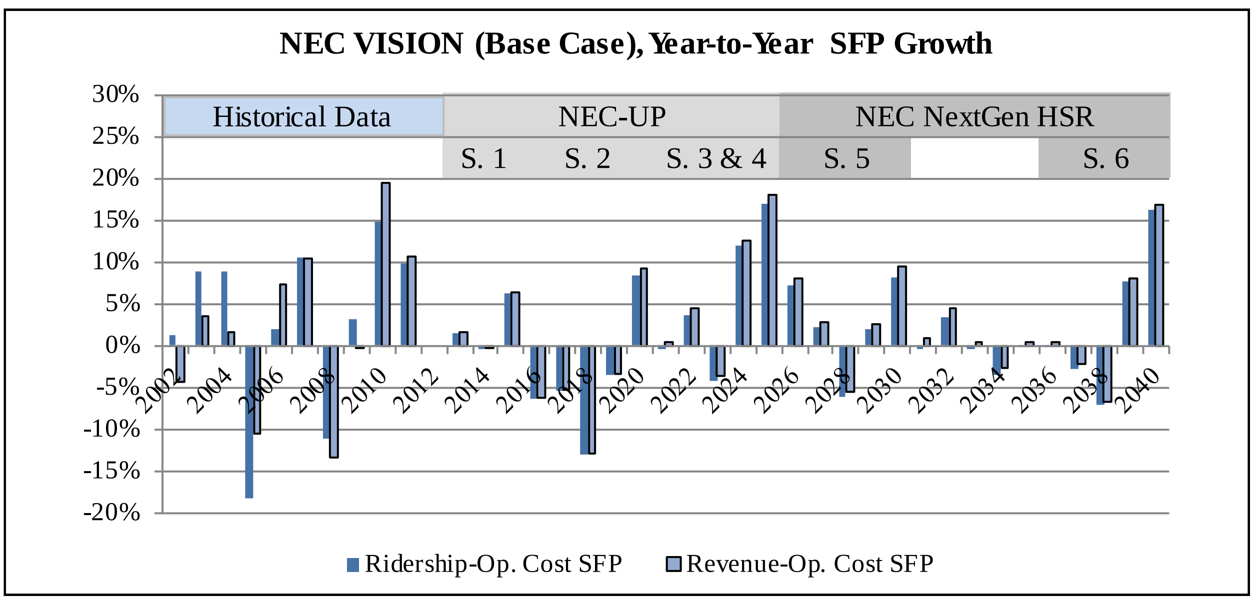



Similarly, Figure 4.7 shows a) the predicted year-to-year SFP growth for the alternative characterization of the NEC VISION in 2013-2040, and b) the results from the base case characterization (Figure 4.4). Again, the (identical) productivity changes calculated for FY 2002-2012 are shown for reference in both graphs (see Chapter 3: Past Productivity in the NEC).

**Figure 4.7- a) Alternative NEC VISION, Year-to-Year SFP Growth FY 2002-2012 and 2013-2040 b) Base Case**

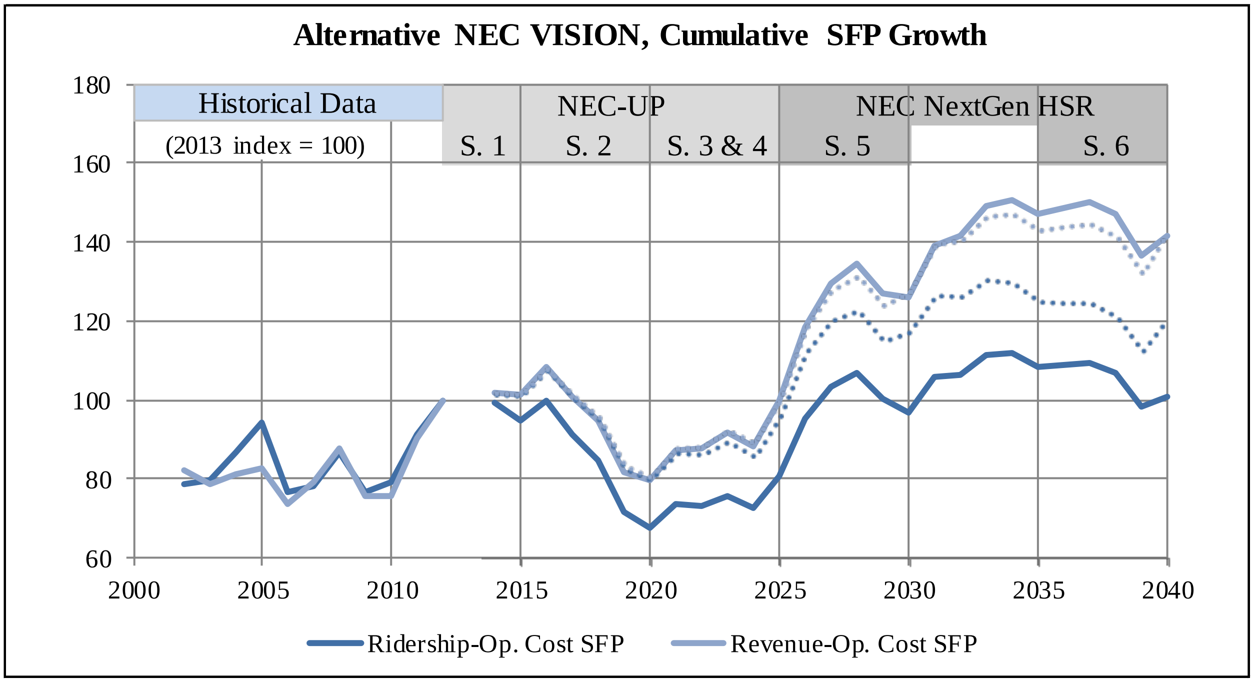



b)



Finally, Figure 4.8 shows the predicted cumulative SFP growth for the alternative characterization of the NEC VISION in 2013-2040, with the values from the base case characterization presented in dotted lines (compare with Figure 4.5). Again, the productivity changes calculated for FY 2002-2012 are shown for reference (see Chapter 3: Past Productivity in the NEC).

**Figure 4.8- Alternative NEC VISION, Cumulative SFP Growth FY 2002-2012 and 2013-2040**




When compared to the base case of analysis, perhaps there are more dramatic changes in productivity, but the overall behavior described earlier prevails. In this case, however, the gap between revenue SFP with respect to operating costs and ridership SFP with respect to operating costs is even greater than before; this is evidence that indeed Amtrak is assuming a change in fares (details of which remain unknown to the author, but that will be revealed once we gain access to the NEC Business and Financial Plan).

Thus, we gain confidence that results are robust to changes in key assumptions, and the base case analysis is valid (see Section 4.5.2: SFP Analysis of the NEC VISION).

#### 4.5.4.2. Sensitivity to Uncertainty of Forecasts

As shown earlier, Amtrak's projections of ridership and revenue might be overestimated or underestimated (see Section 4.5.3.2: Underestimation of Projections; and Section 4.5.3.3: HSR

International Comparisons). Thus, without giving explicit reasons why the forecasts may be inaccurate, we test the robustness of the results by permitting the revenue and ridership estimates to go up down by certain amounts.

Table 4.3 shows the yearly average and the cumulative (with 2013 as the base case) ridership and revenue SFP growth for different time periods in the past, and under some variations of ridership and revenue estimates for the future of the NEC. In the past decade, ridership SFP and revenue SFP grew between ~1–3% per year (see Section 3.3.2.1: Usage and Capacity). The analysis of the base case of the NEC VISION predicted a yearly average ridership and revenue growth in 2013-2040 of 0.7% and 1.3%, respectively. If ridership and revenue estimates are 80% more than what is currently forecasted by Amtrak, then yearly average ridership SFP growth may attain levels that are comparable to what the NEC experienced in the past decade. Similarly, a 25% increase in estimates will achieve the yearly average revenue SFP growth rate that the NEC experienced in the last ten years. In turn, a 20% fall below the currently projected ridership and revenue will return a net zero ridership SFP growth, and a 34% fall will achieve the net zero in terms of revenue SFP.

**Table 4.3- Sensitivity Analysis of Ridership and Revenue Forecasts for the NEC VISION**

| | Yearly Average Ridership SFP Growth | Cumulative Ridership SFP (2013 index = 100) | Yearly Average Revenue SFP Growth | Cumulative Revenue SFP (2013 index = 100) |
|---|---|---|---|---|
| **FY 2002 (to 2012)** | 2.4% | 78 | 2.0% | 82 |
| **FY 2005 (to 2012)** | 0.9% | 94 | 2.8% | 82 |
| | | **2013-2040** | | |
| **NEC VISION** | 0.7% | 120 | 1.3% | 142 |
| **+80%** | **2.4%** | 190 | 3.0% | 224 |
| **+25%** | 1.4% | 144 | **2.0%** | 170 |
| **-20%** | **0.0%** | 100 | 0.6% | 118 |
| **-34%** | -0.7% | 85 | **0.0%** | 100 |

Of course, these calculations omit fluctuations in operating costs, which will vary depending on the ridership. However, since marginal costs are low, this is an assumption that would not affect the analysis for small variations of the ridership estimates. In the case of large increments, however, operating costs would go up significantly, which might in turn decrease the productivity estimates, bringing them back to levels previously attained.

Thus, the productivity results are somewhat robust to variations of the forecasts. Significant variations would not bring the SFP estimates out of the range of what the NEC has achieved in the past. If Amtrak's projections of ridership and revenue are indeed on the low side, then productivity rates could surge to high levels, which are still credible. In turn, lower demand, even by 20%, would bring the productivity of the corridor to levels that are not likely (and desirable). This raises our confidence in the analysis of the projections and also supports our belief that Amtrak's projections are on the low side.

## 4.6. Chapter Conclusion

This chapter used three cases of analyses to infer the future productivity of the NEC based on best publicly available data, which we plan to update.

The first case of analysis, our simple EXTRAPOLATION of recent market and productivity trends in the NEC, would optimistically (and perhaps naively) anticipate high productivity growth rates. However, this ignores future interventions that might take place on the corridor, and neither Amtrak nor the author claims that these performance rates are to be obtained. So, the value of the EXTRAPOLATION was in determining a ballpark estimate of what the productivity of in the future could be, and in suggesting drivers of productivity change that could help sustain such growth rates.

The second case of analysis, the qualitative analysis of the NECMP of 2010, revealed that while higher productivity levels could be expected, they are limited by the conservative interventions presented by the NECMP. Although the author is optimistic about the potential achievement of the prospects described in the NECMP, such interventions will also prevent the NEC from truly deploying an international-quality HSR service. As implied by the analysis, there might be a greater potential for increased productivity and services in the NEC that the NECMP is not exploiting.

Greater expectations for the corridor were in fact considered in the quantitative analysis of the NEC VISION of 2012. The analysis showed that the performance on the NEC is still sensitive to many factors, and that perhaps Amtrak's vision is both risky and in some ways a bit unambitious. On one hand, the projected productivity levels are volatile and especially low at the beginning of the interventions. On the other hand, the projected cumulative productivity growth is low in comparison to the growth in the past decade.

This reveals the need for an improved vision that both reduces risk and takes advantage of the opportunities of the NEC. In fact, international comparisons of HSR in corridors similar to the NEC suggest that Amtrak's projections of ridership and revenue are reasonable, but might be on the low side. An improved level of service in the NEC could attract more riders and bring additional revenue. Air/rail cooperation and competition could be key in shaping a more comprehensive vision for HSR in the NEC.

The results of the analysis in this chapter raised our confidence in the structure of analysis developed in Chapter 3. On one hand, the expected SFP growth was within the ranges of what the NEC has shown in the past, both in the cumulative and year-to-year values. The sensitivity analysis also revealed that results are robust to changes in key assumptions regarding data generation and uncertainty of forecasts. On the other hand, the interventions and market effects embedded in Amtrak's forecasts could reasonably explain future productivity growth. However, we think they ignored external factors, managerial changes, and unplanned interventions that might affect productivity in the future. Finally, comparisons of results across the cases of analyses were difficult, and there were tradeoffs between qualitative and quantitative analyses: The qualitative analysis allowed us to infer the behavior of several SFP metrics, but did not provide specific values. In contrast, the quantitative analysis gave specific results, but restricted the analysis due to lack of data to just two SFP metrics on the demand side of rail transportation: revenue SFP and ridership SFP, both with respect to operating cost.

Naturally, there is room for major improvements in the analysis. The introduction of available seat-miles SFP or any other metric on the supply side will allow us not only to understand the supply side of the services, but also to understand the implications for profitability and further growth when compared to the demand side. Additional cases of analysis could be included, e.g., cases with substantial ridership changes, or cases based upon the preliminary alternatives report of the NEC FUTURE. Another improvement would be the development of a way to allocate operating costs at the route level, which would permit a comparison of performance between regional and express services, and perhaps the refinement of a strategy to mix those services. Finally, more disaggregate data at the specific route-level or O-D-level, or additional information on the way in which Amtrak made the forecasts (which might be available in the "NEC Business and Financial Plan"), would allow a direct comparison between future and past productivity, and expand the analysis of the future productivity of the NEC.

The next chapter summarizes key research findings and contributions, and reflects on the recommended ways to move forward for HSR implementation on the NEC.

### 4.7. Chapter References


Amtrak (2010). *A Vision for High-Speed Rail in the Northeast Corridor.*

Amtrak (2012). *The Amtrak Vision for the Northeast Corridor: 2012 Update Report.*

Cheng, Y. (2010). *High-Speed Rail in Taiwan: New Experience and Issues for Future Development*. Transport Policy, Vol. 17, No. 2, pp. 51-63.

Clewlow, R. R. L. (2012). *The Climate Impacts of High-Speed Rail and Air Transportation: A Global Comparative Analysis* (Ph.D., Massachusetts Institute of Technology, Engineering Systems Division).

De Rus, G., Campos, J. (2009). *Some Stylized Facts about High-Speed Rail: A Review of HSR Experiences around the World*. Transport Policy 16, 2009

Flyvbjerg, B., Holm, M. S., & Buhl, S. (2002). *Underestimating Costs in Public Works Projects: Error or Lie?* Journal of the American Planning Association, 68(3), 279-295.

Gardner, S. (2013). *Creating Capacity for Growth–New Approaches for Managing the Future of the NEC*. TRB 2013 Annual Meeting: Socioeconomic and Financial Aspects of Intercity Passenger Rail Subcommittee.

NEC Future (2013a). *NEC FUTURE – Passenger Rail Corridor Investment Plan*. Accessed on March 2013 www.necfuture.com

NEC Future (2013b). *NEC FUTURE – Passenger Rail Corridor Investment Plan. Preliminary Alternatives Report.*

Sakamoto, R., & Massachusetts Institute of Technology. Dept. of Civil and Environmental Engineering. (2012). *High Speed Railway Productivity: How Does Organizational Restructuring Contribute to HSR Productivity Growth?* (S.M. in Transportation, Massachusetts Institute of Technology, Dept. of Civil and Environmental Engineering).

Sussman, J., Archila, A.F., Carlson S.J., Peña-Alcaraz, M., Stein N. (2012a). *Transportation in the Northeast Corridor of the U.S.: A Multimodal and Intermodal Conceptual Framework.* web.mit.edu/hsr-group/documents/jiti.pdf

The NEC Master Plan Working Group (MPWG) (2010). *The Northeast Corridor Infrastructure Master Plan.*

Thompson, L., Tanaka, Y. (2011). *High Speed Rail Passenger Service: World Experience and U.S. Applications.* TGA Transportation Concepts

Vickerman, R. (1997). *High-Speed Rail in Europe: Experience and Issues for Future Development*. The Annals of Regional Science No. 2, 1997

# 5. Summary and Conclusion

This chapter summarizes key research findings and contributions, reflects on the recommended ways to move forward for HSR implementation on the NEC, and suggests potential areas of future research.

## 5.1. Summary

This thesis used productivity analysis to evaluate the past performance of the NEC in FY 2002-2012 with historical disaggregate data. Then, it made inferences about the future performance of the prospects of HSR in the NEC by 2040. Since the NEC network structure and socioeconomic characteristics make it a natural fit for world-class HSR, our goal was to know if the prospective HSR implementation would be potentially effective given the behavior of the past decade and current plans.

Now, this allows us now to make some recommendations for the future of HSR in the NEC, but first we will review the work done so far.

First, we discussed the concept, the metrics, and the methods of productivity measurement, reviewed previous productivity studies in rail transportation, and discussed the implications for the research on productivity of intercity passenger rail transportation in Chapter 1.

Then, we reviewed the history and performance of Amtrak at the national level, contrasted it with the passenger rail transportation system of the NEC, and explored the HSR prospects in the NEC for the next decades in Chapter 2.

In Chapter 3, we laid out a specific structure to study the productivity of passenger rail in the NEC. We used a non-parametric SFP Törnqvist trans-log index approach, with several SFP metrics, to analyze the performance and understand the behavior of the NEC in FY 2002-2012, with data from Amtrak’s year-end monthly performance reports.

Finally, in Chapter 4, we used the structure of analysis and findings of Chapter 3 to make inferences on the productivity of future HSR developments in the NEC, as described in Chapter 2. Most importantly for the goals of this research, we estimated the productivity trends of the Amtrak’s vision for HSR in the NEC for 2013-2040.

### 5.2. Findings

In this process, we have grouped the following overarching findings:

- *Productivity analyses are useful for assessing performance and determining the drivers of performance in intercity passenger rail transportation, but the literature is sparse.*

Productivity analyses allow managers and decision-makers to understand the behavior and the drivers of productivity change in the NEC, and to better prepare or respond to potential realizations of the future. In general, productivity improvements explain long-term improvements in intercity passenger transportation. In the past, they have translated into benefits to operators and users. For the future, they can reveal if a strategy is realistic or not, and even if a strategy is preferred over another. However, the literature on passenger rail transportation productivity is not extensive, is sparse, and the myriad of approaches to productivity analyses, selected by various researchers, make it hard not only to comprehend, but also to compare results across studies.

- *Not only is the productivity literature sparse, but also has guidelines that are confusing, sometimes contradictory, and rarely specific for transportation studies. Thus the following (not exhaustive) guidelines for analyzing productivity and communicating results in intercity passenger transportation may be useful for subsequent studies.*

Reference explicitly and (where possible) jointly the output and input data categories, the productivity metrics, and the method of a productivity analysis, in order to prevent confusion and to understand if results are comparable across studies.

Select the output and input data categories, then the productivity metric(s), and finally the method of productivity analysis.

**DATA:** Keep in mind that it is unclear exactly which are the outputs and inputs of a transportation process (unlike in economic studies, where at least there is a consensus on GDP, labor, and capital). For intercity passenger transportation, different outputs (not to be mistaken for multiple outputs) coexist and have different meanings: Available Seat-Miles are a proxy for transportation capacity, Revenue Passenger-Miles measure the ability to use the available capacity, and Revenue measures the ability to economically exploit the capacity.

The inputs are even more ambiguous than the outputs. There are many possible input (or cost) breakdowns, which, as with outputs, will give different meanings to the productivity metrics derived. Previous analyses have used the economic approach to inputs (labor, capital) with an additional category for fuel. The input breakdown is relevant when working with MFP and TFP, but not when using SFP.

We encourage developing alternative outputs and/or inputs in order to measure the quality of the service provided (LOS) and to account for the quality of the inputs. However, we recognize that the data might not be readily available, as they do not correspond to incumbent managerial reporting schemes.

Select physical outputs and inputs over monetary quantities where possible, but keep in mind that they are harder to get. Deflate monetary quantities as detailed as possible.

**METRICS:** Do not use partial productivity interchangeably with SFP, and MFP with TFP. Partial productivity is an arbitrary metric in multi-output multi-input or multi-output single-input processes that necessarily excludes some outputs or inputs. SFP, instead, is a metric of a single-output single-input process; MFP is used in single-output multi-input processes; and TFP is used in multi-output multi-input processes. SFP, MFP, and TFP do not exclude (at least intentionally) factors of production. Partial productivity does.

SFP is the preferred choice in single-output single-input processes and in multi-output multi-input processes that can be unmistakably reduced to a single output single-input process. MFP and TFP are definitively preferred over the (inappropriate) partial measures of productivity in multi-output multi-input processes that cannot be unmistakably reduced to a single output single-input process.

**METHOD:** Select the method to analyze productivity depending on the question of interest, the type of data, the data availability, the computational resources, and additional context-specific constraints. Robustness and computational easiness are desired attributes of a method of analysis. Parametric methods are very powerful; they can provide detailed information on the drivers of productivity change, but are data-intensive and computationally complex. Non-parametric methods may sacrifice the amount of information they return, but are less data-intensive and computationally friendlier than parametric methods.

Use complementary analysis, like reviewing historical events or using various productivity metrics, to compensate for the disadvantages of a particular method.

Obtain the cumulative SFP by compounding year-to-year SFP instead of by directly computing an inter-year SFP.

- *In FY 2000-2012, there was substantial but not uniformly distributed ridership and revenue growth for Amtrak. Currently, system-wide unprofitability and capacity constraints in the NEC remain as two of the most pressing challenges that Amtrak faces.*

Amtrak's system-wide ridership and real ticket revenue grew 55% and 38%, respectively, in FY 2000-2012. Short and special routes became more profitable and utilized than longer routes. The NEC contributed nearly half of Amtrak's ridership. Even with HSR trains running below their full potential, the NEC showed increasing revenue, ridership, operating profits, and air/rail market shares. Similarly, the incremental ridership of the Acela Express proved to be highly profitable, much more than that of the Northeast Regional and other services.

However, Amtrak still requires about $1.2 billion annually in governmental subsidies (to which they respond that other modes are heavily subsidized as well). The NEC, the most heavily utilized railway corridor of the U.S., is still facing capacity constraints, aging infrastructure, and maintenance backlogs. Frequently, the political issues of the entire Amtrak system transfer to the NEC and make it difficult for the NEC to be discussed independently.

- *Route changes, technical problems with train sets, targeted capital investments, and economic recession and recovery in the NEC translated into volatile, but considerable productivity growth in FY 2002-2012.*

The analysis of four distinct SFP metrics (i.e., ridership, revenue, revenue passenger-miles, and available seat-miles SFP with respect to operating costs) through a non-parametric Törnqvist trans-log index showed that the NEC had very volatile, but upward productivity growth in FY 2002-2012. Overall, the NEC was less productive by FY 2010 than in FY 2005, had substantial productivity dips in FY 2006 and FY 2009 (-10% to -20%), but boosted its productivity in the last three years (as high as 20% in one year). As shown in Table 5.1, the yearly average SFP growth of the NEC was in the range of ~1-3%. Although results are not directly comparable with previous studies of rail transportation in the U.S., the NEC experienced higher average productivity improvements in FY 2002-2012 than the U.S. railroads (combined freight and passenger outputs) in 1951-1974 (2.5% RPM SFP v. 1.5% [RPM & RTM] TFP) (Caves et al. 1980).

**Table 5.1- Summary of NEC SFP Growth in FY 2002-2012**

| Yearly Average SFP Growth | Ridership SFP | Revenue SFP | RPM SFP | ASM SFP |
|---|---|---|---|---|
| | **2005-2012** | | | |
| **NEC** | 0.9% | 2.8% | 2.5% | 0.4% |
| **Express** | 1.3% | 2.9% | 2.8% | -1.1% |
| **Regional** | 1.0% | 2.1% | 2.4% | 1.3% |
| | **2002-2012** | | | |
| **NEC** | 2.4% | 2.0% | --- | --- |
| **Express** | 2.0% | 1.7% | --- | --- |
| **Regional** | 3.0% | 2.4% | --- | --- |

- *In the past decade, Amtrak increased its ability to fill up and economically exploit the available capacity in the NEC. On the other hand, supply-side productivity did not follow it.*

The NEC became cumulatively ~20% more productive on RPM SFP (demand side) and only ~3% more productive on ASM SFP (supply side) in the past seven years. In fact, the ASM SFP of the express services actually decreased. Amtrak was far more effective at using the available capacity in the NEC (by filling up trains with more passengers over longer distances) than at generating it (running trains cheaper).

- *The NEC-spine trains were volatile to external events, had large economies of scale, and presented slow adjustment of capacity that were not homogenous, but rather depended on specific routes.*

Even though the effect of the economic recession of 2009 was a regrettable 2-3-year setback in ridership and revenue for all routes in the NEC, the effects of lost or gained ridership on ticket revenue were more pronounced for express services than for regional services. Also, the SFP of express services was more volatile than that of regional services. This shows that the Acela Express is more sensitive than the Northeast Regional to external factors, thus revealing risks but also opportunities for improved performance of future HSR.

The increased demand combined with a low marginal cost per RPM was evidence of economies of scale that boosted productivity on the demand side in recent years. Most of the new ridership was accommodated on existing capacity, at low extra costs. However, increasing load factors suggest that the productivity increments achieved through economies of scale might be limited in the future unless the capacity of the corridor is enhanced. Such capacity enhancements remain an unmet challenge for the NEC.

- *NEC users are traveling longer distances by rail, and trains are becoming more competitive in traditional short-haul air markets*.

This is evidenced by the fact that cumulative RPM SFP exceeded ridership SFP over the last decade, and also by the increased air/rail market share of Amtrak in the New York-Washington and New York-Boston routes. In the Boston-Washington market, Amtrak is still not too competitive with air travel.

- *The ability to implement and operate HSR in the NEC is similar as the state of the regional economy so far as productivity concerns go; however, the demand side productivity of the NEC was more volatile with respect to external factors than the supply side.*

The reestablishment of the Acela Express in FY 2006 reduced productivity more than the economic recession of 2009, and ASM SFP only recovered after infrastructure investments in recent years.

The economic dip of 2009 greatly affected the demand side of the NEC (RPM, ridership, and revenue SFP) but had little influence on the productivity of the supply side (ASM SFP). Ridership, revenue, and RPM SFP also increased at higher rates than ASM SFP in favorable years.

Although the introduction of 40 additional Acela-Express coach cars to lengthen the train sets in FY 2014 is promising (Amtrak 2011c), it might not increase ASM productivity if not coordinated with infrastructure enhancements and modifications to maintenance facilities.

- *The characteristics of the NEC reveal a potential for the successful introduction of a true HSR service; however, determining a consensual implementation strategy is challenging but mandatory to move forward effectively.*

The extrapolation of the past productivity determined a ballpark estimate of what the productivity in the future could be, and suggested drivers of productivity change that could help sustain such productivity growth rates. Thus, productivity changes in the past suggested future improvements in the NEC, potentially driven by well-known internal and external factors.

Now, although the geographic and socioeconomic characteristics of the NEC make it an ideal candidate for HSR, it is a multi-stakeholder, multi-state, multi-purpose corridor under a funding-constrained scenario and a polarized debate. So, current initiatives and studies attempt to find a way to enhance the NEC, e.g., the NECMP (2010), the Amtrak Vision for HSR in the NEC (2010, 2012), the multi-stakeholder effort NEC FUTURE (2012-present), and Sussman et al. (2012a, 2012b).

However, most of the planning efforts are at the early stages of development. Alternatives are still to be scoped, consensus to be reached, and significant choices made. For some critics, substantial trip time reductions are scheduled to be realized too far in the future. Current estimates of investments are highly variable. Alignments, services, and institutional arrangements have not yet been determined. So, there is uncertainty in this long-term planning and implementing process, but a common strategy among stakeholders is still needed to advance HSR in the NEC effectively.

- *Amtrak's prospects for HSR in the NEC are realistic but perhaps not too ambitious. The NEC VISION may be risky.*

Our analysis of the NECMP of 2010 revealed that higher productivity levels could be expected, and that the prospects for bringing the corridor to a state of good repair and accommodate some capacity growth were feasible. However, such interventions will prevent the NEC from truly deploying an international-quality HSR service, and there might be a greater potential for increased productivity and services, which the NECMP did not consider.

Our analysis of the NEC VISION of 2012 showed that the performance on the NEC is still sensitive to many factors, and the projected productivity levels are volatile and especially low at the beginning of the proposed interventions. Thus, productivity benefits may take years to realize. If the financial leverage is not there to temporarily support adverse events, or if the market and managers take too much time to adapt to changing conditions, there might be reasons to doubt on a successful implementation of HSR.

Also the NEC VISION is in some ways a bit unambitious, since the projected cumulative productivity growth is low in comparison to the growth in the past decade (20--40% in the next 30 years v. 20% in the past 10 years). In addition, international comparisons of HSR in corridors similar to the NEC suggest that Amtrak's projections of ridership and revenue are reasonable, but might be on the low side.

### 5.3. Recommendations for the Prospects of HSR in the NEC

Amtrak set forth a myriad of short-, medium-, and long-term goals and objectives to advance its vision for HSR in the NEC. In addition, the ongoing NEC FUTURE planning process frequently receives public input. Thus, there are some ways in which the current prospects for HSR in the NEC could be enriched by the findings of this thesis, in order to reduce risk and to take advantage of the opportunities of the corridor:

- The projections of ridership and revenue should be revised, given that they might be underestimated. This is in line with Amtrak's short-term (6-12 months) goal to "Further refine and develop program alternatives as part of the capital expenditure re-profiling efforts…" (Amtrak 2012).
- Air/rail cooperation and competition should be explicitly considered in shaping a more comprehensive vision for HSR in the NEC. The FAA should be involved in the planning process. This builds on Amtrak's short-term goal to "Devise future market strategies and coordinate with rail industry experts…" (Amtrak 2012).
- The effect of improved management practices within Amtrak and other stakeholders of the NEC should be considered in the projections (in case it has not been considered already). This is aligned with the medium-term (1-3 years) goal to: "Develop appropriate program management capabilities and undertake staffing and resource assessments" (Amtrak 2012).
- From a productivity perspective, priority should be given to stages of the implementation that promise the highest productivity improvements. More concretely, efforts to accelerate the Gateway Program or to develop an alternative project that achieves such benefits should be included. This is in line with Amtrak's medium-term goal to: "Define and advance "pathway" projects to gain early support and momentum" (Amtrak 2012).

- The productivity of the NEC is quite sensitive to multiple factors, including large, unexpected regional events that were not explicitly considered in Amtrak's forecasts. Also, there is uncertainty related to political support, external events, or funding for HSR. These are strong arguments for a scenario-planning approach (see Schwartz 1996) and the design of flexibility in the proposed investment alternatives, which might be useful to be better prepared to unexpected (good or bad) circumstances (see Sussman et al. 2012a). For example, new policies could favor governmental funding of HSR over air infrastructure funding. Under appropriate economic conditions, express services should be expanded much more than regional services. This is in line with Amtrak's long-term (3-10 years) goal to "Review ongoing changes that may be needed in the structure of Amtrak and the current phased implementation strategy to effectively deliver the program" (Amtrak 2012).

## 5.4. Contributions

The main contributions of this thesis can be summarized as follows:

- **Results:** To the best of the author's knowledge, these are the first results of a productivity analysis (as defined here) of intercity passenger rail transportation in the U.S., which has never been studied in isolation before, for the selected time period, or in the specific NEC context. Moreover, it contributed to general rail transportation productivity literature, by analyzing not just the NEC as a whole, but also specific services on the corridor: Acela Express and Northeast Regional.
- **Guidelines:** The thesis did a thorough literature review and provided practical guidelines in this chapter for future transportation productivity research, which hopefully will clarify the intricate productivity literature and spare some efforts for future researchers.
- **Structure of Analysis:** The thesis laid out a robust structure of analysis that can be subsequently (and perhaps easily) applied to other routes or sub-networks of Amtrak for the given time period, and to the future performance of the NEC and its routes. This structure overcame some limitations of parametric methods through the use of multiple SFP metrics. The sensitivity analyses also revealed that results were robust to changes in key assumptions regarding deflation of monetized data, route scoping, data reconstruction, and uncertainty of forecasts.
- **Inferences on Future Productivity:** To the best of the author's knowledge, this is the first time a productivity analysis of rail passenger transportation is performed for a future implementation. However, data limitations made difficult comparisons of results across the cases of analyses, and there were tradeoffs between qualitative and quantitative analyses: The qualitative analysis had a broader scope, but did not provide specific values. In contrast, the quantitative analysis gave specific results, but restricted the analysis to outputs and inputs for which data were available.

### 5.5. Future Research

**Past Productivity:** The most immediate extension of this structure of analysis is to other services or sub-networks of Amtrak (perhaps even outside of the NEC) in the same time period (FY 2002-2012), for which data are already available.

The analysis can also be updated with data from Amtrak's FY 2013 year-end monthly performance report, expected by September-October 2013.

More disaggregate past data at the NEC level would allow us to flag potential areas for improvement, and could determine where enhancements would be the most effective. For example, it would be useful to analyze the past performance of the northern and southern leg of the NEC spine separately when designing a strategy for future targeted investments. However, getting these data might not be easy.

**Future Productivity:** Without relying on Amtrak data, additional cases of analyses could be generated, for example, cases based upon subsequent reports of the NEC FUTURE, which should be increasingly detailed in the next two years.

Another improvement would be the development of a way to allocate operating costs at the route level, which would permit a comparison of performance between regional and express services, and perhaps the refinement of a strategy to mix those services.

The sensitivity analysis of Chapter 4 was a previous step to full-fledged scenario analysis. In the former, we did not suggested causes for the change in the estimates of ridership, revenue, and operating costs, and we were limited to outputs and inputs for which we had available data. In scenario analysis, we will develop one or more narratives of the future and assess their impacts on productivity. Then, we will suggest potential courses of action for the decision-makers, given the events and risks described in the narrative.

Once we get access to the "NEC Business and Financial Plan", we could update the analysis with the specific projected data from Amtrak. Hopefully, this document includes disaggregate data at the specific route-level or O-D-level, which would expand the analysis of the future productivity of the NEC. The introduction of available seat-miles or any other output on the supply side will allow us not only to understand the supply side of the services, but also to understand the implications for profitability and further growth when compared to the demand side. Additional information on the assumptions embedded in Amtrak's forecasts would allow us to analyze the projections and retrofit the strategy of investment in a less speculative fashion.

We thank the reader for taking interest in this thesis, and hope that it is of value for researchers in the railway industry and for the future development of HSR in the NEC. *¡Mil gracias!*

### 5.6. Chapter References

Amtrak (2010). *A Vision for High-Speed Rail in the Northeast Corridor.*

Amtrak (2012). *The Amtrak Vision for the Northeast Corridor: 2012 Update Report.*

Caves, D. W., Christensen, L. R., & Swanson, J. A. (1980). *Productivity in US Railroads, 1951-1974*. The Bell Journal of Economics, 166-181.

NEC Future (2013a). *NEC FUTURE – Passenger Rail Corridor Investment Plan*. Accessed on March 2013 www.necfuture.com

NEC Future (2013b). *NEC FUTURE – Passenger Rail Corridor Investment Plan. Preliminary Alternatives Report.*

Schwartz, P. (1996). *The Art of the Long View: Planning for the Future in an Uncertain World*. Doubleday: New York, NY.

Sussman, J., Archila, A.F., Carlson S.J., Peña-Alcaraz, M., Stein N. (2012a). *Transportation in the Northeast Corridor of the U.S.: A Multimodal and Intermodal Conceptual Framework.* web.mit.edu/hsr-group/documents/jiti.pdf

Sussman, J., Pena-Alcaraz, M., Carlson, S. J., Archila, A. F., Stein, N. (2012b) *Analysis of High-Speed Rail Implementation Alternatives in the Northeast Corridor: the Role of Institutional and Technological Flexibility.*

The NEC Master Plan Working Group (MPWG) (2010). *The Northeast Corridor Infrastructure Master Plan.*

## Appendix A: NEC Data FY 2002-2012

This appendix displays data retrieved from Amtrak's reports. White cells indicate data that were directly retrieved from the reports, and light-blue cells show indirectly calculated data.

### NEC Data 2009-2012

| Year | Route Number | Train Name | Ridership (passengers) | Total Revenue ($ millions) | Ticket Revenue ($) | RPM (millions) | ASM (millions) | ALF | Total Costs excl. OPEB's, Capital Charge and Other Costs | OPEB's | Capital Charge* | Total Costs | Fully Allocated Contribution / (Loss) | Fully Allocated Contribution / (Loss) per Pass Mile (cents) | Fully Allocated Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2012 | RT01 | Acela | 3,395,354 | $521.1 | $508,080,295 | 646.7 | 1,034.2 | 63% | $305.3 | $6.9 | n/a | $312.2 | $208.9 | 32.3 | 20.2 |
| 2012 | RT05 | Northeast Regional | 8,014,175 | $552.8 | $535,700,003 | 1,233.9 | 2,550.0 | 48% | $467.6 | $8.8 | n/a | $476.4 | $76.5 | 6.2 | 3.0 |
| 2012 | RT99 | Special Trains | 13,372 | $5.3 | $2,131,944 | 1.8 | 12.4 | 15% | $2.1 | $0.0 | n/a | $2.1 | $3.1 | 177.7 | 25.8 |
| **2012** | | **TOTAL NEC** | **11,422,901** | **$1,079.2** | **$1,045,912,242** | **1,882.4** | **3,596.2** | 52% | **$775.1** | **$15.7** | **n/a** | **$790.8** | **$288.5** | **15.3** | **8.0** |
| 2011 | RT01 | Acela | 3,379,126 | $510.3 | $491,654,117 | 650.2 | 1,027.6 | 63% | $323.4 | $8.2 | n/a | $331.6 | $178.8 | 27.5 | 17.4 |
| 2011 | RT05 | Northeast Regional | 7,514,741 | $505.3 | $490,857,865 | 1,166.7 | 2,545.5 | 46% | $467.2 | $10.1 | n/a | $477.3 | $28.0 | 2.4 | 1.1 |
| 2011 | RT99 | Special Trains | 6,022 | $0.9 | $940,573 | 1.0 | 5.8 | 18% | $2.2 | $0.0 | n/a | $2.2 | ($1.4) | -135.6 | -24.0 |
| **2011** | | **TOTAL NEC** | **10,899,889** | **$1,016.4** | **$983,452,555** | **1,817.9** | **3,578.9** | 51% | **$792.8** | **$18.3** | **n/a** | **$811.1** | **$205.4** | **11.3** | **5.8** |
| 2010 | RT01 | Acela | 3,218,718 | $449.8 | $440,119,294 | 611.1 | 1,014.6 | 60% | $316.4 | $28.9 | n/a | $345.3 | $104.5 | 17.1 | 10.3 |
| 2010 | RT05 | Northeast Regional | 7,148,998 | $469.7 | $458,105,798 | 1,105.1 | 2,394.4 | 46% | $466.3 | $46.6 | n/a | $512.9 | ($43.1) | -3.9 | -1.8 |
| 2010 | RT99 | Special Trains | 7,493 | $0.9 | $908,307 | 1.2 | 6.0 | 19% | $1.0 | $0.2 | n/a | $1.2 | ($0.3) | -25.9 | -5.0 |
| **2010** | | **TOTAL NEC** | **10,375,209** | **$920.4** | **$899,133,399** | **1,717.4** | **3,415.0** | 50% | **$783.6** | **$75.7** | **n/a** | **$859.3** | **$61.1** | **3.6** | **1.8** |
| 2009 | RT01 | Acela | 3,019,627 | $416.8 | $409,251,483 | 570.5 | 1,032.8 | 55% | $334.3 | $22.6 | n/a | $356.9 | $59.9 | 10.5 | 5.8 |
| 2009 | RT05 | Northeast Regional | 6,920,610 | $443.4 | $431,430,679 | 1,046.9 | 2,392.9 | 44% | $451.1 | $25.8 | n/a | $476.9 | ($33.5) | -3.2 | -1.4 |
| 2009 | RT99 | Special Trains | 5,790 | $1.3 | $1,000,499 | 2.2 | 6.0 | 38% | $2.6 | $0.3 | n/a | $2.9 | ($1.5) | -67.2 | -25.2 |
| **2009** | | **TOTAL NEC** | **9,946,027** | **$861.6** | **$841,682,662** | **1,619.6** | **3,431.6** | 47% | **$788.0** | **$48.7** | **n/a** | **$836.7** | **$24.8** | **1.5** | **0.7** |

### NEC Data 2008-2009

| Year | Route Number | Train Name | Ridership (passengers) | Total Revenue ($ millions) | Ticket Revenue ($) | RPM (millions) | ASM (millions) | ALF | FRA Defined Costs | Total Remaining Direct Costs | Total Non-Direct Costs | Total Costs (Excl. Dep & Int) | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2009 | RT01 | Acela | 3,019,627 | $414.5 | $409,251,483 | 571.2 | 1,021.2 | 56% | $135.9 | $116.3 | $94.9 | $347.1 | $67.4 | 11.8 | 6.6 |
| 2009 | RT05 | Northeast Regional | 6,920,610 | $440.1 | $431,430,679 | 1,057.1 | 2,378.6 | 44% | $186.5 | $163.0 | $157.2 | $506.7 | ($66.6) | -6.3 | -2.8 |
| 2009 | RT91 | NEC Unknown (Crew Labor) | | $0.0 | | | | | $0.1 | $0.0 | $0.0 | $0.1 | ($0.1) | --- | --- |
| 2009 | RT06/98/99 | NEC Special Trains | 5,790 | $1.3 | $1,000,499 | 2.1 | 3.0 | 70% | $0.9 | $0.2 | $1.0 | $2.1 | ($0.8) | -37.5 | -26.4 |
| 2009 | RT70 | NEC Bus Route | | $0.0 | | | | | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | --- | --- |
| **2009** | | **TOTAL NEC** | **9,946,027** | **$855.9** | **$841,682,662** | **1,630.5** | **3,402.8** | 48% | **$323.5** | **$279.6** | **$253.1** | **$856.1** | **($0.2)** | **0.0** | **0.0** |
| 2008 | RT01 | Acela | 3,398,759 | $474.1 | $467,782,708 | 631.4 | 1,006.3 | 63% | $145.1 | $113.4 | $86.8 | $345.3 | $128.8 | 20.4 | 12.8 |
| 2008 | RT05 | Northeast Regional | 7,489,426 | $490.5 | $481,606,621 | 1,100.0 | 2,200.0 | 50% | $185.4 | $165.4 | $137.5 | $488.3 | $2.2 | 0.2 | 0.1 |
| 2008 | RT91 | NEC Unknown (Crew Labor) | | $0.0 | | | | | $1.3 | $0.0 | $0.0 | $1.3 | ($1.3) | --- | --- |
| 2008 | RT06/98/99 | NEC Special Trains | 9,667 | $1.6 | $1,249,590 | | | | $1.1 | $0.3 | $0.1 | $1.4 | $0.2 | --- | --- |
| 2008 | RT70 | NEC Bus Route | | $0.0 | | | | | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | --- | --- |
| **2008** | | **TOTAL NEC** | **10,897,852** | **$966.2** | **$950,638,920** | **1,731.4** | **3,206.3** | 54% | **$332.9** | **$279.0** | **$224.3** | **$836.2** | **$129.9** | **7.3** | **3.8** |

### NEC Data 2005-2008

| Year | Route Number | Train Name | Ridership (passengers) | Total Revenue ($ millions) | Ticket Revenue ($) | RPM (millions) | ASM (millions) | ALF | Direct Labor | Other Direct Costs | Total Shared Costs | Total Attributed Costs | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2008 | RT01 | Acela | 3,398,759 | $486.3 | $467,782,708 | 630.9 | 1,019.4 | 62% | $27.2 | $110.5 | $128.4 | $266.1 | $220.2 | 34.9 | 21.6 |
| 2008 | RT05 | Northeast Regional | 7,489,426 | $518.4 | $481,606,621 | 1,144.5 | 2,401.6 | 48% | $53.7 | $129.3 | $188.9 | $371.9 | $146.5 | 12.8 | 6.1 |
| 2008 | RT91 | NEC Unknown (Crew Labor) | | $0.0 | | | | | $1.1 | $0.2 | $0.0 | $1.3 | ($1.3) | --- | --- |
| 2008 | RT06/98/99 | Special Trains | 9,667 | $4.6 | $1,249,590 | | | | $0.3 | $0.5 | $0.2 | $1.1 | $3.6 | --- | --- |
| 2008 | RT70 | NEC Bus Route | | $0.0 | | | | | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | --- | --- |
| **2008** | | **TOTAL NEC** | **10,897,852** | **$1,009.4** | **$950,638,920** | **1,775.5** | **3,421.1** | 52% | **$82.2** | **$240.6** | **$317.6** | **$640.4** | **$369.0** | **20.7** | **10.7** |
| 2007 | RT01 | Acela | 3,191,321 | $421.4 | $403,571,410 | 576.9 | 980.1 | 59% | $23.7 | $105.5 | $119.6 | $248.8 | $172.5 | 29.9 | 17.6 |
| 2007 | RT05 | Northeast Regional | 6,836,646 | $459.5 | $424,721,134 | 973.8 | 2,272.2 | 43% | $46.7 | $129.5 | $201.4 | $377.7 | $81.8 | 8.4 | 3.6 |
| 2007 | RT91 | NEC Unknown (Crew Labor) | | $0.0 | | | | | $0.7 | $0.0 | $0.0 | $0.7 | ($0.7) | --- | --- |
| 2007 | RT06/98/99 | Special Trains | 7,045 | $4.3 | $1,011,903 | | | | $0.2 | $0.3 | $0.1 | $0.6 | $3.7 | --- | --- |
| 2007 | RT70 | NEC Bus Route | | $0.0 | | | | | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | --- | --- |
| **2007** | | **TOTAL NEC** | **10,035,012** | **$885.2** | **$829,304,447** | **1,550.7** | **3,252.3** | 48% | **$71.3** | **$235.3** | **$321.2** | **$627.8** | **$257.4** | **16.6** | **8.0** |
| 2006 | RT01 | Acela/Metroliner | 2,668,174 | $347.5 | $328,215,839 | 472.6 | 922.6 | 51% | $23.2 | $90.3 | $99.4 | $212.8 | $134.7 | 28.5 | 14.6 |
| 2006 | RT05 | Regionals* | 6,755,085 | $439.9 | $396,149,944 | 961.1 | 2,306.7 | 42% | $49.8 | $135.6 | $185.4 | $370.7 | $69.2 | 7.2 | 3.0 |
| 2006 | RT91 | NEC Unknown (Crew Labor) | | $0.0 | | | | | $0.2 | $0.0 | $0.0 | $0.2 | ($0.2) | --- | --- |
| 2006 | RT06/98/99 | Special Trains | 8,020 | $7.3 | $1,067,843 | | | | $0.3 | $0.6 | $0.2 | $1.1 | $6.1 | --- | --- |
| 2006 | RT70 | NEC Bus Route | | $0.0 | | | | | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | --- | --- |
| **2006** | | **TOTAL NEC** | **9,431,279** | **$794.7** | **$725,433,626** | **1,433.7** | **3,229.3** | 44% | **$73.4** | **$226.5** | **$284.9** | **$584.9** | **$209.8** | **14.7** | **6.6** |
| 2005 | RT01 | Acela/Metroliner | 2,452,902 | $290.2 | $276,211,184 | 421.5 | 882.1 | 48% | $23.5 | $56.1 | $77.4 | $157.0 | $133.2 | 31.6 | 15.1 |
| 2005 | RT05 | Regionals* | 7,115,698 | $403.4 | $368,675,501 | 1,040.9 | 2,410.5 | 43% | $50.1 | $100.7 | $161.1 | $311.8 | $91.6 | 8.8 | 3.8 |
| 2005 | RT91 | NEC Unknown (Crew Labor) | | ($0.1) | | | | | $0.4 | $0.0 | $0.0 | $0.4 | ($0.5) | --- | --- |
| 2005 | RT06/98/99 | Special Trains | 17,580 | $3.3 | $1,219,518 | | | | $0.2 | $0.5 | $0.1 | $0.9 | $2.4 | --- | --- |
| 2005 | RT70 | NEC Bus Route | | $0.4 | | | | | $0.0 | $0.0 | $0.0 | $0.0 | $0.4 | --- | --- |
| **2005** | | **TOTAL NEC** | **9,586,180** | **$697.2** | **$646,106,203** | **1,462.4** | **3,292.6** | 44% | **$74.3** | **$157.2** | **$238.6** | **$470.1** | **$227.1** | **15.5** | **6.9** |

NEC Data 2004-2005

| Year | Route Number | Train Name | Ridership (passengers) | Total Revenue ($ millions) | Ticket Revenue ($) | FRA Defined Costs | Remaining Direct Costs | Total Non-Direct Costs (Exclude Dep, Int & Discont Ops | Cost | Contribution / (Loss) (Exclude Dep, Int & Discont Ops) |
|---|---|---|---|---|---|---|---|---|---|---|
| 2005 | RT01/02 | Acela/Metroliner | 2,452,902 | $281.1 | $276,211,184 | $87.5 | $74.5 | $53.9 | $215.9 | $65.4 |
| 2005 | RT01 | Acela Express | 1,772,868 | $206.8 | $204,494,310 | $63.1 | $53.5 | $39.3 | $155.9 | $51.0 |
| 2005 | RT02 | Metroliner | 680,034 | $74.3 | $71,716,874 | $24.4 | $21.0 | $14.6 | $60.0 | $14.4 |
| 2005 | RT05A | Regional/Federal | 7,024,021 | $371.5 | $362,944,581 | $162.6 | $133.5 | $102.1 | $398.2 | ($26.7) |
| 2005 | RT13 | Clocker Service | 1,560,856 | $15.5 | $15,501,566 | $6.8 | $7.7 | $5.8 | $20.3 | ($4.8) |
| **2005** | | **TOTAL NEC** | **11,037,779** | **$668.1** | **$654,657,331** | **$256.9** | **$215.7** | **$161.7** | **$634.3** | **$33.8** |
| 2004 | RT01/02 | Acela/Metroliner | 2,966,543 | $334.7 | $335,778,337 | $91.4 | $98.7 | $76.3 | $266.4 | $68.5 |
| 2004 | RT01 | Acela Express | 2,568,935 | $287.3 | $294,654,392 | $76.9 | $85.1 | $64.3 | $226.3 | $61.1 |
| 2004 | RT02 | Metroliner | 397,608 | $47.4 | $41,123,945 | $14.5 | $13.6 | $12.0 | $40.1 | $7.4 |
| 2004 | RT05A | Regional/Federal | 6,405,087 | $338.2 | $320,244,267 | $147.2 | $131.5 | $116.4 | $395.1 | ($56.9) |
| 2004 | RT13 | Clocker Service | 1,945,553 | $17.9 | $17,943,641 | $6.9 | $8.5 | $7.4 | $22.8 | ($5.0) |
| **2004** | | **TOTAL NEC** | **11,317,183** | **$690.9** | **$673,966,245** | **$245.4** | **$238.7** | **$200.1** | **$684.2** | **$6.6** |

NEC Data 2002-2003

| Year | Route Number | Train Name | Ridership (passengers) | Revenue ($ millions) | Ticket Revenue ($) | Cost | Profit / (Loss) (Exclude Dep & Int) |
|---|---|---|---|---|---|---|---|
| 2003 | RT01/02 | Acela/Metroliner | 2,936,885 | $337.9 | $332,487,808 | $271.9 | $66.0 |
| 2003 | RT01 | Acela Express | 2,363,454 | $276.8 | $272,647,303 | $218.9 | $57.9 |
| 2003 | RT02 | Metroliner | 573,431 | $61.1 | $59,840,505 | $53.0 | $8.1 |
| 2003 | RT05A | Regional/Federal | 5,850,975 | $309.7 | $299,148,786 | $387.9 | ($77.1) |
| 2003 | RT05 | Regional | | $298.3 | | $361.3 | ($62.9) |
| 2003 | RT06 | Federal | | $11.4 | | $26.6 | ($14.2) |
| 2003 | RT13 | Clocker Service | 1,957,903 | $18.9 | $18,817,113 | $28.8 | ($9.9) |
| **2003** | | **TOTAL NEC** | **10,745,763** | **$666.5** | **$650,453,707** | **$688.6** | **($21.0)** |
| 2002 | RT01/02 | Acela/Metroliner | 3,213,981 | $370.1 | $364,149,582 | $290.2 | $79.9 |
| 2002 | RT01 | Acela Express | | $300.4 | | $235.3 | $65.1 |
| 2002 | RT02 | Metroliner | | $69.7 | | $54.9 | $14.8 |
| 2002 | RT05A | Regional/Federal | 5,975,640 | $311.2 | $312,078,313 | $392.6 | ($81.4) |
| 2002 | RT05 | Regional | 5,760,499 | $296.6 | $298,787,635 | $362.9 | ($66.4) |
| 2002 | RT06 | Federal | 215,141 | $14.6 | $13,290,678 | $29.7 | ($15.0) |
| 2002 | RT13 | Clocker Service | 1,978,533 | $18.9 | $18,867,001 | $25.7 | ($6.8) |
| **2002** | | **TOTAL NEC** | **11,168,154** | **$700.2** | **$695,094,896** | **$708.5** | **($8.3)** |

The following are the original sections of Amtrak's FY 2003-2012 Year-End Monthly Performance Reports, from which the data for this thesis were taken.

# FY12

| | Ridership | | | | | Ticket Revenue | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | % change vs. | | | | | % change vs. | |
| ***NEC Spine*** | FY12 | FY11 | Budget | FY11 | Budget | FY12 | FY11 | Budget | FY11 | Budget |
| 1 - Acela | 3,395,354 | 3,379,126 | 3,515,095 | +0.5 | -3.4 | $508,080,295 | $491,654,117 | $520,199,206 | +3.3 | -2.3 |
| 5 - Northeast Regional | 8,014,175 | 7,514,741 | 7,693,814 | +6.6 | +4.2 | $535,700,003 | $490,857,865 | $516,948,583 | +9.1 | +3.6 |
| 99 - Special Trains | 13,372 | 6,022 | 7,400 | +122.1 | +80.7 | $2,131,944 | $940,573 | $1,099,540 | +126.7 | +93.9 |
| **Subtotal** | **11,422,901** | **10,899,889** | **11,216,309** | **+4.8** | **+1.8** | **$1,045,912,242** | **$983,452,555** | **$1,038,247,329** | **+6.4** | **+0.7** |
| ***State Supported and Other Short Distance Corridors*** | | | | | | | | | | |
| 3 - Ethan Allen | 54,376 | 49,448 | 49,105 | +10.0 | +10.7 | $2,829,307 | $2,504,308 | $2,555,998 | +13.0 | +10.7 |
| 4 - Vermonter | 82,086 | 77,783 | 96,585 | +5.5 | -15.0 | $4,761,018 | $3,961,115 | $5,568,788 | +20.2 | -14.5 |
| 7 - Albany-Niagara Falls-Toronto | 407,729 | 406,286 | 442,586 | +0.4 | -7.9 | $24,600,726 | $23,406,596 | $24,926,187 | +5.1 | -1.3 |
| 9 - Downeaster | 541,757 | 519,668 | 555,089 | +4.3 | -2.4 | $7,741,844 | $7,149,257 | $7,796,049 | +8.3 | -0.7 |
| 12 - New Haven-Springfield | 384,834 | 380,896 | 387,776 | +1.0 | -0.8 | $11,723,569 | $11,204,575 | $11,417,988 | +4.6 | +2.7 |
| 14 - Keystone | 1,420,392 | 1,342,507 | 1,397,172 | +5.8 | +1.7 | $32,970,951 | $29,366,992 | $31,877,481 | +12.3 | +3.4 |
| 15 - Empire (NYP ALB) | 1,062,715 | 1,023,698 | 1,092,547 | +3.8 | -2.7 | $43,877,344 | $40,077,158 | $42,019,935 | +9.5 | +4.4 |
| 20 - Chicago-St. Louis (Lincoln Service) | 597,519 | 549,465 | 640,039 | +8.7 | -6.6 | $13,353,833 | $12,262,325 | $15,182,530 | +8.9 | -12.0 |
| 21 - Hiawatha | 838,355 | 819,493 | 859,460 | +2.3 | -2.5 | $15,963,261 | $14,953,873 | $15,937,371 | +6.8 | +0.2 |
| 22 - Wolverine | 484,138 | 503,290 | 544,487 | -3.8 | -11.1 | $17,704,897 | $18,769,770 | $20,706,383 | -5.7 | -14.5 |
| 23 - Chicago-Carbondale (Illini/Saluki) | 325,255 | 313,027 | 311,681 | +3.9 | +4.4 | $9,258,647 | $8,802,288 | $9,084,085 | +5.2 | +1.9 |
| 24 - Chicago-Quincy (IL Zephyr/Carl Sandburg) | 232,592 | 223,936 | 233,796 | +3.9 | -0.5 | $5,687,467 | $5,580,227 | $5,955,475 | +1.9 | -4.5 |
| 29 - Heartland Flyer | 87,873 | 84,039 | 90,591 | +4.6 | -3.0 | $2,086,587 | $1,911,994 | $2,161,314 | +9.1 | -3.5 |
| 35 - Pacific Surfliner | 2,640,342 | 2,786,972 | 2,883,636 | -5.3 | -8.4 | $58,595,820 | $55,317,127 | $57,787,136 | +5.9 | +1.4 |
| 36 - Cascades | 845,099 | 852,269 | 854,792 | -0.8 | -1.1 | $30,886,455 | $30,025,126 | $31,945,022 | +2.9 | -3.3 |
| 37 - Capitol Corridor | 1,746,397 | 1,708,618 | 1,783,560 | +2.2 | -2.1 | $27,927,540 | $25,720,252 | $27,856,562 | +8.6 | +0.3 |
| 39 - San Joaquin | 1,144,616 | 1,067,441 | 1,069,467 | +7.2 | +7.0 | $38,661,536 | $35,704,109 | $37,281,133 | +8.3 | +3.7 |
| 40 - Adirondack | 131,869 | 125,239 | 129,194 | +5.3 | +2.1 | $6,748,333 | $6,301,649 | $6,736,625 | +7.1 | +0.2 |
| 41 - Blue Water | 189,193 | 187,065 | 203,235 | +1.1 | -6.9 | $6,094,659 | $5,797,878 | $6,362,023 | +5.1 | -4.2 |
| 46 - Washington-Lynchburg | 184,907 | 162,051 | 158,067 | +14.1 | +17.0 | $11,411,821 | $9,826,802 | $9,796,805 | +16.1 | +16.5 |
| 47 - Washington-Newport News | 623,864 | 557,528 | 549,060 | +11.9 | +13.6 | $34,286,847 | $29,682,574 | $29,836,758 | +15.5 | +14.9 |
| 54 - Hoosier State | 36,669 | 37,249 | 37,208 | -1.6 | -1.4 | $856,675 | $836,057 | $839,606 | +2.5 | +2.0 |
| 56 - Kansas City-St. Louis (MO River Runner) | 195,885 | 186,077 | 197,392 | +5.3 | -0.8 | $5,139,069 | $4,763,442 | $5,108,422 | +7.9 | +0.6 |
| 57 - Pennsylvanian | 212,006 | 207,422 | 207,604 | +2.2 | +2.1 | $9,281,813 | $8,856,539 | $9,189,976 | +4.8 | +1.0 |
| 65 - Pere Marquette | 109,321 | 106,662 | 110,865 | +2.5 | -1.4 | $3,276,210 | $3,197,106 | $3,424,242 | +2.5 | -4.3 |
| 66 - Carolinian | 306,419 | 307,213 | 340,264 | -0.3 | -9.9 | $18,652,552 | $17,720,525 | $19,537,252 | +5.3 | -4.5 |
| 67 - Piedmont | 162,657 | 140,016 | 148,511 | +16.2 | +9.5 | $3,077,031 | $2,498,540 | $2,523,761 | +23.2 | +21.9 |
| 74-81, 85 - Buses | - | - | - | - | - | $7,858,849 | $7,993,876 | $6,991,982 | -1.7 | +12.4 |
| 96 - Special Trains | 32,612 | 39,653 | 43,602 | -17.8 | -25.2 | $2,747,535 | $2,772,993 | $2,533,350 | -0.9 | +8.5 |
| **Subtotal** | **15,081,477** | **14,765,011** | **15,417,371** | **+2.1** | **-2.2** | **$458,062,196** | **$426,965,070** | **$452,940,239** | **+7.3** | **+1.1** |
| ***Long Distance*** | | | | | | | | | | |
| 16 - Silver Star | 425,794 | 424,394 | 433,277 | +0.3 | -1.7 | $35,080,321 | $32,963,894 | $33,850,409 | +6.4 | +3.6 |
| 18 - Cardinal | 116,373 | 110,923 | 117,664 | +4.9 | -1.1 | $7,536,903 | $7,097,809 | $7,709,981 | +6.2 | -2.2 |
| 19 - Silver Meteor | 375,164 | 373,576 | 379,580 | +0.4 | -1.2 | $39,773,225 | $39,041,195 | $39,602,263 | +1.9 | +0.4 |
| 25 - Empire Builder | 543,072 | 469,167 | 534,593 | +15.8 | +1.6 | $66,655,153 | $53,773,711 | $66,637,131 | +24.0 | +0.0 |
| 26 - Capitol Ltd. | 226,884 | 226,597 | 237,120 | +0.1 | -4.3 | $20,480,182 | $20,312,544 | $21,344,948 | +0.8 | -4.1 |
| 27 - California Zephyr | 376,459 | 355,324 | 393,425 | +5.9 | -4.3 | $47,605,728 | $44,751,539 | $50,537,584 | +6.4 | -5.8 |
| 28 - Southwest Chief | 355,316 | 354,912 | 375,631 | +0.1 | -5.4 | $44,183,540 | $44,184,060 | $47,151,590 | -0.0 | -6.3 |
| 30 - City of New Orleans | 253,170 | 233,318 | 255,247 | +8.5 | -0.8 | $20,768,426 | $17,743,443 | $20,374,397 | +17.0 | +1.9 |
| 32 - Texas Eagle | 337,973 | 299,508 | 311,309 | +12.8 | +8.6 | $26,304,505 | $24,475,309 | $26,523,151 | +7.5 | -0.8 |
| 33 - Sunset Ltd. | 101,217 | 99,714 | 103,796 | +1.5 | -2.5 | $11,584,644 | $11,138,286 | $12,235,114 | +4.0 | -5.3 |
| 34 - Coast Starlight | 454,443 | 426,584 | 420,432 | +6.5 | +8.1 | $40,826,562 | $39,997,952 | $39,256,529 | +2.1 | +4.0 |
| 45 - Lake Shore Ltd. | 403,700 | 387,043 | 404,134 | +4.3 | -0.1 | $32,785,725 | $30,701,576 | $33,050,270 | +6.8 | -0.8 |
| 48 - Palmetto | 198,260 | 196,743 | 205,714 | +0.8 | -3.6 | $17,342,317 | $16,438,480 | $17,577,321 | +5.5 | -1.3 |
| 52 - Crescent | 304,266 | 304,086 | 325,182 | +0.1 | -6.4 | $32,584,682 | $30,023,636 | $32,646,228 | +8.5 | -0.2 |
| 63 - Auto Train | 264,096 | 259,944 | 254,554 | +1.6 | +3.7 | $72,518,200 | $68,618,768 | $69,448,919 | +5.7 | +4.4 |
| **Subtotal** | **4,736,187** | **4,521,833** | **4,751,657** | **+4.7** | **-0.3** | **$516,030,313** | **$481,262,202** | **$517,945,835** | **+7.2** | **-0.4** |
| **Amtrak Total** | **31,240,565** | **30,186,733** | **31,385,337** | **+3.5** | **-0.5** | **$2,020,004,751** | **$1,891,679,827** | **$2,009,133,403** | **+6.8** | **+0.5** |

A - 3.5

## National Railroad Passenger Corporation (Amtrak)

**Financial Performance of Routes - Fully allocated overhead, excluding Depreciation and Interest (see notes below)**

**September 2012 YTD**

Route Performance Results Exclude Depreciation and Interest.

All numbers are in $ millions except Passenger Mile and Seat Mile Calculations

| Northeast Corridor Trains<br>Route Number | Train Name | Total Revenue | Total Costs excl. OPEB's, Capital Charge and Other Costs | Core Contribution / (Loss) excl. OPEB's | OPEB's | Contribution / (Loss) before Capital Charge | Capital Charge* | Fully Allocated Contribution / (Loss) | Fully Allocated Contribution / (Loss) per Pass Mile (cents) | Fully Allocated Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| RT01 | Acela | $521.0 | $305.3 | $215.7 | $6.9 | $208.9 | n/a | $208.9 | 32.3 | 20.2 |
| RT05 | Northeast Regional | $552.8 | $467.6 | $85.2 | $8.6 | $76.5 | n/a | $76.5 | 6.2 | 3.6 |
| RT99 | NEC Special Trains | $5.3 | $2.1 | $3.2 | $0.0 | $3.1 | n/a | $3.1 | 177.7 | 25.9 |
| | Total | $1,079.2 | $775.1 | $304.1 | $15.7 | $288.5 | n/a | $288.5 | 15.3 | 8.0 |

| State Supported and Other Short Distance Corridor Trains<br>Route Number | Train Name | Total Revenue | Total Costs excl. OPEB's, Capital Charge and Other Costs | Core Contribution / (Loss) excl. OPEB's | OPEB's | Contribution / (Loss) before Capital Charge | Capital Charge* | Fully Allocated Contribution / (Loss) | Fully Allocated Contribution / (Loss) per Pass Mile (cents) | Fully Allocated Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| RT03 | Ethan Allen Express | $5.2 | $5.0 | $0.1 | $0.1 | $0.0 | n/a | $0.0 | 0.3 | 0.1 |
| RT04 | Vermonter | $7.8 | $10.5 | ($2.7) | $0.2 | ($2.9) | n/a | ($2.9) | (12.2) | (5.2) |
| RT07 | Maple Leaf | $26.3 | $27.6 | ($1.5) | $0.6 | ($2.1) | n/a | ($2.1) | (1.7) | (0.9) |
| RT09 | The Downeaster | $11.9 | $14.6 | ($2.8) | $0.3 | ($3.1) | n/a | ($3.1) | (7.1) | (2.7) |
| RT12 | New Haven - Springfield | $12.2 | $23.8 | ($11.6) | $0.5 | ($12.1) | n/a | ($12.1) | (34.8) | (17.4) |
| RT14 | Keystone Service | $42.2 | $46.8 | ($4.7) | $0.8 | ($5.5) | n/a | ($5.5) | (4.5) | (1.8) |
| RT15 | Empire Service | $44.8 | $64.6 | ($19.8) | $1.3 | ($21.1) | n/a | ($21.1) | (16.3) | (5.5) |
| RT20 | Chicago-St Louis | $24.0 | $38.7 | ($14.7) | $0.9 | ($15.5) | n/a | ($15.5) | (15.2) | (7.8) |
| RT21 | Hiawathas | $23.7 | $26.3 | ($2.6) | $0.6 | ($3.2) | n/a | ($3.2) | (4.7) | (1.8) |
| RT22 | Wolverines | $19.1 | $37.7 | ($18.6) | $0.8 | ($19.4) | n/a | ($19.4) | (19.2) | (9.7) |
| RT23 | Illini | $16.0 | $20.9 | ($5.0) | $0.5 | ($5.4) | n/a | ($5.4) | (9.0) | (3.8) |
| RT24 | Illinois Zephyr | $14.9 | $17.1 | ($2.1) | $0.4 | ($2.5) | n/a | ($2.5) | (6.4) | (2.6) |
| RT29 | Heartland Flyer | $5.4 | $9.0 | ($3.6) | $0.2 | ($3.8) | n/a | ($3.8) | (24.8) | (11.1) |
| RT35 | Pacific Surfliner | $91.1 | $115.2 | ($24.1) | $2.5 | ($26.6) | n/a | ($26.6) | (11.9) | (3.7) |
| RT36 | Cascades | $54.0 | $67.2 | ($13.2) | $1.4 | ($14.6) | n/a | ($14.6) | (11.1) | (5.9) |
| RT37 | Capitols | $60.3 | $73.9 | ($13.6) | $1.6 | ($15.1) | n/a | ($15.1) | (13.6) | (3.9) |
| RT39 | San Joaquins | $69.8 | $85.0 | ($15.1) | $1.5 | ($16.6) | n/a | ($16.6) | (10.0) | (3.9) |
| RT40 | Adirondack | $10.0 | $12.6 | ($2.6) | $0.3 | ($2.9) | n/a | ($2.9) | (7.1) | (5.7) |
| RT41 | Blue Water | $12.1 | $15.0 | ($2.9) | $0.3 | ($3.2) | n/a | ($3.2) | (9.2) | (2.8) |
| RT46 | Washington-Lynchburg | $11.8 | $7.9 | $3.9 | $0.2 | $3.7 | n/a | $3.7 | 9.6 | 5.8 |
| RT47 | Washington-Newport News | $35.8 | $31.0 | $4.7 | $0.7 | $4.0 | n/a | $4.0 | 3.1 | 1.9 |
| RT54 | Hoosier State | $0.9 | $4.6 | ($3.7) | $0.1 | ($3.8) | n/a | ($3.8) | (67.9) | (31.9) |
| RT56 | Kansas City-St Louis | $14.0 | $15.4 | ($1.5) | $0.4 | ($1.8) | n/a | ($1.8) | (4.8) | (2.4) |
| RT57 | Pennsylvanian | $9.9 | $15.3 | ($5.4) | $0.3 | ($5.8) | n/a | ($5.8) | (11.9) | (7.2) |
| RT65 | Pere Marquette | $5.9 | $5.9 | ($0.1) | $0.1 | ($0.2) | n/a | ($0.2) | (1.2) | (0.7) |
| RT66 | Carolinian | $21.5 | $20.0 | $1.5 | $0.5 | $1.0 | n/a | $1.0 | 1.1 | 0.9 |
| RT67 | Piedmont | $6.6 | $7.0 | ($0.3) | $0.2 | ($0.5) | n/a | ($0.5) | (2.9) | (1.4) |
| RT96 | Non NEC Special Trains | $3.2 | $2.0 | $1.1 | $0.0 | $1.1 | n/a | $1.1 | 13.8 | 12.9 |
| | Total | $660.2 | $820.7 | ($160.5) | $17.3 | ($177.9) | n/a | ($177.9) | (9.0) | (3.9) |

| Long Distance Trains<br>Route Number | Train Name | Total Revenue | Total Costs excl. OPEB's, Capital Charge and Other Costs | Core Contribution / (Loss) excl. OPEB's | OPEB's | Contribution / (Loss) before Capital Charge | Capital Charge* | Fully Allocated Contribution / (Loss) | Fully Allocated Contribution / (Loss) per Pass Mile (cents) | Fully Allocated Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| RT16 | Silver Star | $38.7 | $82.1 | ($43.4) | $1.6 | ($45.1) | n/a | ($45.1) | (20.6) | (13.6) |
| RT18 | Cardinal | $8.4 | $25.1 | ($16.6) | $0.5 | ($17.2) | n/a | ($17.2) | (35.6) | (20.7) |
| RT19 | Silver Meteor | $42.6 | $78.8 | ($36.2) | $1.7 | ($37.9) | n/a | ($37.9) | (16.4) | (10.6) |
| RT25 | Empire Builder | $72.2 | $126.9 | ($54.7) | $2.9 | ($57.6) | n/a | ($57.6) | (14.5) | (8.9) |
| RT26 | Capitol Limited | $22.6 | $45.6 | ($23.0) | $1.0 | ($24.0) | n/a | ($24.0) | (21.4) | (14.5) |
| RT27 | California Zephyr | $53.2 | $120.7 | ($67.6) | $2.6 | ($70.3) | n/a | ($70.3) | (22.6) | (13.3) |
| RT28 | Southwest Chief | $48.2 | $112.3 | ($64.2) | $2.6 | ($66.7) | n/a | ($66.7) | (21.2) | (13.9) |
| RT30 | City of New Orleans | $22.0 | $42.4 | ($20.3) | $0.9 | ($21.2) | n/a | ($21.2) | (17.8) | (12.1) |
| RT32 | Texas Eagle | $28.5 | $61.1 | ($32.6) | $1.4 | ($34.0) | n/a | ($34.0) | (18.5) | (13.2) |
| RT33 | Sunset Limited | $13.0 | $53.6 | ($40.5) | $1.3 | ($41.7) | n/a | ($41.7) | (48.4) | (25.2) |
| RT34 | Coast Starlight | $45.3 | $98.3 | ($53.0) | $2.2 | ($55.2) | n/a | ($55.2) | (24.7) | (15.2) |
| RT45 | Lake Shore Limited | $35.0 | $66.1 | ($31.1) | $1.5 | ($32.6) | n/a | ($32.6) | (15.8) | (10.1) |
| RT48 | Palmetto | $18.4 | $29.0 | ($10.6) | $0.6 | ($11.2) | n/a | ($11.2) | (12.8) | (6.2) |
| RT52 | Crescent | $34.9 | $74.9 | ($40.0) | $1.6 | ($41.6) | n/a | ($41.6) | (25.7) | (14.1) |
| RT63 | Auto Train | $74.1 | $106.1 | ($32.0) | $2.4 | ($34.5) | n/a | ($34.5) | (15.2) | (10.5) |
| | Total | $557.1 | $1,122.9 | ($565.7) | $25.2 | ($591.0) | n/a | ($591.0) | (20.2) | (12.6) |
| | Total National Train System | $2,296.5 | $2,718.6 | ($422.1) | $58.2 | ($480.3) | n/a | ($480.3) | (7.1) | (3.7) |

* Under Development - will be included once it is completed

**Reconciling Items between National Train System and Consolidated Statement of Operations**

| | Revenue | Expense | Net |
|---|---|---|---|
| Total National Train System | $2,296.5 | $2,776.0 | ($480.3) |
| Ancillary Customers | $450.4 | $282.6 | $167.8 |
| Freight and Other Customers | $97.1 | $312.5 | ($215.4) |
| Depreciation, net | $0.0 | $663.7 | ($663.7) |
| Operating Results | $2,844.1 | $4,035.8 | ($1,191.7) |
| Interest Expense, net | $0.0 | $80.4 | ($80.4) |
| State Capital Payments | $32.7 | $0.0 | $32.7 |
| **Net Results** | $2,876.9 | $4,116.2 | ($1,239.4) |

Notes:

- This report is being produced using the Amtrak Performance Tracking (SAM_APT) system, which drives costs to all customers, including freight and commuter railroads. This report reflects the information as it existed in SAP at the time it was produced. Future changes to SAP data may affect the placement of data within this report. Project (PRJ) related costs are excluded from this fully allocated report because they are paid for with Capital funding.
- Amtrak does not report depreciation on a route level due to the distortion caused by the sale and leaseback transactions of the late 1990's and early 2000's. Allocating depreciation and interest would unfairly burden routes whose equipment was sold and then leased back. Those transactions caused the value of those assets to increase and therefore their depreciation to increase, which is unrelated to the actual capital cost of that equipment. A synthetic capital charge is under development and will be allocated to routes and included in this report when available.

## National Railroad Passenger Corporation (Amtrak)

### Financial Performance of Routes - Fully allocated overhead, excluding Depreciation and Interest (see notes below)

### September 2011 YTD

Route Performance Results Exclude Depreciation and Interest.

All numbers are in $ millions except Passenger Mile and Seat Mile Calculations

| Northeast Corridor Trains<br>Route Number | Train Name | Total Revenue | Total Costs excl. OPEB's, Capital Charge and Other Costs | Core Contribution / (Loss) excl. OPEB's | OPEB's | Contribution / (Loss) before Capital Charge | Capital Charge* | Fully Allocated Contribution / (Loss) | Fully Allocated Contribution / (Loss) per Pass Mile (cents) | Fully Allocated Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| RT01 | Acela | $510.3 | $323.4 | $186.9 | $8.2 | $178.8 | n/a | $178.8 | 27.5 | 17.4 |
| RT05 | Northeast Regional | $505.3 | $467.2 | $36.1 | $10.1 | $26.0 | n/a | $28.0 | 2.4 | 1.1 |
| RT99 | NEC Special Trains | $0.9 | $2.2 | ($1.3) | $0.0 | ($1.4) | n/a | ($1.4) | (135.6) | (24.0) |
| | Total | $1,016.4 | $792.8 | $223.7 | $18.3 | $205.4 | n/a | $205.4 | 11.3 | 5.8 |

| State Supported and Other Short Distance Corridor Trains<br>Route Number | Train Name | Total Revenue | Total Costs excl. OPEB's, Capital Charge and Other Costs | Core Contribution / (Loss) excl. OPEB's | OPEB's | Contribution / (Loss) before Capital Charge | Capital Charge* | Fully Allocated Contribution / (Loss) | Fully Allocated Contribution / (Loss) per Pass Mile (cents) | Fully Allocated Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| RT03 | Ethan Allen Express | $4.1 | $6.5 | ($2.4) | $0.1 | ($2.5) | n/a | ($2.5) | (26.8) | (11.0) |
| RT04 | Vermonter | $7.4 | $9.1 | ($1.7) | $0.2 | ($1.9) | n/a | ($1.9) | (9.0) | (4.9) |
| RT07 | Maple Leaf | $25.0 | $30.2 | ($5.2) | $0.7 | ($5.9) | n/a | ($5.9) | (4.7) | (2.7) |
| RT09 | The Downeaster | $13.5 | $13.2 | ($0.7) | $0.3 | ($1.0) | n/a | ($1.0) | (2.3) | (0.8) |
| RT12 | New Haven - Springfield | $11.6 | $23.9 | ($12.3) | $0.5 | ($12.9) | n/a | ($12.9) | (36.2) | (18.6) |
| RT14 | Keystone Service | $38.9 | $46.1 | ($7.2) | $0.9 | ($8.2) | n/a | ($8.2) | (7.0) | (2.8) |
| RT15 | Empire Service | $40.9 | $70.4 | ($29.5) | $1.5 | ($31.0) | n/a | ($31.0) | (24.4) | (8.4) |
| RT20 | Chicago-St Louis | $28.3 | $31.7 | ($3.4) | $0.7 | ($4.1) | n/a | ($4.1) | (4.3) | (2.0) |
| RT21 | Hiawathas | $23.7 | $25.3 | ($1.6) | $0.6 | ($2.2) | n/a | ($2.2) | (3.3) | (1.2) |
| RT22 | Wolverines | $20.2 | $36.4 | ($16.2) | $0.8 | ($17.0) | n/a | ($17.0) | (15.6) | (7.9) |
| RT23 | Illini | $16.1 | $20.1 | ($4.0) | $0.5 | ($4.4) | n/a | ($4.4) | (7.4) | (2.8) |
| RT24 | Illinois Zephyr | $14.4 | $16.4 | ($2.0) | $0.4 | ($2.4) | n/a | ($2.4) | (6.2) | (2.4) |
| RT29 | Heartland Flyer | $5.9 | $8.5 | ($2.5) | $0.2 | ($2.7) | n/a | ($2.7) | (18.4) | (6.2) |
| RT35 | Pacific Surfliner | $85.3 | $112.9 | ($27.6) | $2.5 | ($30.1) | n/a | ($30.1) | (12.0) | (4.3) |
| RT36 | Cascades | $50.4 | $64.5 | ($14.0) | $1.6 | ($15.6) | n/a | ($15.6) | (11.4) | (6.5) |
| RT37 | Capitols | $55.5 | $68.1 | ($12.6) | $1.5 | ($14.1) | n/a | ($14.1) | (12.8) | (3.7) |
| RT39 | San Joaquins | $71.1 | $76.4 | ($5.3) | $1.5 | ($6.8) | n/a | ($6.8) | (4.3) | (1.7) |
| RT40 | Adirondack | $14.8 | $13.0 | $1.8 | $0.3 | $1.3 | n/a | $1.3 | 3.3 | 2.7 |
| RT41 | Blue Water | $11.7 | $13.7 | ($2.0) | $0.3 | ($2.3) | n/a | ($2.3) | (5.0) | (2.7) |
| RT46 | Washington-Lynchburg | $10.2 | $6.7 | $3.5 | $0.2 | $3.3 | n/a | $3.3 | 9.4 | 5.5 |
| RT47 | Washington-Newport News | $30.8 | $30.6 | $0.2 | $0.7 | ($0.5) | n/a | ($0.5) | (0.4) | (0.2) |
| RT54 | Hoosier State | $0.9 | $4.8 | ($3.9) | $0.1 | ($4.0) | n/a | ($4.0) | (68.7) | (32.3) |
| RT56 | Kansas City-St.Louis | $18.9 | $18.8 | $0.1 | $0.3 | ($0.3) | n/a | ($0.3) | (0.7) | (0.5) |
| RT57 | Pennsylvanian | $9.4 | $16.5 | ($7.1) | $0.3 | ($7.4) | n/a | ($7.4) | (15.1) | (9.4) |
| RT65 | Pere Marquette | $6.0 | $6.6 | ($0.7) | $0.2 | ($0.8) | n/a | ($0.8) | (5.0) | (3.1) |
| RT66 | Carolinian | $20.8 | $21.4 | ($0.6) | $0.5 | ($1.1) | n/a | ($1.1) | (1.2) | (1.0) |
| RT67 | Piedmont | $5.2 | $6.9 | ($1.7) | $0.2 | ($1.9) | n/a | ($1.9) | (11.9) | (5.5) |
| RT96 | Non NEC Special Trains | $2.7 | $2.0 | $0.7 | $0.0 | $0.6 | n/a | $0.6 | 6.1 | 9.5 |
| | Total | $637.6 | $796.0 | ($158.4) | $17.6 | ($176.0) | n/a | ($176.0) | (8.9) | (3.9) |

| Long Distance Trains<br>Route Number | Train Name | Total Revenue | Total Costs excl. OPEB's, Capital Charge and Other Costs | Core Contribution / (Loss) excl. OPEB's | OPEB's | Contribution / (Loss) before Capital Charge | Capital Charge* | Fully Allocated Contribution / (Loss) | Fully Allocated Contribution / (Loss) per Pass Mile (cents) | Fully Allocated Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| RT16 | Silver Star | $36.3 | $85.0 | ($48.8) | $1.9 | ($50.7) | n/a | ($50.7) | (23.2) | (15.2) |
| RT18 | Cardinal | $7.8 | $25.8 | ($18.0) | $0.6 | ($18.6) | n/a | ($18.6) | (40.7) | (23.2) |
| RT19 | Silver Meteor | $41.6 | $83.7 | ($42.0) | $1.9 | ($44.0) | n/a | ($44.0) | (19.7) | (12.5) |
| RT25 | Empire Builder | $57.7 | $109.6 | ($51.9) | $2.7 | ($54.6) | n/a | ($54.6) | (16.7) | (9.5) |
| RT26 | Capitol Limited | $22.4 | $45.9 | ($23.5) | $1.1 | ($24.5) | n/a | ($24.5) | (21.3) | (14.6) |
| RT27 | California Zephyr | $49.8 | $109.7 | ($59.9) | $2.6 | ($62.6) | n/a | ($62.6) | (21.8) | (12.7) |
| RT28 | Southwest Chief | $48.0 | $111.8 | ($63.8) | $2.7 | ($66.5) | n/a | ($66.5) | (20.5) | (13.9) |
| RT30 | City of New Orleans | $18.8 | $40.7 | ($21.9) | $0.9 | ($22.8) | n/a | ($22.8) | (21.0) | (13.5) |
| RT32 | Texas Eagle | $26.6 | $55.4 | ($28.8) | $1.3 | ($30.1) | n/a | ($30.1) | (16.9) | (12.0) |
| RT33 | Sunset Limited | $12.6 | $50.5 | ($37.9) | $1.2 | ($39.1) | n/a | ($39.1) | (46.1) | (23.6) |
| RT34 | Coast Starlight | $44.3 | $95.9 | ($51.6) | $2.2 | ($53.8) | n/a | ($53.8) | (24.5) | (15.1) |
| RT45 | Lake Shore Limited | $32.9 | $68.9 | ($36.0) | $1.5 | ($37.5) | n/a | ($37.5) | (18.5) | (11.9) |
| RT48 | Palmetto | $17.4 | $33.2 | ($15.7) | $0.8 | ($16.5) | n/a | ($16.5) | (19.3) | (9.2) |
| RT52 | Crescent | $32.3 | $75.4 | ($43.1) | $1.7 | ($44.8) | n/a | ($44.8) | (26.6) | (15.4) |
| RT63 | Auto Train | $69.9 | $99.2 | ($29.2) | $2.3 | ($31.5) | n/a | ($31.5) | (14.1) | (9.7) |
| | Total | $518.5 | $1,090.7 | ($572.1) | $25.6 | ($597.7) | n/a | ($597.7) | (21.2) | (13.2) |
| | Total National Train System | $2,172.6 | $2,679.4 | ($506.8) | $61.5 | ($568.3) | n/a | ($568.3) | (8.6) | (4.5) |

* Under Development - will be included once it is completed

**Reconciling Items between National Train System and Consolidated Statement of Operations**

| | Revenue | Expense | Net |
|---|---|---|---|
| Total National Train System | $2,172.6 | $2,740.9 | ($568.3) |
| Ancillary Customers | $315.5 | $258.5 | $57.0 |
| Freight and Other Customers | $187.8 | $357.6 | ($169.7) |
| Depreciation, net | $0.0 | $598.5 | ($598.5) |
| Operating Results | $2,675.9 | $3,955.5 | ($1,279.6) |
| Interest Expense, net | $0.0 | $93.3 | ($93.2) |
| State Capital Payments | $30.9 | $0.0 | $30.9 |
| **Net Results** | $2,706.8 | $4,048.8 | ($1,342.0) |

Notes:
- This report is being produced using the Amtrak Performance Tracking (SAM_APT) system, which drives costs to all customers, including freight and commuter railroads. This report reflects the information as it existed in SAP at the time it was produced. Future changes to SAP data may affect the placement of data within this report. Project (PRJ) related costs are excluded from this fully allocated report because they are paid for with Capital funding.
- Amtrak does not report depreciation on a route level due to the distortion caused by the sale and leaseback transactions of the late 1990's and early 2000's. Allocating depreciation and interest would unfairly burden routes whose equipment was sold and then leased back. Those transactions caused the value of those assets to increase and therefore their depreciation to increase, which is unrelated to the actual capital cost of that equipment. A synthetic capital charge is under development and will be allocated to routes and included in this report when available.

# FY11

| | Ridership | | | | | Ticket Revenue | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | % change vs. | | | | | % change vs. | |
| ***NEC Spine*** | FY11 | FY10 | Budget | FY10 | Budget | FY11 | FY10 | Budget | FY10 | Budget |
| 1 - Acela | 3,379,126 | 3,218,718 | 3,311,947 | +5.0 | +2.0 | $491,654,117 | $440,119,294 | $460,082,028 | +11.7 | +6.9 |
| 5 - Northeast Regional | 7,514,741 | 7,148,998 | 7,320,277 | +5.1 | +2.7 | $490,857,865 | $458,105,798 | $477,291,158 | +7.1 | +2.8 |
| 99 - Special Trains | 6,022 | 7,493 | 7,880 | -19.6 | -23.6 | $940,573 | $908,307 | $965,300 | +3.6 | -2.6 |
| **Subtotal** | **10,899,889** | **10,375,209** | **10,640,104** | **+5.1** | **+2.4** | **$983,452,555** | **$899,133,399** | **$938,338,486** | **+9.4** | **+4.8** |
| ***State Supported and Other Short Distance Corridors*** | | | | | | | | | | |
| 3 - Ethan Allen | 49,448 | 48,031 | 53,087 | +3.0 | -6.9 | $2,504,308 | $2,398,998 | $2,670,057 | +4.4 | -6.2 |
| 4 - Vermonter | 77,783 | 86,245 | 83,429 | -9.8 | -6.8 | $3,961,115 | $4,778,747 | $4,687,094 | -17.1 | -15.5 |
| 7 - Albany-Niagara Falls-Toronto | 406,286 | 386,430 | 384,543 | +5.1 | +5.7 | $23,406,596 | $21,797,094 | $22,468,109 | +7.4 | +4.2 |
| 9 - Downeaster | 519,668 | 478,463 | 488,466 | +8.6 | +6.4 | $7,149,257 | $6,711,893 | $7,205,160 | +6.5 | -0.8 |
| 12 - New Haven-Springfield | 380,896 | 363,458 | 349,213 | +4.8 | +9.1 | $11,204,575 | $10,277,140 | $10,179,888 | +9.0 | +10.1 |
| 14 - Keystone | 1,342,507 | 1,296,838 | 1,304,353 | +3.5 | +2.9 | $29,366,992 | $27,731,221 | $28,331,522 | +5.9 | +3.7 |
| 15 - Empire (NYP ALB) | 1,023,698 | 981,241 | 1,005,599 | +4.3 | +1.8 | $40,077,158 | $37,807,261 | $40,240,007 | +6.0 | -0.4 |
| 20 - Chicago-St. Louis (Lincoln Service) | 549,465 | 572,424 | 559,425 | -4.0 | -1.8 | $12,262,325 | $13,324,632 | $13,607,462 | -8.0 | -9.9 |
| 21 - Hiawatha | 819,493 | 783,060 | 791,665 | +4.7 | +3.5 | $14,953,873 | $14,092,803 | $14,731,051 | +6.1 | +1.5 |
| 22 - Wolverine | 503,290 | 479,782 | 518,059 | +4.9 | -2.9 | $18,769,770 | $16,909,193 | $18,561,842 | +11.0 | +1.1 |
| 23 - Chicago-Carbondale (Illini/Saluki) | 313,027 | 264,934 | 315,057 | +18.2 | -0.6 | $8,802,288 | $7,674,434 | $9,168,356 | +14.7 | -4.0 |
| 24 - Chicago-Quincy (IL Zephyr/Carl Sandburg) | 223,936 | 209,466 | 212,957 | +6.9 | +5.2 | $5,580,227 | $5,045,876 | $5,257,596 | +10.6 | +6.1 |
| 29 - Heartland Flyer | 84,039 | 81,749 | 78,168 | +2.8 | +7.5 | $1,911,994 | $1,806,780 | $1,779,752 | +5.8 | +7.4 |
| 35 - Pacific Surfliner | 2,786,972 | 2,613,604 | 2,763,451 | +6.6 | +0.9 | $55,317,127 | $49,523,433 | $53,723,199 | +11.7 | +3.0 |
| 36 - Cascades | 852,269 | 836,499 | 908,296 | +1.9 | -6.2 | $30,025,126 | $27,564,069 | $26,981,271 | +8.9 | +11.3 |
| 37 - Capitol Corridor | 1,708,618 | 1,580,619 | 1,601,637 | +8.1 | +6.7 | $25,720,252 | $22,872,085 | $24,777,610 | +12.5 | +3.8 |
| 39 - San Joaquin | 1,067,441 | 977,834 | 1,036,568 | +9.2 | +3.0 | $35,704,109 | $31,341,146 | $32,525,753 | +13.9 | +9.8 |
| 40 - Adirondack | 125,239 | 118,673 | 124,816 | +5.5 | +0.3 | $6,301,649 | $6,058,894 | $6,555,784 | +4.0 | -3.9 |
| 41 - Blue Water | 187,065 | 157,709 | 154,675 | +18.6 | +20.9 | $5,797,878 | $4,741,560 | $4,950,842 | +22.3 | +17.1 |
| 46 - Washington-Lynchburg | 162,051 | 126,072 | 114,650 | +28.5 | +41.3 | $9,826,802 | $7,570,943 | $7,134,169 | +29.8 | +37.7 |
| 47 - Washington-Newport News | 557,528 | 468,142 | 519,782 | +19.1 | +7.3 | $29,682,574 | $25,525,588 | $29,150,334 | +16.3 | +1.8 |
| 54 - Hoosier State | 37,249 | 33,600 | 39,826 | +10.9 | -6.5 | $836,057 | $796,094 | $941,062 | +5.0 | -11.2 |
| 56 - Kansas City-St. Louis (MO River Runner) | 186,077 | 172,554 | 173,241 | +7.8 | +7.4 | $4,763,442 | $4,073,303 | $4,252,729 | +16.9 | +12.0 |
| 57 - Pennsylvanian | 207,422 | 203,392 | 218,485 | +2.0 | -5.1 | $8,856,539 | $8,453,934 | $9,029,871 | +4.8 | -1.9 |
| 65 - Pere Marquette | 106,662 | 101,907 | 121,571 | +4.7 | -12.3 | $3,197,106 | $2,912,070 | $3,529,364 | +9.8 | -9.4 |
| 66 - Carolinian | 307,213 | 308,197 | 323,709 | -0.3 | -5.1 | $17,720,525 | $17,332,708 | $17,955,172 | +2.2 | -1.3 |
| 67 - Piedmont | 140,016 | 99,873 | 124,193 | +40.2 | +12.7 | $2,498,540 | $1,556,873 | $2,116,495 | +60.5 | +18.1 |
| 74-81 - Buses | - | - | - | - | -- | $7,993,876 | $6,947,135 | $5,798,667 | +15.1 | +37.9 |
| 96 - Special Trains | 39,653 | 36,008 | 34,892 | +10.1 | +13.6 | $2,772,993 | $2,391,643 | $2,184,668 | +15.9 | +26.9 |
| **Subtotal** | **14,765,011** | **13,866,804** | **14,403,803** | **+6.5** | **+2.5** | **$426,965,070** | **$390,017,549** | **$410,494,885** | **+9.5** | **+4.0** |
| ***Long Distance*** | | | | | | | | | | |
| 16 - Silver Star | 424,394 | 393,586 | 404,932 | +7.8 | +4.8 | $32,963,894 | $29,805,402 | $30,273,978 | +10.6 | +8.9 |
| 18 - Cardinal | 110,923 | 107,053 | 122,419 | +3.6 | -9.4 | $7,097,809 | $6,375,560 | $7,464,062 | +11.3 | -4.9 |
| 19 - Silver Meteor | 373,576 | 352,286 | 364,303 | +6.0 | +2.5 | $39,041,195 | $35,271,821 | $37,228,257 | +10.7 | +4.9 |
| 25 - Empire Builder | 469,167 | 533,493 | 540,334 | -12.1 | -13.2 | $53,773,711 | $58,497,143 | $61,361,250 | -8.1 | -12.4 |
| 26 - Capitol Ltd. | 226,597 | 218,956 | 229,189 | +3.5 | -1.1 | $20,312,544 | $18,578,926 | $19,163,002 | +9.3 | +6.0 |
| 27 - California Zephyr | 355,324 | 377,876 | 379,167 | -6.0 | -6.3 | $44,751,539 | $43,754,763 | $45,709,800 | +2.3 | -2.1 |
| 28 - Southwest Chief | 354,912 | 342,403 | 329,962 | +3.7 | +7.6 | $44,184,060 | $41,604,705 | $41,844,638 | +6.2 | +5.6 |
| 30 - City of New Orleans | 233,318 | 229,270 | 223,720 | +1.8 | +4.3 | $17,743,443 | $17,248,582 | $17,306,150 | +2.9 | +2.5 |
| 32 - Texas Eagle | 299,508 | 287,164 | 282,124 | +4.3 | +6.2 | $24,475,309 | $22,728,016 | $22,635,034 | +7.7 | +8.1 |
| 33 - Sunset Ltd. | 99,714 | 91,684 | 87,865 | +8.8 | +13.5 | $11,138,280 | $9,962,415 | $9,392,805 | +11.8 | +18.6 |
| 34 - Coast Starlight | 426,584 | 444,205 | 456,564 | -4.0 | -6.6 | $39,997,952 | $37,404,114 | $37,258,792 | +6.9 | +7.4 |
| 45 - Lake Shore Ltd. | 387,043 | 364,460 | 363,017 | +6.2 | +6.6 | $30,701,576 | $27,529,698 | $27,060,799 | +11.5 | +13.5 |
| 48 - Palmetto | 196,743 | 189,468 | 178,121 | +3.8 | +10.5 | $16,438,480 | $15,365,992 | $14,142,967 | +7.0 | +16.2 |
| 52 - Crescent | 304,086 | 298,688 | 301,086 | +1.8 | +1.0 | $30,023,636 | $28,700,727 | $28,909,284 | +4.6 | +3.9 |
| 63 - Auto Train | 259,944 | 244,252 | 243,859 | +6.4 | +6.6 | $68,618,768 | $61,012,324 | $61,064,145 | +12.5 | +12.4 |
| **Subtotal** | **4,521,833** | **4,474,844** | **4,506,682** | **+1.1** | **+0.3** | **$481,262,202** | **$453,840,185** | **$460,814,965** | **+6.0** | **+4.4** |
| **Amtrak Total** | **30,186,733** | **28,716,857** | **29,550,589** | **+5.1** | **+2.2** | **$1,891,679,827** | **$1,742,991,134** | **$1,809,648,336** | **+8.5** | **+4.5** |

A - 3.5

## National Railroad Passenger Corporation (Amtrak)

**Financial Performance of Routes - Fully allocated overhead, excluding Depreciation and Interest (see notes below)**

**September 2010 YTD**

Route Performance Results Exclude Depreciation and Interest.

All numbers are in $ millions except Passenger Mile and Seat Mile Calculations

| Northeast Corridor Trains<br>Route Number | Train Name | Total Revenue | Total Costs excl. OPEB's, Capital Charge and Other Costs | Core Contribution / (Loss) excl. OPEB's | OPEB's and Other Costs | Contribution / (Loss) before Capital Charge | Capital Charge* | Fully Allocated Contribution / (Loss) | Fully Allocated Contribution / (Loss) per Pass Mile (cents) | Fully Allocated Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| RT01 | Acela | $449.8 | $316.4 | $133.4 | $28.9 | $104.5 | n/a | $104.5 | 17.1 | 10.3 |
| RT05 | Northeast Regional | $469.7 | $466.3 | $3.4 | $46.6 | ($43.1) | n/a | ($43.1) | (3.9) | (1.8) |
| RT99 | NEC Special Trains | $0.9 | $1.0 | ($0.1) | $0.2 | ($0.3) | n/a | ($0.3) | (25.9) | (5.0) |
| | Total | $920.4 | $783.6 | $136.8 | $75.7 | $61.1 | n/a | $61.1 | 3.6 | 1.8 |

| State Supported and Other Short Distance Corridor Trains<br>Route Number | Train Name | Total Revenue | Total Costs excl. OPEB's, Capital Charge and Other Costs | Core Contribution / (Loss) excl. OPEB's | OPEB's and Other Costs | Contribution / (Loss) before Capital Charge | Capital Charge* | Fully Allocated Contribution / (Loss) | Fully Allocated Contribution / (Loss) per Pass Mile (cents) | Fully Allocated Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| RT03 | Ethan Allen Express | $3.5 | $4.8 | ($1.3) | $0.2 | ($1.5) | n/a | ($1.5) | (17.2) | (6.6) |
| RT04 | Vermonter | $7.8 | $9.4 | ($1.6) | $0.5 | ($2.0) | n/a | ($2.0) | (8.0) | (3.7) |
| RT07 | Maple Leaf | $23.0 | $28.3 | ($5.3) | $1.2 | ($6.6) | n/a | ($6.6) | (5.6) | (2.9) |
| RT09 | The Downeaster | $11.1 | $12.1 | ($1.1) | $0.8 | ($1.8) | n/a | ($1.8) | (4.7) | (1.6) |
| RT12 | New Haven - Springfield | $10.6 | $21.0 | ($10.4) | $2.8 | ($13.2) | n/a | ($13.2) | (41.1) | (19.3) |
| RT14 | Keystone Service | $37.0 | $57.9 | ($20.9) | $5.5 | ($26.4) | n/a | ($26.4) | (23.1) | (9.0) |
| RT15 | Empire Service | $38.5 | $60.6 | ($22.0) | $3.2 | ($25.2) | n/a | ($25.2) | (20.9) | (6.8) |
| RT20 | Chicago-St.Louis | $26.9 | $35.5 | ($8.6) | $3.3 | ($11.8) | n/a | ($11.8) | (11.5) | (5.2) |
| RT21 | Hiawathas | $20.6 | $28.5 | ($7.9) | $5.3 | ($13.1) | n/a | ($13.1) | (20.9) | (7.5) |
| RT22 | Wolverines | $18.1 | $33.8 | ($15.7) | $3.0 | ($18.6) | n/a | ($18.6) | (18.3) | (9.0) |
| RT23 | Illini | $13.7 | $17.2 | ($3.6) | $2.0 | ($5.6) | n/a | ($5.6) | (11.0) | (4.7) |
| RT24 | Illinois Zephyr | $11.7 | $17.5 | ($5.8) | $1.6 | ($7.3) | n/a | ($7.3) | (21.0) | (7.7) |
| RT29 | Heartland Flyer | $5.3 | $7.5 | ($2.2) | $0.3 | ($2.5) | n/a | ($2.5) | (17.9) | (7.8) |
| RT35 | Pacific Surfliner | $80.8 | $106.5 | ($25.8) | $4.5 | ($30.3) | n/a | ($30.3) | (14.1) | (4.3) |
| RT36 | Cascades | $44.5 | $56.2 | ($11.7) | $2.3 | ($14.0) | n/a | ($14.0) | (10.5) | (5.6) |
| RT37 | Capitols | $52.7 | $65.7 | ($12.9) | $2.9 | ($15.8) | n/a | ($15.8) | (15.6) | (4.3) |
| RT39 | San Joaquins | $64.7 | $73.2 | ($8.5) | $2.4 | ($11.0) | n/a | ($11.0) | (7.9) | (3.1) |
| RT40 | Adirondack | $9.8 | $12.1 | ($2.3) | $0.5 | ($2.8) | n/a | ($2.8) | (7.7) | (5.7) |
| RT41 | Blue Water | $8.9 | $11.7 | ($2.9) | $1.0 | ($3.8) | n/a | ($3.9) | (12.1) | (5.2) |
| RT46 | Washington-Lynchburg | $7.8 | $5.4 | $2.4 | $0.3 | $2.1 | n/a | $2.1 | 7.2 | 3.7 |
| RT47 | Washington-Newport News | $26.5 | $25.6 | $0.9 | $1.3 | ($0.3) | n/a | ($0.3) | (0.4) | (0.2) |
| RT54 | Hoosier State | $0.8 | $5.3 | ($4.5) | $0.4 | ($4.9) | n/a | ($4.9) | (95.2) | (43.2) |
| RT56 | Kansas City-St.Louis | $13.0 | $13.0 | $0.0 | $0.6 | ($0.6) | n/a | ($0.6) | (1.5) | (0.7) |
| RT57 | Pennsylvanian | $8.9 | $14.4 | ($5.5) | $0.9 | ($6.3) | n/a | ($6.3) | (13.1) | (9.1) |
| RT65 | Pere Marquette | $6.9 | $6.1 | $0.7 | $0.7 | $0.0 | n/a | $0.0 | 0.3 | 0.1 |
| RT66 | Carolinian | $21.0 | $20.4 | $0.5 | $0.9 | ($0.3) | n/a | ($0.3) | (0.4) | (0.3) |
| RT67 | Piedmont | $4.2 | $4.5 | ($0.3) | $0.2 | ($0.6) | n/a | ($0.6) | (4.9) | (2.2) |
| RT96 | Non NEC Special Trains | $1.3 | $1.8 | ($0.5) | $0.4 | ($0.9) | n/a | ($0.9) | (9.1) | (27.1) |
| | Total | $579.7 | $756.1 | ($176.4) | $48.8 | ($225.2) | n/a | ($225.2) | (12.3) | (5.2) |

| Long Distance Trains<br>Route Number | Train Name | Total Revenue | Total Costs excl. OPEB's, Capital Charge and Other Costs | Core Contribution / (Loss) excl. OPEB's | OPEB's and Other Costs | Contribution / (Loss) before Capital Charge | Capital Charge* | Fully Allocated Contribution / (Loss) | Fully Allocated Contribution / (Loss) per Pass Mile (cents) | Fully Allocated Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| RT16 | Silver Star | $32.7 | $78.3 | ($45.6) | $3.8 | ($49.3) | n/a | ($49.3) | (23.9) | (15.0) |
| RT18 | Cardinal | $7.0 | $22.0 | ($15.0) | $1.5 | ($16.5) | n/a | ($16.5) | (39.2) | (21.1) |
| RT19 | Silver Meteor | $37.6 | $76.6 | ($39.1) | $3.7 | ($42.8) | n/a | ($42.8) | (19.7) | (12.6) |
| RT25 | Empire Builder | $62.4 | $117.7 | ($55.3) | $5.6 | ($60.9) | n/a | ($60.9) | (15.8) | (9.4) |
| RT26 | Capitol Limited | $20.2 | $40.3 | ($20.1) | $2.2 | ($22.3) | n/a | ($22.3) | (20.6) | (13.9) |
| RT27 | California Zephyr | $48.3 | $99.7 | ($51.4) | $4.4 | ($55.8) | n/a | ($55.8) | (18.4) | (11.1) |
| RT28 | Southwest Chief | $44.8 | $101.8 | ($57.0) | $4.7 | ($61.7) | n/a | ($61.7) | (19.7) | (13.1) |
| RT30 | City of New Orleans | $18.3 | $39.4 | ($21.1) | $2.2 | ($23.3) | n/a | ($23.3) | (21.9) | (13.5) |
| RT32 | Texas Eagle | $24.4 | $51.0 | ($26.5) | $2.6 | ($29.1) | n/a | ($29.1) | (17.5) | (12.2) |
| RT33 | Sunset Limited | $11.1 | $48.5 | ($37.4) | $1.8 | ($39.2) | n/a | ($39.2) | (60.1) | (23.8) |
| RT34 | Coast Starlight | $41.2 | $88.3 | ($47.1) | $3.3 | ($50.4) | n/a | ($50.4) | (22.4) | (14.0) |
| RT45 | Lake Shore Limited | $29.3 | $63.6 | ($34.3) | $3.3 | ($37.6) | n/a | ($37.6) | (20.2) | (12.2) |
| RT48 | Palmetto | $16.2 | $30.0 | ($13.8) | $2.0 | ($15.8) | n/a | ($15.8) | (19.6) | (9.7) |
| RT52 | Crescent | $30.6 | $70.8 | ($40.2) | $3.5 | ($43.7) | n/a | ($43.7) | (26.5) | (14.8) |
| RT63 | Auto Train | $61.7 | $80.2 | ($18.5) | $2.8 | ($21.2) | n/a | ($21.2) | (10.1) | (6.6) |
| | Total | $485.8 | $1,008.2 | ($522.3) | $47.3 | ($569.6) | n/a | ($569.6) | (20.3) | (12.5) |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Total National Train System | $1,986.0 | $2,547.9 | ($562.0) | $171.8 | ($733.7) | n/a | ($733.7) | (11.6) | (5.9) |

* Under Development - will be included once it is completed.

**Reconciling Items between National Train System and Consolidated Statement of Operations**

| | Revenue | Expense | Net |
|---|---|---|---|
| Total National Train System | $1,986.0 | $2,719.7 | ($733.7) |
| Ancillary Customers | $330.2 | $280.1 | $50.1 |
| Freight and Other Customers | $168.2 | $128.8 | $39.4 |
| Depreciation, net | $0.0 | $593.1 | ($593.1) |
| Operating Results | $2,484.4 | $3,721.8 | ($1,237.4) |
| Interest Expense, net | $0.0 | $100.9 | ($100.9) |
| State Capital Payments | $29.0 | $0.0 | $29.0 |
| **Net Results** | $2,513.4 | $3,822.7 | ($1,309.3) |

Notes:

This report is being produced using the Amtrak Performance Tracking (SAM_APT) system, which drives costs to all customers, including freight and commuter railroads. This report reflects the information as it existed in SAP at the time it was produced. Future changes to SAP data may affect the placement of data within this report.

Amtrak does not report depreciation on a route level due to the distortion caused by the sale and leaseback transactions of the late 1990's and early 2000's. Allocating depreciation and interest would unfairly burden routes whose equipment was sold and then leased back. Those transactions caused the value of those assets to increase and therefore their depreciation to increase, which is unrelated to the actual capital cost of that equipment. A synthetic capital charge is under development and will be allocated to routes and included in this report when available.

APP - 5

## FY10

| | Ridership | | | | | Ticket Revenue | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | % change vs. | | | | | % change vs. | |
| ***NEC Spine*** | FY10 | FY09 | Budget | FY09 | Budget | FY10 | FY09 | Budget | FY09 | Budget |
| 1 - Acela | 3,218,718 | 3,019,627 | 3,052,167 | +6.6 | +5.5 | $440,119,294 | $409,251,483 | $418,947,478 | +7.5 | +5.1 |
| 5 - Northeast Regional | 7,148,998 | 6,920,610 | 6,846,260 | +3.3 | +4.4 | $458,105,798 | $431,430,679 | $437,298,854 | +6.2 | +4.8 |
| 99 - Special Trains | 7,493 | 5,790 | 7,900 | +29.4 | -5.2 | $908,307 | $1,000,499 | $1,072,000 | -9.2 | -15.3 |
| **Subtotal** | **10,375,209** | **9,946,027** | **9,906,327** | **+4.3** | **+4.7** | **$899,133,399** | **$841,682,662** | **$857,318,332** | **+6.8** | **+4.9** |
| ***State Supported and Other Short Distance Corridors*** | | | | | | | | | | |
| 3 - Ethan Allen | 48,031 | 46,748 | 46,724 | +2.7 | +2.8 | $2,398,998 | $2,347,362 | $2,338,494 | +2.2 | +2.6 |
| 4 - Vermonter | 86,245 | 74,016 | 75,243 | +16.5 | +14.6 | $4,778,747 | $4,011,930 | $4,153,043 | +19.1 | +15.1 |
| 7 - Albany-Niagara Falls-Toronto | 386,430 | 339,434 | 347,081 | +13.8 | +11.3 | $21,797,094 | $19,269,166 | $19,967,832 | +13.1 | +9.2 |
| 9 - Downeaster | 478,463 | 460,474 | 472,451 | +3.9 | +1.3 | $6,711,893 | $6,496,040 | $6,904,794 | +3.3 | -2.8 |
| 12 - New Haven-Springfield | 363,458 | 325,518 | 311,727 | +11.7 | +16.6 | $10,277,140 | $9,208,912 | $9,165,372 | +11.6 | +12.1 |
| 14 - Keystone | 1,296,838 | 1,215,785 | 1,222,962 | +6.7 | +6.0 | $27,731,221 | $25,105,076 | $25,857,891 | +10.5 | +7.2 |
| 15 - Empire (NYP-ALB) | 981,241 | 925,746 | 941,883 | +6.0 | +4.2 | $37,807,261 | $36,755,360 | $37,567,316 | +2.9 | +0.6 |
| 20 - Chicago-St. Louis (Lincoln Service) | 572,424 | 506,235 | 518,397 | +13.1 | +10.4 | $13,324,632 | $11,327,352 | $11,919,520 | +17.6 | +11.8 |
| 21 - Hiawatha | 783,060 | 738,231 | 751,075 | +6.1 | +4.3 | $14,092,803 | $13,300,511 | $13,807,603 | +6.0 | +2.1 |
| 22 - Wolverine | 479,782 | 444,127 | 444,793 | +8.0 | +7.9 | $16,909,193 | $15,041,919 | $15,246,605 | +12.4 | +10.9 |
| 23 - Chicago-Carbondale (Illini/Saluki) | 264,934 | 259,630 | 265,800 | +2.0 | -0.3 | $7,674,434 | $7,126,732 | $7,332,247 | +7.7 | +4.7 |
| 24 - Chicago-Quincy (IL Zephyr/Carl Sandburg) | 209,466 | 202,558 | 209,464 | +3.4 | +0.0 | $5,045,876 | $4,657,372 | $4,899,117 | +8.3 | +3.0 |
| 29 - Heartland Flyer | 81,749 | 73,564 | 77,220 | +11.1 | +5.9 | $1,806,780 | $1,592,435 | $1,718,567 | +13.5 | +5.1 |
| 35 - Pacific Surfliner | 2,613,604 | 2,592,996 | 2,637,088 | +0.8 | -0.9 | $49,523,433 | $46,551,006 | $49,971,142 | +6.4 | -0.9 |
| 36 - Cascades | 836,499 | 740,154 | 838,966 | +13.0 | -0.3 | $27,564,069 | $20,944,809 | $23,943,106 | +31.6 | +15.1 |
| 37 - Capitol Corridor | 1,580,619 | 1,599,625 | 1,602,205 | -1.2 | -1.3 | $22,872,085 | $22,160,890 | $24,083,516 | +3.2 | -5.0 |
| 39 - San Joaquin | 977,834 | 929,172 | 950,239 | +5.2 | +2.9 | $31,341,146 | $27,816,923 | $29,802,728 | +12.7 | +5.2 |
| 40 - Adirondack | 118,673 | 104,681 | 106,104 | +13.4 | +11.8 | $6,058,894 | $5,312,772 | $5,477,089 | +14.0 | +10.6 |
| 41 - Blue Water | 157,709 | 132,851 | 134,367 | +18.7 | +17.4 | $4,741,560 | $4,111,375 | $4,165,141 | +15.3 | +13.8 |
| 46 - Washington-Lynchburg | 126,072 | - | 48,182 | - | +161.7 | $7,570,943 | - | $3,036,175 | - | +149.4 |
| 47 - Washington-Newport News | 468,142 | 446,604 | 472,920 | +4.8 | -1.0 | $25,525,588 | $23,904,997 | $26,014,687 | +6.8 | -1.9 |
| 54 - Hoosier State | 33,600 | 31,384 | 34,413 | +7.1 | -2.4 | $796,094 | $677,755 | $742,045 | +17.5 | +7.3 |
| 56 - Kansas City-St. Louis (MO River Runner) | 172,554 | 150,870 | 153,283 | +14.4 | +12.6 | $4,073,303 | $3,274,897 | $3,447,536 | +24.4 | +18.2 |
| 57 - Pennsylvanian | 203,392 | 199,484 | 202,449 | +2.0 | +0.5 | $8,453,934 | $7,819,404 | $8,095,656 | +8.1 | +4.4 |
| 65 - Pere Marquette | 101,907 | 103,246 | 104,993 | -1.3 | -2.9 | $2,912,070 | $2,818,294 | $2,894,202 | +3.3 | +0.6 |
| 66 - Carolinian | 308,197 | 277,740 | 280,303 | +11.0 | +10.0 | $17,332,708 | $14,707,244 | $15,178,055 | +17.9 | +14.2 |
| 67 - Piedmont | 99,873 | 68,427 | 113,071 | +46.0 | -11.7 | $1,556,873 | $1,119,573 | $1,892,308 | +39.1 | -17.7 |
| 74-81 - Buses | - | - | - | - | - | $6,947,135 | $5,948,843 | $5,766,117 | +16.8 | +20.5 |
| 96 - Special Trains | 36,008 | 32,937 | 41,230 | +9.3 | -12.7 | $2,391,643 | $2,822,047 | $2,206,152 | -15.3 | +8.4 |
| **Subtotal** | **13,866,804** | **13,022,237** | **13,404,633** | **+6.5** | **+3.4** | **$390,017,549** | **$346,230,996** | **$367,594,060** | **+12.6** | **+6.1** |
| ***Long Distance*** | | | | | | | | | | |
| 16 - Silver Star | 393,586 | 371,235 | 362,156 | +6.0 | +8.7 | $29,805,402 | $27,034,942 | $27,103,266 | +10.2 | +10.0 |
| 18 - Cardinal | 107,053 | 108,614 | 108,372 | -1.4 | -1.2 | $6,375,560 | $6,364,295 | $6,512,600 | +0.2 | -2.1 |
| 19 - Silver Meteor | 352,286 | 330,734 | 323,441 | +6.5 | +8.9 | $35,271,821 | $32,640,978 | $33,312,724 | +8.1 | +5.9 |
| 25 - Empire Builder | 533,493 | 515,444 | 522,467 | +3.5 | +2.1 | $58,497,143 | $54,064,861 | $59,956,490 | +8.2 | -2.4 |
| 26 - Capitol Ltd. | 218,956 | 215,371 | 211,946 | +1.7 | +3.3 | $18,578,926 | $17,581,767 | $18,043,926 | +5.7 | +3.0 |
| 27 - California Zephyr | 377,876 | 345,558 | 354,413 | +9.4 | +6.6 | $43,754,763 | $38,679,674 | $40,930,723 | +13.1 | +6.9 |
| 28 - Southwest Chief | 342,403 | 318,025 | 317,042 | +7.7 | +8.0 | $41,604,705 | $38,033,503 | $39,737,942 | +9.4 | +4.7 |
| 30 - City of New Orleans | 229,270 | 196,659 | 194,384 | +16.6 | +17.9 | $17,248,582 | $14,976,461 | $15,083,315 | +15.2 | +14.4 |
| 32 - Texas Eagle | 287,164 | 260,467 | 256,603 | +10.2 | +11.9 | $22,728,016 | $19,721,777 | $20,336,044 | +15.2 | +11.8 |
| 33 - Sunset Ltd. | 91,684 | 78,775 | 78,054 | +16.4 | +17.5 | $9,962,415 | $8,272,084 | $8,517,522 | +20.4 | +17.0 |
| 34 - Coast Starlight | 444,205 | 432,565 | 429,455 | +2.7 | +3.4 | $37,404,114 | $32,637,793 | $33,544,620 | +14.6 | +11.5 |
| 45 - Lake Shore Ltd. | 364,460 | 334,456 | 351,115 | +9.0 | +3.8 | $27,529,698 | $23,978,505 | $25,994,764 | +14.8 | +5.9 |
| 48 - Palmetto | 189,468 | 171,316 | 167,606 | +10.6 | +13.0 | $15,365,992 | $12,479,621 | $12,681,727 | +23.1 | +21.2 |
| 52 - Crescent | 298,688 | 286,576 | 280,941 | +4.2 | +6.3 | $28,700,727 | $26,498,509 | $26,364,652 | +8.3 | +8.9 |
| 63 - Auto Train | 244,252 | 232,955 | 231,892 | +4.8 | +5.3 | $61,012,324 | $58,589,872 | $60,063,935 | +4.1 | +1.6 |
| **Subtotal** | **4,474,844** | **4,198,750** | **4,189,887** | **+6.6** | **+6.8** | **$453,840,185** | **$411,554,642** | **$428,184,250** | **+10.3** | **+6.0** |
| **Amtrak Total** | **28,716,857** | **27,167,014** | **27,500,847** | **+5.7** | **+4.4** | **$1,742,991,134** | **$1,599,468,300** | **$1,653,096,642** | **+9.0** | **+5.4** |

A - 3.5

## National Railroad Passenger Corporation (Amtrak)

### Financial Performance of Routes - Fully allocated overhead, excluding Depreciation and Interest (see notes below)

### September 2009 YTD - Final Audited

Route Performance Results Exclude Depreciation and Interest.

All numbers are in $ millions except Passenger Mile and Seat Mile Calculations.

| Northeast Corridor Trains<br>Route Number | Train Name | Total Revenue | Total Costs excl. OPEB's, Capital Charge and Other Costs | Core Contribution / (Loss) excl. OPEB's | OPEB's and Other Costs | Contribution / (Loss) before Capital Charge | Capital Charge* | Fully Allocated Contribution / (Loss) | Fully Allocated Contribution / (Loss) per Pass Mile (cents) | Fully Allocated Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| RT01 | Acela | $416.8 | $334.3 | $82.5 | $22.6 | $59.9 | n/a | $59.9 | 10.5 | 5.8 |
| RT05 | Northeast Regional | $443.4 | $451.1 | ($7.7) | $25.8 | ($33.5) | n/a | ($33.5) | (3.2) | (1.4) |
| RT99 | NEC Special Trains | $1.3 | $2.6 | ($1.2) | $0.3 | ($1.5) | n/a | ($1.5) | (67.2) | (25.2) |
| | Total | $861.6 | $788.0 | $73.6 | $48.7 | $24.8 | n/a | $24.8 | 1.5 | 0.7 |

| State Supported and Other Short Distance Corridor Trains<br>Route Number | Train Name | Total Revenue | Total Costs excl. OPEB's, Capital Charge and Other Costs | Core Contribution / (Loss) excl. OPEB's | OPEB's and Other Costs | Contribution / (Loss) before Capital Charge | Capital Charge* | Fully Allocated Contribution / (Loss) | Fully Allocated Contribution / (Loss) per Pass Mile (cents) | Fully Allocated Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| RT03 | Ethan Allen Express | $3.5 | $4.5 | ($1.0) | $0.2 | ($1.2) | n/a | ($1.2) | (13.6) | (5.2) |
| RT04 | Vermonter | $6.9 | $8.1 | ($1.2) | $0.3 | ($1.5) | n/a | ($1.5) | (7.0) | (3.0) |
| RT07 | Maple Leaf | $20.3 | $28.4 | ($8.1) | $1.0 | ($9.1) | n/a | ($9.1) | (9.0) | (4.2) |
| RT09 | The Downeaster | $10.6 | $11.8 | ($1.2) | $0.5 | ($1.7) | n/a | ($1.7) | (4.8) | (1.5) |
| RT12 | New Haven - Springfield | $9.5 | $21.6 | ($12.1) | $1.6 | ($13.7) | n/a | ($13.7) | (46.6) | (20.9) |
| RT14 | Keystone Service | $33.5 | $60.3 | ($26.9) | $3.0 | ($29.8) | n/a | ($29.8) | (27.8) | (10.0) |
| RT15 | Empire Service | $37.6 | $59.8 | ($22.3) | $2.1 | ($24.4) | n/a | ($24.4) | (21.3) | (6.7) |
| RT20 | Chicago-St.Louis | $21.4 | $37.0 | ($15.7) | $1.2 | ($16.9) | n/a | ($16.9) | (18.5) | (8.3) |
| RT21 | Hiawathas | $19.9 | $33.9 | ($14.0) | $1.3 | ($15.3) | n/a | ($15.3) | (25.9) | (10.0) |
| RT22 | Wolverines | $16.2 | $32.9 | ($16.7) | $1.3 | ($18.0) | n/a | ($18.0) | (19.1) | (10.0) |
| RT23 | Illini | $10.4 | $18.4 | ($7.9) | $0.7 | ($8.6) | n/a | ($8.6) | (17.5) | (8.4) |
| RT24 | Illinois Zephyr | $8.3 | $16.2 | ($7.9) | $0.6 | ($8.5) | n/a | ($8.5) | (24.7) | (9.9) |
| RT29 | Heartland Flyer | $4.7 | $6.5 | ($1.8) | $0.2 | ($2.0) | n/a | ($2.0) | (15.9) | (6.4) |
| RT35 | Pacific Surfliner | $76.2 | $104.0 | ($27.8) | $3.5 | ($31.3) | n/a | ($31.3) | (14.6) | (4.6) |
| RT36 | Cascades | $41.5 | $48.9 | ($7.4) | $1.5 | ($8.9) | n/a | ($8.9) | (7.8) | (4.0) |
| RT37 | Capitols | $47.0 | $71.9 | ($24.9) | $2.4 | ($27.3) | n/a | ($27.3) | (26.7) | (7.1) |
| RT39 | San Joaquins | $59.8 | $64.1 | ($4.3) | $1.8 | ($6.1) | n/a | ($6.1) | (4.6) | (1.6) |
| RT40 | Adirondack | $9.9 | $10.8 | ($1.0) | $0.3 | ($1.3) | n/a | ($1.3) | (4.2) | (2.7) |
| RT41 | Blue Water | $9.1 | $11.9 | ($2.9) | $0.5 | ($3.3) | n/a | ($3.3) | (12.2) | (6.1) |
| RT46 | Washington-Lynchburg | $0.0 | $0.0 | ($0.0) | $0.0 | ($0.0) | n/a | ($0.0) | — | — |
| RT47 | Washington-Newport News | $24.8 | $23.9 | $0.9 | $0.9 | $0.0 | n/a | $0.0 | 0.0 | 0.0 |
| RT54 | Hoosier State | $0.7 | $3.9 | ($3.2) | $0.2 | ($3.3) | n/a | ($3.3) | (68.6) | (31.4) |
| RT56 | Kansas City-St Louis | $11.5 | $11.7 | ($0.2) | $0.4 | ($0.6) | n/a | ($0.6) | (2.3) | (0.9) |
| RT57 | Pennsylvanian | $8.3 | $13.2 | ($4.9) | $0.5 | ($5.5) | n/a | ($5.5) | (11.6) | (8.5) |
| RT65 | Pere Marquette | $5.3 | $6.4 | ($1.1) | $0.3 | ($1.4) | n/a | ($1.4) | (8.6) | (4.9) |
| RT66 | Carolinian | $16.7 | $17.4 | ($0.7) | $0.6 | ($1.3) | n/a | ($1.3) | (1.6) | (1.1) |
| RT67 | Piedmont | $2.7 | $3.3 | ($0.6) | $0.1 | ($0.7) | n/a | ($0.7) | (8.8) | (3.5) |
| RT96 | Non NEC Special Trains | $2.5 | $3.5 | ($1.0) | $0.4 | ($1.4) | n/a | ($1.4) | (14.5) | (24.6) |
| | Total | $518.9 | $734.6 | ($215.7) | $27.3 | ($243.0) | n/a | ($243.0) | (14.5) | (5.9) |

| Long Distance Trains<br>Route Number | Train Name | Total Revenue | Total Costs excl. OPEB's, Capital Charge and Other Costs | Core Contribution / (Loss) excl. OPEB's | OPEB's and Other Costs | Contribution / (Loss) before Capital Charge | Capital Charge* | Fully Allocated Contribution / (Loss) | Fully Allocated Contribution / (Loss) per Pass Mile (cents) | Fully Allocated Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| RT16 | Silver Star | $29.9 | $72.7 | ($42.8) | $2.5 | ($45.4) | n/a | ($45.4) | (23.4) | (14.0) |
| RT18 | Cardinal | $7.0 | $21.5 | ($14.6) | $0.9 | ($15.4) | n/a | ($15.4) | (35.7) | (19.1) |
| RT19 | Silver Meteor | $34.8 | $73.0 | ($38.1) | $2.5 | ($40.6) | n/a | ($40.6) | (20.1) | (12.0) |
| RT25 | Empire Builder | $58.1 | $107.7 | ($49.6) | $3.5 | ($53.2) | n/a | ($53.2) | (14.1) | (8.5) |
| RT26 | Capitol Limited | $19.1 | $37.9 | ($18.8) | $1.3 | ($20.1) | n/a | ($20.1) | (18.8) | (12.1) |
| RT27 | California Zephyr | $43.1 | $95.9 | ($52.9) | $3.0 | ($55.9) | n/a | ($55.9) | (20.4) | (11.0) |
| RT28 | Southwest Chief | $41.2 | $93.3 | ($52.1) | $3.0 | ($55.1) | n/a | ($55.1) | (19.0) | (11.0) |
| RT30 | City of New Orleans | $15.9 | $34.8 | ($19.0) | $1.2 | ($20.2) | n/a | ($20.2) | (21.5) | (12.4) |
| RT32 | Texas Eagle | $21.4 | $46.8 | ($25.4) | $1.6 | ($27.0) | n/a | ($27.0) | (17.0) | (10.6) |
| RT33 | Sunset Limited | $9.5 | $45.2 | ($35.8) | $1.5 | ($37.3) | n/a | ($37.3) | (55.2) | (23.1) |
| RT34 | Coast Starlight | $36.9 | $77.4 | ($40.6) | $2.4 | ($42.9) | n/a | ($42.9) | (19.7) | (12.2) |
| RT45 | Lake Shore Limited | $25.5 | $56.3 | ($30.8) | $1.8 | ($32.6) | n/a | ($32.6) | (20.0) | (12.0) |
| RT48 | Palmetto | $13.2 | $25.9 | ($12.7) | $1.1 | ($13.8) | n/a | ($13.8) | (19.1) | (9.5) |
| RT52 | Crescent | $28.3 | $67.6 | ($39.3) | $2.4 | ($41.6) | n/a | ($41.6) | (28.8) | (14.5) |
| RT63 | Auto Train | $59.2 | $78.0 | ($18.8) | $3.2 | ($22.0) | n/a | ($22.0) | (11.0) | (6.9) |
| | Total | $443.0 | $934.2 | ($491.2) | $31.9 | ($523.1) | n/a | ($523.1) | (20.1) | (11.7) |
| | Total National Train System | $1,823.5 | $2,456.7 | ($633.3) | $107.9 | ($741.2) | n/a | ($741.2) | (12.6) | (6.1) |

**Reconciling Items between National Train System and Consolidated Statement of Operations**

| | Revenue | Expense | Net |
|---|---|---|---|
| Total National Train System | $1,823.5 | $2,564.6 | ($741.2) |
| Ancillary Customers | $326.8 | $286.9 | $39.9 |
| Freight and Other Customers | $175.4 | $93.1 | $82.2 |
| Depreciation, net | $0.0 | $562.6 | ($562.6) |
| Operating Results | $2,325.6 | $3,507.2 | ($1,181.6) |
| Interest Expense, net | $0.0 | $109.9 | ($109.9) |
| State Capital Payments | $27.2 | $0.0 | $27.2 |
| **Net Results** | $2,352.8 | $3,617.1 | ($1,264.4) |

Notes:

The route performance data contained in this report no longer follows the Strategic Reform Initiative (SRI) or Route Profitability System (RPS) format used in prior year's reports. Beginning in FY10 this report is produced using the Amtrak Performance Tracking (APT) system, which drives costs to all customers, including freight and commuter railroads.

As such, this report is not comparable to previously published data.

Amtrak does not report depreciation on a route level due to the distortion caused by the sale and leaseback transactions of the late 1990's and early 2000's. Allocating depreciation and interest would unfairly burden routes whose equipment was sold and then leased back. Those transactions caused the value of those assets to increase and therefore their depreciation to increase, which is unrelated to the actual capital cost of that equipment.

FY09 results in APT reflect unaudited results. Audit adjustments are currently reflected within Other Customers for the reconciliation to the audited income statement results.

# FY09

| | Ridership | | | | | Ticket Revenue | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | % change vs. | | | | | % change vs. | |
| ***NEC Spine*** | FY09 | FY08 | Budget | FY08 | Budget | FY09 | FY08 | Budget | FY08 | Budget |
| 1 - Acela | 3,019,627 | 3,398,759 | 3,525,789 | -11.2 | -14.4 | $409,251,483 | $467,782,706 | $503,164,404 | -12.5 | -16.7 |
| 5 - Northeast Regional | 6,920,610 | 7,469,426 | 7,670,569 | -7.6 | -9.8 | $431,430,679 | $481,606,621 | $506,917,742 | -10.4 | -14.9 |
| 99 - Special Trains | 5,790 | 9,667 | 12,500 | -40.1 | -53.7 | $1,000,499 | $1,249,590 | $1,565,000 | -19.9 | -36.1 |
| **Subtotal** | **9,946,027** | **10,897,852** | **11,208,858** | **-8.7** | **-11.3** | **$841,682,662** | **$950,638,920** | **$1,011,647,146** | **-11.5** | **-16.8** |
| ***State Supported and Other Short Distance Corridors*** | | | | | | | | | | |
| 3 - Ethan Allen | 46,748 | 46,881 | 47,609 | -0.3 | -1.8 | $2,347,362 | $2,407,851 | $2,556,365 | -2.5 | -8.2 |
| 4 - Vermonter | 74,016 | 72,655 | 74,027 | +1.9 | -0.0 | $4,011,930 | $3,942,778 | $4,108,676 | +1.8 | -2.4 |
| 7 - Albany-Niagara Falls-Toronto | 339,434 | 354,492 | 366,588 | -4.2 | -7.4 | $19,269,166 | $21,759,315 | $23,505,189 | -11.4 | -18.0 |
| 9 - Downeaster | 460,474 | 474,492 | 486,899 | -3.0 | -5.4 | $6,496,040 | $6,560,768 | $6,795,241 | -1.0 | -4.4 |
| 12 - New Haven-Springfield | 325,518 | 349,928 | 366,479 | -7.0 | -11.2 | $9,208,912 | $10,063,889 | $10,872,484 | -8.5 | -15.3 |
| 14 - Keystone | 1,215,785 | 1,183,821 | 1,231,687 | +2.7 | -1.3 | $25,105,076 | $24,747,102 | $26,843,091 | +1.4 | -6.5 |
| 15 - Empire (NYP-ALB) | 925,746 | 994,293 | 1,037,048 | -6.9 | -10.7 | $36,755,360 | $41,114,816 | $44,954,007 | -10.6 | -18.2 |
| 20 - Chicago-St. Louis (Lincoln Service) | 506,235 | 476,427 | 517,054 | +6.3 | -2.1 | $11,327,352 | $11,288,034 | $11,886,294 | +0.3 | -4.7 |
| 21 - Hiawatha | 738,231 | 749,659 | 775,029 | -1.5 | -4.7 | $13,300,511 | $13,138,765 | $13,652,670 | +1.2 | -2.6 |
| 22 - Wolverine | 444,127 | 472,393 | 502,292 | -6.0 | -11.6 | $15,041,919 | $16,243,510 | $17,343,657 | -7.4 | -13.3 |
| 23 - Chicago-Carbondale (Illini/Saluki) | 259,630 | 271,082 | 290,804 | -4.2 | -10.7 | $7,126,732 | $7,732,413 | $8,093,765 | -7.8 | -11.9 |
| 24 - Chicago-Quincy (IL Zephyr/Carl Sandburg) | 202,568 | 202,814 | 216,209 | -0.1 | -6.3 | $4,657,372 | $4,979,726 | $5,245,832 | -6.5 | -11.2 |
| 29 - Heartland Flyer | 73,564 | 80,892 | 84,034 | -9.1 | -12.5 | $1,592,435 | $1,682,088 | $1,716,565 | -5.3 | -7.2 |
| 35 - Pacific Surfliner | 2,592,996 | 2,898,859 | 3,094,911 | -10.6 | -16.2 | $46,551,006 | $51,010,624 | $55,698,863 | -8.7 | -16.4 |
| 36 - Cascades | 740,154 | 760,323 | 809,500 | -2.7 | -8.6 | $20,944,809 | $20,999,003 | $22,959,905 | -0.3 | -8.8 |
| 37 - Capitol Corridor | 1,599,625 | 1,693,580 | 1,765,792 | -5.5 | -9.4 | $22,160,890 | $22,306,774 | $24,301,031 | -0.7 | -8.8 |
| 39 - San Joaquin | 929,172 | 949,611 | 1,024,511 | -2.2 | -9.3 | $27,816,923 | $29,847,468 | $31,498,701 | -6.8 | -11.7 |
| 40 - Adirondack | 104,681 | 112,047 | 116,109 | -6.6 | -9.8 | $5,312,772 | $5,581,639 | $6,008,724 | -4.8 | -11.6 |
| 41 - Blue Water | 132,851 | 136,538 | 143,480 | -2.7 | -7.4 | $4,111,375 | $4,158,742 | $4,359,725 | -1.1 | -5.7 |
| 47 - Washington-Newport News | 446,604 | 459,236 | 480,990 | -2.8 | -7.1 | $23,904,997 | $26,276,227 | $28,276,582 | -9.0 | -15.5 |
| 54 - Hoosier State | 31,384 | 31,774 | 33,489 | -1.2 | -6.3 | $677,755 | $681,685 | $712,035 | -0.6 | -4.8 |
| 56 - Kansas City-St. Louis (MO River Runner) | 150,870 | 151,690 | 156,911 | -0.5 | -3.8 | $3,274,897 | $3,311,182 | $3,458,193 | -1.1 | -5.3 |
| 57 - Pennsylvanian | 199,484 | 200,999 | 208,099 | -0.8 | -4.1 | $7,819,404 | $7,914,009 | $8,385,623 | -1.2 | -6.8 |
| 65 - Pere Marquette | 103,246 | 111,716 | 118,628 | -7.6 | -13.0 | $2,818,294 | $2,975,391 | $3,150,759 | -5.3 | -10.6 |
| 66 - Carolinian | 277,740 | 295,427 | 315,361 | -6.0 | -11.9 | $14,707,244 | $16,026,148 | $18,151,702 | -8.2 | -19.0 |
| 67 - Piedmont | 68,427 | 65,941 | 68,351 | +3.8 | +0.1 | $1,119,573 | $1,079,184 | $1,128,622 | +3.7 | -0.8 |
| 74-81 - Buses | - | - | - | - | - | $5,948,843 | $5,796,194 | $6,064,565 | +2.6 | -1.9 |
| 96 - Special Trains | 32,937 | 50,626 | 53,400 | -34.9 | -38.3 | $2,822,047 | $5,201,520 | $5,285,000 | -45.7 | -46.6 |
| **Subtotal** | **13,022,237** | **13,648,196** | **14,385,291** | **-4.6** | **-9.5** | **$346,230,996** | **$368,826,847** | **$397,013,853** | **-6.1** | **-12.8** |
| ***Long Distance*** | | | | | | | | | | |
| 15 - Silver Star | 371,235 | 367,139 | 371,770 | +1.1 | -0.1 | $27,034,942 | $27,699,306 | $28,875,866 | -2.4 | -6.4 |
| 18 - Cardinal | 108,614 | 109,195 | 112,551 | -0.5 | -3.5 | $6,364,295 | $6,490,845 | $6,736,158 | -1.9 | -5.5 |
| 19 - Silver Meteor | 330,734 | 319,773 | 326,428 | +3.4 | +1.3 | $32,640,878 | $30,568,604 | $31,539,056 | +6.8 | +3.5 |
| 25 - Empire Builder | 515,444 | 554,266 | 572,577 | -7.0 | -10.0 | $54,064,861 | $59,461,168 | $62,457,654 | -9.1 | -13.4 |
| 26 - Capitol Ltd. | 215,371 | 216,350 | 220,941 | -0.5 | -2.5 | $17,581,767 | $17,431,949 | $18,071,480 | +0.9 | -2.7 |
| 27 - California Zephyr | 345,558 | 352,563 | 376,096 | -2.0 | -8.1 | $38,679,674 | $39,001,032 | $42,115,966 | -0.8 | -8.2 |
| 28 - Southwest Chief | 318,025 | 331,143 | 341,028 | -4.0 | -6.7 | $38,033,503 | $41,079,865 | $42,828,980 | -7.4 | -11.2 |
| 30 - City of New Orleans | 196,659 | 197,394 | 210,361 | -0.4 | -6.5 | $14,976,461 | $14,875,928 | $16,037,054 | +0.7 | -6.6 |
| 32 - Texas Eagle | 260,467 | 251,518 | 250,012 | +3.6 | +4.2 | $19,721,777 | $19,514,531 | $19,761,610 | +1.1 | -0.2 |
| 33 - Sunset Ltd. | 78,775 | 71,719 | 72,749 | +9.8 | +8.3 | $8,272,084 | $8,052,515 | $8,342,709 | +2.7 | -0.8 |
| 34 - Coast Starlight | 432,565 | 353,657 | 406,398 | +22.3 | +6.4 | $32,637,793 | $28,117,404 | $35,381,968 | +16.1 | -7.8 |
| 45 - Lake Shore Ltd. | 334,456 | 345,632 | 356,823 | -3.2 | -6.3 | $23,978,505 | $24,238,394 | $25,094,946 | -1.1 | -4.4 |
| 48 - Palmetto | 171,316 | 173,949 | 182,149 | -1.5 | -5.9 | $12,479,621 | $12,901,668 | $13,577,890 | -3.3 | -8.1 |
| 52 - Crescent | 286,676 | 291,222 | 300,215 | -1.6 | -4.5 | $26,498,509 | $27,095,838 | $28,386,245 | -2.2 | -6.7 |
| 63 - Auto Train | 232,955 | 234,839 | 242,620 | -0.8 | -4.0 | $58,589,872 | $58,154,402 | $60,739,925 | +0.7 | -3.5 |
| **Subtotal** | **4,198,750** | **4,170,359** | **4,342,720** | **+0.7** | **-3.3** | **$411,554,642** | **$414,683,450** | **$439,947,508** | **-0.8** | **-6.5** |
| **Amtrak Total** | **27,167,014** | **28,716,407** | **29,936,869** | **-5.4** | **-9.3** | **$1,599,468,300** | **$1,734,149,216** | **$1,848,608,508** | **-7.8** | **-13.5** |

## National Railroad Passenger Corporation (Amtrak)

### Financial Performance of Routes - Fully allocated overhead, excluding Depreciation and Interest (see notes below)

### September 2009 YTD

**Route Performance Results Exclude Federal Support for Operations, Depreciation, Interest and Capital Charges**

All numbers are in $ millions except Passenger Mile and Seat Mile Calculations

| Northeast Corridor Trains<br>Route Number | Train Name | Total Revenue | FRA Defined Costs | Total Remaining Direct Costs | Total Direct Costs | Contribution / (Loss) after Direct Costs | Total Non-Direct Costs | Total Costs (Excl. Dep & Int.) | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RT01 | Acela | $414.5 | $135.9 | $116.3 | $252.2 | $162.3 | $94.9 | $347.1 | $67.4 | 11.8 | 6.6 |
| RT05 | Northeast Regional | $440.1 | $186.5 | $163.0 | $349.5 | $90.6 | $157.2 | $506.7 | ($66.6) | (6.3) | (2.8) |
| RT91 | NEC Unknown (Crew Labor) | $0.0 | $0.1 | ($0.0) | $0.1 | ($0.1) | $0.0 | $0.1 | ($0.1) | — | — |
| RT06/98/99 | NEC Special Trains | $1.3 | $0.9 | $0.2 | $1.1 | $0.1 | $1.0 | $2.1 | ($0.8) | (37.5) | (26.4) |
| RT70 | NEC Bus Route | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | — | — |
| | Total | $655.9 | $323.5 | $279.6 | $603.0 | $252.9 | $253.1 | $656.1 | ($0.2) | (0.0) | (0.0) |

| State Supported and Other Short Distance Corridor Trains<br>Route Number | Train Name | Total Revenue | FRA Defined Costs | Total Remaining Direct Costs | Total Direct Costs | Contribution / (Loss) after Direct Costs | Total Non-Direct Costs | Total Costs (Excl. Dep & Int.) | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RT03 | Ethan Allen Express | $3.5 | $2.4 | $1.3 | $3.7 | ($0.3) | $0.8 | $4.6 | ($1.1) | (12.5) | (4.9) |
| RT04 | Vermonter | $6.8 | $6.2 | $1.6 | $7.8 | ($1.0) | $1.3 | $9.1 | ($2.2) | (10.5) | (4.6) |
| RT07 | Maple Leaf | $20.1 | $16.8 | $9.5 | $26.2 | ($6.1) | $4.7 | $30.9 | ($10.7) | (10.6) | (5.4) |
| RT09 | The Downeaster | $10.6 | $7.8 | $3.3 | $10.7 | ($0.1) | $2.2 | $12.9 | ($2.2) | (6.2) | (2.0) |
| RT12 | New Haven - Springfield | $9.4 | $9.2 | $9.0 | $18.1 | ($8.7) | $7.0 | $25.1 | ($15.7) | (53.2) | (24.4) |
| RT14 | Keystone Service | $33.2 | $20.9 | $17.9 | $38.8 | ($5.6) | $15.5 | $54.3 | ($21.1) | (19.7) | (7.1) |
| RT15 | Empire Service | $37.2 | $28.7 | $26.5 | $55.3 | ($18.0) | $13.0 | $68.3 | ($31.1) | (27.3) | (8.9) |
| RT20 | Chicago-St.Louis | $21.4 | $15.4 | $10.2 | $25.5 | ($4.2) | $5.8 | $31.3 | ($9.9) | (10.9) | (4.9) |
| RT21 | Hiawathas | $19.6 | $9.7 | $9.7 | $19.5 | $0.1 | $5.7 | $25.1 | ($5.6) | (9.5) | (3.7) |
| RT22 | Wolverines | $16.3 | $17.5 | $8.6 | $26.0 | ($9.7) | $8.7 | $34.7 | ($18.5) | (19.6) | (10.3) |
| RT23 | Illini | $10.5 | $7.5 | $4.5 | $12.1 | ($1.6) | $2.8 | $14.8 | ($4.3) | (8.8) | (4.4) |
| RT24 | Illinois Zephyr | $8.3 | $8.4 | $4.1 | $12.5 | ($4.2) | $2.7 | $15.2 | ($6.9) | (20.1) | (8.8) |
| RT29 | Heartland Flyer | $4.7 | $4.1 | $1.2 | $5.3 | ($0.6) | $0.8 | $6.1 | ($1.4) | (11.1) | (5.0) |
| RT35 | Pacific Surfliner | $76.5 | $55.0 | $30.1 | $85.1 | ($8.6) | $14.3 | $99.5 | ($22.9) | (10.7) | (3.4) |
| RT36 | Cascades | $39.7 | $29.2 | $12.8 | $41.9 | ($2.2) | $8.0 | $49.9 | ($10.2) | (9.0) | (5.0) |
| RT37 | Capitols | $46.8 | $37.4 | $16.0 | $53.4 | ($6.6) | $8.4 | $61.8 | ($15.0) | (14.7) | (4.0) |
| RT39 | San Joaquins | $59.7 | $51.9 | $10.8 | $62.7 | ($3.0) | $11.0 | $73.7 | ($14.0) | (10.4) | (3.9) |
| RT40 | Adirondack | $9.8 | $7.1 | $3.2 | $10.4 | ($0.5) | $2.8 | $13.1 | ($3.3) | (10.3) | (7.0) |
| RT41 | Blue Water | $9.0 | $6.2 | $3.0 | $9.2 | ($0.2) | $2.6 | $11.8 | ($2.8) | (10.4) | (7.1) |
| RT47 | Washington-Newport News | $24.7 | $13.1 | $8.3 | $21.5 | $3.2 | $3.7 | $25.1 | ($0.5) | (0.5) | (0.3) |
| RT54 | Hoosier State | $0.7 | $2.2 | $1.1 | $3.3 | ($2.6) | $0.6 | $3.9 | ($3.2) | (66.1) | (23.4) |
| RT56 | Kansas City-St Louis | $11.5 | $6.5 | $3.8 | $10.3 | $1.2 | $1.9 | $12.2 | ($0.7) | (2.7) | (1.0) |
| RT57 | Pennsylvanian | $8.2 | $6.9 | $5.4 | $12.3 | ($4.0) | $2.9 | $15.2 | ($6.9) | (14.6) | (10.6) |
| RT65 | Pere Marquette | $5.3 | $3.5 | $1.7 | $5.3 | $0.0 | $1.1 | $6.4 | ($1.1) | (7.1) | (5.0) |
| RT66 | Carolinian | $17.2 | $10.0 | $7.2 | $17.2 | $0.0 | $3.7 | $20.8 | ($3.6) | (4.3) | (2.2) |
| RT67 | Piedmont | $2.7 | $1.8 | $1.7 | $3.5 | ($0.7) | $0.6 | $4.1 | ($1.4) | (17.2) | (6.9) |
| RT92 | Central Unknown (Crew Labor) | $0.0 | $0.2 | $0.0 | $0.2 | ($0.2) | $0.0 | $0.2 | ($0.2) | — | — |
| RT93 | Crew Labor | $0.0 | $0.2 | $0.0 | $0.3 | ($0.3) | $0.0 | $0.3 | ($0.3) | --- | --- |
| RT96 | Non NEC Special Trains | $2.6 | $0.7 | $0.3 | $1.0 | $1.6 | $2.0 | $3.0 | ($0.4) | (4.2) | (4.0) |
| | State Supported Rt Buses | $0.0 | $0.0 | $0.0 | $0.0 | ($0.0) | ($0.0) | $0.0 | ($0.0) | (69.8) | (102.6) |
| | Total | $516.2 | $386.1 | $212.8 | $598.9 | ($82.7) | $134.6 | $733.4 | ($217.3) | (13.0) | (5.4) |

| Long Distance Trains<br>Route Number | Train Name | Total Revenue | FRA Defined Costs | Total Remaining Direct Costs | Total Direct Costs | Contribution / (Loss) after Direct Costs | Total Non-Direct Costs | Total Costs (Excl. Dep & Int.) | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RT16 | Silver Star | $29.3 | $42.1 | $24.4 | $66.6 | ($37.3) | $16.2 | $82.8 | ($53.4) | (27.6) | (16.5) |
| RT18 | Cardinal | $6.9 | $13.2 | $6.7 | $20.0 | ($13.0) | $4.9 | $24.9 | ($18.0) | (41.5) | (23.2) |
| RT19 | Silver Meteor | $34.8 | $41.7 | $24.2 | $66.0 | ($31.2) | $16.5 | $82.5 | ($47.7) | (23.6) | (14.4) |
| RT25 | Empire Builder | $59.7 | $68.8 | $22.6 | $91.4 | ($31.7) | $17.5 | $108.9 | ($49.1) | (13.1) | (7.7) |
| RT26 | Capitol Limited | $19.1 | $24.3 | $12.5 | $36.8 | ($17.7) | $7.2 | $44.0 | ($24.9) | (23.3) | (16.1) |
| RT27 | California Zephyr | $43.1 | $65.6 | $20.1 | $85.7 | ($42.6) | $16.2 | $101.9 | ($58.9) | (21.5) | (11.3) |
| RT28 | Southwest Chief | $41.8 | $59.4 | $21.1 | $80.4 | ($38.6) | $15.5 | $96.0 | ($54.1) | (18.7) | (11.2) |
| RT30 | City of New Orleans | $15.9 | $21.0 | $6.2 | $27.2 | ($11.3) | $5.6 | $32.8 | ($16.9) | (16.0) | (11.1) |
| RT32 | Texas Eagle | $21.3 | $32.1 | $10.7 | $42.8 | ($21.5) | $8.3 | $51.1 | ($29.7) | (19.5) | (10.4) |
| RT33 | Sunset Limited | $9.8 | $26.2 | $10.6 | $36.8 | ($27.0) | $6.9 | $43.7 | ($33.9) | (50.3) | (26.6) |
| RT34 | Coast Starlight | $38.0 | $54.4 | $19.6 | $74.0 | ($36.1) | $12.2 | $86.3 | ($48.3) | (22.2) | (13.4) |
| RT45 | Lake Shore Limited | $25.4 | $33.8 | $23.2 | $57.0 | ($31.7) | $11.9 | $68.9 | ($43.6) | (26.7) | (16.1) |
| RT48 | Palmetto | $13.2 | $13.3 | $9.0 | $22.3 | ($9.1) | $6.6 | $28.9 | ($15.7) | (21.6) | (10.5) |
| RT52 | Crescent | $28.1 | $40.0 | $18.9 | $58.9 | ($30.8) | $15.3 | $74.2 | ($46.1) | (31.9) | (16.1) |
| RT63 | Auto Train | $58.9 | $48.6 | $16.8 | $65.5 | ($6.6) | $11.7 | $77.2 | ($18.3) | (9.1) | (5.9) |
| | Total | $445.3 | $584.6 | $246.8 | $831.4 | ($386.1) | $172.6 | $1,004.0 | ($558.8) | (21.5) | (13.5) |

| | | Total Revenue | FRA Defined Costs | Total Remaining Direct Costs | Total Direct Costs | Contribution / (Loss) after Direct Costs | Total Non-Direct Costs | Total Costs (Excl. Dep & Int.) | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total All Trains | $1,617.3 | $1,294.1 | $739.2 | $2,033.3 | ($215.9) | $560.3 | $2,593.6 | ($776.3) | (13.2) | (6.5) |

**Reconciling Items between RPS and Consolidated Statement of Operations**

| | Revenue | Expense | Net |
|---|---|---|---|
| Total National Train System | $1,617.3 | $2,593.6 | ($776.3) |
| Ancillary Businesses | $320.3 | $215.2 | $105.1 |
| Freight Access Fees and Other | $183.8 | $33.4 | $150.4 |
| Operating Results | $2,321.4 | $2,842.2 | ($520.8) |
| Interest Expense, net | $0.0 | $108.8 | ($108.8) |
| Depreciation, net | $0.0 | $562.3 | ($562.3) |
| Project Costs covered by Capital Funds | $0.0 | $92.7 | ($92.7) |
| State Capital Payments | $27.2 | $0.0 | $27.2 |
| **Net Results** | $2,348.6 | $3,596.0 | ($1,247.4) |

Notes:

- The route performance data contained in section C no longer follows the Strategic Reform Initiative (SRI) format used in prior year's reports. Under the SRI format, Infrastructure and Unallocated System costs were not allocated to Amtrak routes. The report in section C, utilizing the Route Profitability System (RPS), now reports Route results after Infrastructure and System costs have been fully allocated to Amtrak routes.
- Prior year data may not match previously published reports at the individual route level.
- Total FRA Defined Costs represents Host Railroad MofW and Performance incentives, Fuel and Power, T&E Crew, OBS and Commissary costs, Car and Locomotive maint. and Turnaround Costs, Commissions, Reservations, Call Centers, Psgr Inconvenience, and Route Stations.
- Total Remaining Direct Costs include Shared Stations, MoE Supervision and Training, Maintenance of Way, Yard Ops, Marketing and Distribution, Insurance, Terminal Payments, Procurement/Purchasing, Police/Environmental and Safety, and T&E Overhead.
- Total Non-Direct Costs includes Amtrak Infrastructure Maintenance and System costs.

C - 1

## National Railroad Passenger Corporation (Amtrak)

### Financial Perfomance of Routes - Fully allocated overhead, excluding Depreciation and Interest (see notes below)

### September 2008 YTD

Route Performance Results Exclude Federal Support for Operations, Depreciation, Interest and Capital Charges

All numbers are in $ millions except Passenger Mile and Seat Mile Calculations

| Northeast Corridor Trains<br>Route Number | Train Name | Total Revenue | FRA Defined Costs | Total Remaining Direct Costs | Total Direct Costs | Contribution / (Loss) after Direct Costs | Total Non-Direct Costs | Total Costs (Excl. Dep & Int.) | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RT01 | Acela | $474.1 | $145.1 | $113.4 | $258.5 | $215.6 | $86.8 | $345.3 | $128.8 | 20.4 | 12.8 |
| RT05 | Northeast Regional | $400.5 | $185.4 | $165.4 | $350.8 | $139.7 | $137.5 | $488.3 | $2.2 | 0.2 | 0.1 |
| RT91 | NEC Unknown (Crew Labor) | $0.0 | $1.3 | $0.0 | $1.3 | ($1.3) | $0.0 | $1.3 | ($1.3) | — | — |
| RT06/98/99 | NEC Special Trains | $1.6 | $1.1 | $0.3 | $1.3 | $0.3 | $0.1 | $1.4 | $0.2 | — | — |
| RT70 | NEC Bus Route | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | — | — |
| | Total | $966.2 | $332.9 | $279.0 | $611.9 | $354.3 | $224.3 | $835.2 | $129.9 | 7.3 | 3.8 |

| State Supported and Other Short Distance Corridor Trains<br>Route Number | Train Name | Total Revenue | FRA Defined Costs | Total Remaining Direct Costs | Total Direct Costs | Contribution / (Loss) after Direct Costs | Total Non-Direct Costs | Total Costs (Excl. Dep & Int.) | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RT03 | Ethan Allen Express | $3.7 | $2.6 | $1.2 | $3.8 | ($0.1) | $0.7 | $4.4 | ($0.8) | (8.5) | (3.5) |
| RT04 | Vermonter | $6.9 | $6.5 | $1.6 | $8.0 | ($1.2) | $1.2 | $9.2 | ($2.3) | (10.8) | (4.9) |
| RT07 | Maple Leaf | $22.7 | $18.8 | $9.4 | $27.9 | ($5.2) | $4.2 | $32.1 | ($9.4) | (8.7) | (4.7) |
| RT09 | The Downeaster | $11.5 | $8.7 | $3.1 | $11.8 | ($0.3) | $2.3 | $14.0 | ($2.6) | (6.8) | (2.2) |
| RT12 | New Haven - Springfield | $10.3 | $9.9 | $8.5 | $18.4 | ($8.1) | $7.2 | $25.6 | ($15.3) | (49.0) | (23.1) |
| RT14 | Keystone Service | $32.0 | $21.3 | $18.0 | $39.3 | ($7.3) | $15.2 | $54.5 | ($22.5) | (21.3) | (7.6) |
| RT15 | Empire Service | $41.6 | $32.2 | $25.6 | $57.8 | ($16.3) | $13.1 | $70.9 | ($29.4) | (23.8) | (8.3) |
| RT20 | Chicago-St Louis | $31.8 | $17.1 | $8.5 | $25.6 | $6.2 | $5.1 | $30.6 | $1.1 | 1.8 | 0.6 |
| RT21 | Hiawathas | $22.0 | $10.5 | $8.7 | $19.2 | $2.8 | $6.0 | $25.2 | ($3.2) | (5.3) | (2.2) |
| RT22 | Wolverines | $17.7 | $20.2 | $8.3 | $28.5 | ($10.8) | $8.2 | $36.7 | ($19.0) | (18.8) | (10.4) |
| RT23 | Illini | $13.1 | $7.5 | $4.3 | $11.9 | $1.2 | $2.5 | $14.4 | ($1.3) | (2.5) | (1.2) |
| RT24 | Illinois Zephyr | $10.7 | $8.7 | $3.9 | $12.6 | ($1.9) | $2.6 | $15.2 | ($4.5) | (13.0) | (5.6) |
| RT29 | Heartland Flyer | $5.7 | $4.3 | $1.2 | $5.6 | $0.1 | $0.8 | $6.4 | ($0.7) | (4.7) | (2.0) |
| RT35 | Pacific Surfliner | $78.6 | $59.2 | $28.6 | $87.8 | ($9.2) | $13.8 | $101.6 | ($23.0) | (9.5) | (3.5) |
| RT36 | Cascades | $38.5 | $31.1 | $13.2 | $44.3 | ($5.8) | $7.3 | $51.6 | ($13.1) | (11.2) | (6.3) |
| RT37 | Capitols | $43.5 | $39.5 | $15.8 | $55.3 | ($11.8) | $8.7 | $63.9 | ($20.5) | (19.8) | (5.4) |
| RT39 | San Joaquins | $61.9 | $56.4 | $11.1 | $67.5 | ($5.6) | $10.0 | $77.5 | ($15.6) | (11.2) | (4.4) |
| RT40 | Adirondack | $10.9 | $7.6 | $3.1 | $10.7 | $0.2 | $1.7 | $12.4 | ($1.5) | (4.5) | (3.1) |
| RT41 | Blue Water | $8.7 | $7.1 | $2.9 | $10.0 | ($1.2) | $2.2 | $12.2 | ($3.4) | (12.6) | (10.0) |
| RT47 | Washington-Newport News | $27.0 | $15.8 | $8.1 | $23.9 | $3.1 | $3.5 | $27.3 | ($0.3) | (0.3) | (0.2) |
| RT54 | Hoosier State | $0.7 | $2.3 | $1.0 | $3.3 | ($2.6) | $0.6 | $3.8 | ($3.1) | (63.2) | (22.4) |
| RT56 | Kansas City-St Louis | $7.1 | $7.0 | $3.2 | $10.2 | ($3.1) | $1.8 | $12.0 | ($4.9) | (17.2) | (6.4) |
| RT57 | Pennsylvanian | $8.4 | $7.1 | $5.4 | $12.5 | ($4.1) | $2.7 | $15.2 | ($6.9) | (14.1) | (10.5) |
| RT65 | Pere Marquette | $5.2 | $3.8 | $1.7 | $5.4 | ($0.2) | $1.1 | $6.5 | ($1.3) | (7.4) | (5.0) |
| RT66 | Carolinian | $20.1 | $11.2 | $7.0 | $18.2 | $1.9 | $3.2 | $21.4 | ($1.3) | (1.4) | (1.1) |
| RT67 | Piedmont | $2.6 | $1.7 | $1.6 | $3.2 | ($0.6) | $0.6 | $3.8 | ($1.2) | (14.9) | (6.7) |
| RT92 | Central Unknown (Crew Labor) | $0.0 | $0.9 | $0.0 | $0.9 | ($0.9) | $0.0 | $0.9 | ($0.9) | — | — |
| RT93 | Crew Labor | $0.0 | $0.8 | $0.0 | $0.8 | ($0.8) | $0.0 | $0.8 | ($0.8) | — | — |
| RT96 | Non NEC Special Trains | $5.3 | $2.9 | $0.5 | $3.4 | $1.9 | $0.1 | $3.5 | $1.8 | 10.7 | 7.0 |
| | State Supported Rt Buses | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | — | — |
| | Total | $547.9 | $422.2 | $205.3 | $627.6 | ($79.7) | $126.0 | $753.6 | ($205.7) | (11.8) | (5.1) |

| Long Distance Trains<br>Route Number | Train Name | Total Revenue | FRA Defined Costs | Total Remaining Direct Costs | Total Direct Costs | Contribution / (Loss) after Direct Costs | Total Non-Direct Costs | Total Costs (Excl. Dep & Int.) | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RT16 | Silver Star | $29.9 | $45.6 | $24.6 | $70.2 | ($40.2) | $14.6 | $84.7 | ($54.8) | (27.8) | (16.4) |
| RT18 | Cardinal | $7.2 | $14.1 | $6.4 | $20.6 | ($13.4) | $4.3 | $24.8 | ($17.7) | (40.0) | (22.2) |
| RT19 | Silver Meteor | $32.6 | $43.4 | $22.9 | $66.2 | ($33.6) | $14.1 | $80.3 | ($47.7) | (24.5) | (15.3) |
| RT25 | Empire Builder | $65.0 | $76.0 | $22.7 | $98.6 | ($33.6) | $15.1 | $113.8 | ($48.7) | (14.9) | (7.5) |
| RT26 | Capitol Limited | $19.0 | $27.0 | $12.6 | $39.6 | ($20.6) | $6.6 | $46.2 | ($27.2) | (25.6) | (17.1) |
| RT27 | California Zephyr | $43.3 | $76.9 | $19.6 | $96.6 | ($53.4) | $14.8 | $111.6 | ($66.3) | (24.9) | (13.0) |
| RT28 | Southwest Chief | $44.7 | $63.0 | $21.4 | $84.4 | ($39.8) | $13.6 | $98.1 | ($53.4) | (17.4) | (11.1) |
| RT30 | City of New Orleans | $16.0 | $24.0 | $6.1 | $30.1 | ($14.1) | $5.2 | $35.3 | ($19.3) | (20.6) | (13.2) |
| RT32 | Texas Eagle | $21.3 | $36.2 | $10.5 | $46.7 | ($25.3) | $7.5 | $54.1 | ($32.8) | (21.4) | (11.4) |
| RT33 | Sunset Limited | $9.4 | $29.1 | $9.5 | $38.6 | ($29.2) | $6.0 | $44.6 | ($35.2) | (53.2) | (30.2) |
| RT34 | Coast Starlight | $33.0 | $50.9 | $16.5 | $67.4 | ($34.4) | $9.2 | $76.6 | ($43.6) | (23.6) | (14.7) |
| RT45 | Lake Shore Limited | $25.7 | $36.9 | $21.6 | $58.5 | ($32.8) | $10.5 | $69.0 | ($43.3) | (28.4) | (18.2) |
| RT48 | Palmetto | $13.7 | $13.6 | $8.6 | $22.3 | ($8.7) | $5.9 | $28.2 | ($14.5) | (18.9) | (9.7) |
| RT52 | Crescent | $28.8 | $43.1 | $19.3 | $62.4 | ($33.6) | $13.9 | $76.3 | ($47.5) | (32.8) | (16.7) |
| RT63 | Auto Train | $58.4 | $50.4 | $16.2 | $66.7 | ($8.3) | $10.6 | $77.2 | ($18.8) | (9.3) | (5.9) |
| | Total | $448.0 | $630.2 | $238.9 | $869.1 | ($421.0) | $151.8 | $1,020.8 | ($572.8) | (22.0) | (13.1) |
| | Total All Trains | $1,962.1 | $1,385.3 | $723.3 | $2,108.6 | ($146.4) | $502.1 | $2,610.7 | ($648.6) | (10.5) | (5.5) |

**Reconciling Items between RPS and Consolidated Statement of Operations**

| | Revenue | Expense | Net |
|---|---|---|---|
| Total National Train System | $1,962.1 | $2,610.7 | ($648.6) |
| Ancillary Businesses | $298.2 | $205.5 | $92.8 |
| Freight Access Fees and Other | $165.1 | $71.8 | $93.3 |
| Operating Results | $2,425.5 | $2,888.0 | ($462.5) |
| Interest Expense, Net | $0.0 | $175.9 | ($175.9) |
| Depreciation, net | $0.0 | $498.6 | ($498.6) |
| Project Costs covered by Capital Funds | $0.0 | $23.1 | ($23.1) |
| State Capital Payments | $27.3 | $0.0 | $27.3 |
| **Net Results** | $2,452.8 | $3,585.6 | ($1,132.8) |

Notes:
- The route performance data contained in section C no longer follows the Strategic Reform Initiative (SRI) format used in prior year's reports. Under the SRI format, infrastructure and Unallocated System costs were not allocated to Amtrak routes. The report in section C, utilizing the Route Profitability System (RPS), now reports Route results after Infrastructure and System costs have been fully allocated to Amtrak routes.
- Prior year data may not match previously published reports at the individual route level.
-Total FRA Defined Costs represents Host Railroad MofW and Performance Incentives, Fuel and Power, T&E Crew, OBS and Commissary costs, Car and Locomotive maint. and Turnaround Costs, Commissions, Reservations, Call Centers, Psgr inconvenience, and Route Stations.
-Total Remaining Direct Costs include Shared Stations, MoE Supervision and Training, Maintenance of Way, Yard Ops, Marketing and Distribution, Insurance, Terminal Payments, Procurement/Purchasing, Police/Environmental and Safety, and T&E Overhead.
-Total Non-Direct Costs includes Amtrak Infrastructure Maintenance and System costs.

C - 2

# FY08

| NEC Spine | Ridership | | | | | Ticket Revenue | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | % change vs. | | | | | % change vs. | |
| | FY08 | FY07 | Budget | FY07 | Budget | FY08 | FY07 | Budget | FY07 | Budget |
| 1 - Acela | 3,398,759 | 3,191,321 | 3,283,442 | +6.5 | +3.5 | $467,782,708 | $403,571,410 | $429,977,096 | +15.9 | +8.8 |
| 5 - Northeast Regional | 7,489,426 | 6,836,646 | 6,834,878 | +9.5 | +9.6 | $481,606,621 | $424,721,134 | $431,655,514 | +13.4 | +11.6 |
| 99 - Special Trains | 9,667 | 7,045 | 9,340 | +37.2 | +3.5 | $1,249,590 | $1,011,903 | $1,815,000 | +23.5 | -31.2 |
| **Subtotal** | **10,897,852** | **10,035,012** | **10,127,660** | **+8.6** | **+7.6** | **$950,638,920** | **$829,304,447** | **$863,447,610** | **+14.6** | **+10.1** |
| ***State Supported and Other Short Distance Corridors*** | | | | | | | | | | |
| 3 - Ethan Allen | 46,881 | 43,942 | 45,948 | +6.7 | +2.0 | $2,407,851 | $2,190,959 | $2,352,200 | +9.9 | +2.4 |
| 4 - Vermonter | 72,655 | 63,299 | 66,277 | +14.8 | +9.6 | $3,942,778 | $3,357,124 | $3,650,481 | +17.4 | +8.0 |
| 7 - Albany-Niagara Falls-Toronto | 354,492 | 288,365 | 298,238 | +22.9 | +18.9 | $21,759,315 | $16,854,750 | $17,520,665 | +29.1 | +24.2 |
| 9 - Downeaster | 474,492 | 361,634 | 414,441 | +31.2 | +14.5 | $6,560,768 | $4,800,036 | $5,838,614 | +36.7 | +12.4 |
| 12 - New Haven-Springfield | 349,928 | 320,852 | 328,583 | +9.1 | +6.5 | $10,063,889 | $8,840,099 | $9,501,804 | +13.8 | +5.9 |
| 14 - Keystone | 1,183,821 | 988,454 | 1,041,408 | +19.8 | +13.7 | $24,747,102 | $20,582,838 | $22,189,037 | +20.2 | +11.5 |
| 15 - Empire (NYP-ALB) | 994,293 | 957,583 | 1,013,924 | +3.8 | -1.9 | $41,114,816 | $38,592,354 | $41,749,734 | +6.5 | -1.5 |
| 20 - Chicago-St. Louis (Lincoln Service) | 476,427 | 408,807 | 427,711 | +16.5 | +11.4 | $11,288,034 | $8,822,785 | $9,488,613 | +27.9 | +19.0 |
| 21 - Hiawatha | 749,659 | 595,336 | 625,581 | +25.9 | +19.8 | $13,138,765 | $10,230,272 | $10,807,024 | +28.4 | +21.6 |
| 22 - Wolverine | 472,393 | 449,107 | 476,269 | +5.2 | -0.8 | $16,243,510 | $14,934,656 | $16,237,136 | +8.8 | +0.0 |
| 23 - Chicago-Carbondale (Illini/Saluki) | 271,082 | 228,695 | 243,211 | +18.5 | +11.5 | $7,732,413 | $6,187,835 | $6,715,875 | +25.0 | +15.1 |
| 24 - Chicago-Quincy (IL Zephyr/Carl Sandburg) | 202,814 | 169,258 | 186,628 | +19.8 | +8.7 | $4,979,726 | $3,937,263 | $4,530,016 | +26.5 | +9.9 |
| 29 - Heartland Flyer | 80,892 | 68,246 | 69,211 | +18.5 | +16.9 | $1,682,088 | $1,260,579 | $1,310,722 | +33.4 | +28.3 |
| 35 - Pacific Surfliner | 2,898,859 | 2,707,188 | 2,798,380 | +7.1 | +3.6 | $51,010,624 | $46,788,081 | $49,556,765 | +9.0 | +2.9 |
| 36 - Cascades | 760,323 | 674,153 | 680,501 | +12.8 | +11.7 | $20,999,003 | $18,165,351 | $18,761,864 | +15.6 | +11.9 |
| 37 - Capitol Corridor | 1,693,580 | 1,450,069 | 1,471,685 | +16.8 | +15.1 | $22,306,774 | $18,059,715 | $19,195,506 | +23.5 | +16.2 |
| 39 - San Joaquins | 949,611 | 804,785 | 816,417 | +18.0 | +16.3 | $29,847,468 | $24,544,160 | $26,533,880 | +21.6 | +12.5 |
| 40 - Adirondack | 112,047 | 101,097 | 108,351 | +10.8 | +3.4 | $5,581,639 | $5,065,860 | $5,458,742 | +10.2 | +2.3 |
| 41 - Blue Water | 136,538 | 127,642 | 136,061 | +7.0 | +0.4 | $4,158,742 | $3,557,216 | $3,767,921 | +16.9 | +10.4 |
| 47 - Washington-Newport News | 459,236 | 401,510 | 404,049 | +14.4 | +13.7 | $26,276,227 | $20,914,840 | $21,373,397 | +25.6 | +22.9 |
| 54 - Hoosier State | 31,774 | 26,347 | 26,616 | +20.6 | +19.4 | $681,685 | $529,270 | $553,649 | +28.8 | +23.1 |
| 56 - Kansas City-St. Louis | 151,690 | 116,517 | 124,622 | +30.2 | +21.7 | $3,311,182 | $2,508,912 | $2,757,917 | +32.0 | +20.1 |
| 57 - Pennsylvanian | 200,999 | 180,140 | 181,632 | +11.6 | +10.7 | $7,914,009 | $6,620,783 | $6,798,515 | +19.5 | +16.4 |
| 65 - Pere Marquette | 111,716 | 104,819 | 111,973 | +6.6 | -0.2 | $2,975,391 | $2,666,416 | $2,865,142 | +11.6 | +3.8 |
| 66 - Carolinian | 295,427 | 256,212 | 259,929 | +15.3 | +13.7 | $16,026,148 | $13,512,362 | $13,726,170 | +18.6 | +16.8 |
| 67 - Piedmont | 65,941 | 50,551 | 50,581 | +30.4 | +30.4 | $1,079,184 | $831,383 | $855,196 | +29.8 | +26.2 |
| 74-81 - Buses | - | - | - | - | - | $5,796,194 | $4,878,943 | $4,734,072 | +18.8 | +22.4 |
| 96 - Special Trains | 50,626 | 48,644 | 50,400 | +4.1 | +0.4 | $5,201,520 | $4,622,911 | $5,235,000 | +12.5 | -0.6 |
| **Subtotal** | **13,648,196** | **11,993,252** | **12,458,627** | **+13.8** | **+9.5** | **$368,826,847** | **$313,857,753** | **$334,065,656** | **+17.5** | **+10.4** |
| ***Long Distance*** | | | | | | | | | | |
| 16 - Silver Star | 367,139 | 329,132 | 327,143 | +11.5 | +12.2 | $27,699,306 | $25,715,553 | $26,916,495 | +7.7 | +2.9 |
| 18 - Cardinal | 109,195 | 96,896 | 96,444 | +12.7 | +13.2 | $6,490,845 | $5,453,083 | $5,693,023 | +19.0 | +14.0 |
| 19 - Silver Meteor | 319,773 | 291,735 | 290,871 | +9.6 | +9.9 | $30,568,604 | $27,379,452 | $28,699,984 | +11.6 | +6.5 |
| 25 - Empire Builder | 554,266 | 504,977 | 521,972 | +9.8 | +6.2 | $59,461,168 | $53,177,760 | $56,375,437 | +11.8 | +5.5 |
| 26 - Capitol Ltd. | 216,350 | 193,748 | 194,877 | +11.7 | +11.0 | $17,431,949 | $14,877,428 | $15,433,688 | +17.2 | +12.9 |
| 27 - California Zephyr | 352,563 | 329,840 | 351,702 | +6.9 | +0.2 | $39,001,032 | $35,719,619 | $40,009,923 | +9.2 | -2.5 |
| 28 - Southwest Chief | 331,143 | 316,668 | 327,976 | +4.6 | +1.0 | $41,079,865 | $37,935,113 | $40,646,351 | +8.3 | +1.1 |
| 30 - City of New Orleans | 197,394 | 180,473 | 182,826 | +9.4 | +8.0 | $14,875,928 | $13,311,213 | $14,091,945 | +11.8 | +5.6 |
| 32 - Texas Eagle | 251,518 | 218,321 | 225,810 | +15.2 | +11.4 | $19,514,531 | $16,424,146 | $17,199,150 | +18.8 | +13.5 |
| 33 - Sunset Ltd. | 71,719 | 63,336 | 65,752 | +13.2 | +9.1 | $8,052,516 | $6,955,881 | $7,605,786 | +15.8 | +5.9 |
| 34 - Coast Starlight | 353,657 | 343,542 | 362,328 | +2.9 | -2.4 | $28,117,404 | $29,171,278 | $32,201,080 | -3.6 | -12.7 |
| 45 - Lake Shore Ltd. | 345,632 | 312,643 | 311,248 | +10.6 | +11.0 | $24,238,394 | $21,421,657 | $22,407,259 | +13.1 | +8.2 |
| 48 - Palmetto | 173,949 | 156,998 | 159,420 | +10.8 | +9.1 | $12,901,668 | $11,280,047 | $11,901,455 | +14.4 | +8.4 |
| 52 - Crescent | 291,222 | 263,136 | 266,523 | +10.7 | +9.3 | $27,095,838 | $24,262,171 | $25,590,692 | +11.7 | +5.9 |
| 63 - Auto Train | 234,839 | 217,822 | 224,759 | +7.8 | +4.5 | $58,154,402 | $52,883,481 | $55,639,661 | +10.0 | +4.5 |
| **Subtotal** | **4,170,359** | **3,819,267** | **3,909,651** | **+9.2** | **+6.7** | **$414,683,450** | **$375,967,883** | **$400,411,949** | **+10.3** | **+3.6** |
| **Amtrak Total** | **28,716,407** | **25,847,531** | **26,495,938** | **+11.1** | **+8.4** | **$1,734,149,216** | **$1,519,130,083** | **$1,597,925,215** | **+14.2** | **+8.5** |

## National Railroad Passenger Corporation (Amtrak)

### Financial Performance of Routes - Strategic Business Line (SBL) format

### September 2008 YTD - Unaudited

**Route Performance Results Exclude Federal Support for Operations, Unallocated System costs and Capital Charges**

All numbers are in $ millions except Passenger Mile and Seat Mile Calculations

| **Northeast Corridor Trains** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Route Number** | **Train Name** | **Total Revenue** | **Direct Labor** | **Other Direct Costs** | **Total Avoidable Costs** | **Contribution / (Loss) after Avoidable Costs** | **Total Shared Costs** | **Total Attributed Costs** | **Contribution / (Loss) (Exclude Dep & Int)** | **Contribution / (Loss) per Pass Mile (cents)** | **Contribution / (Loss) per Seat Mile (cents)** |
| RT01 | Acela | $486.3 | $27.2 | $110.6 | $137.7 | $348.6 | $128.4 | $266.1 | $220.2 | 34.9 | 21.6 |
| RT05 | Northeast Regional | $518.4 | $53.7 | $129.3 | $183.0 | $335.4 | $188.9 | $371.8 | $146.5 | 12.8 | 8.1 |
| RT91 | NEC Unknown (Crew Labor) | $0.0 | $1.1 | $0.2 | $1.3 | ($1.3) | $0.0 | $1.3 | ($1.3) | — | — |
| RT06/98/99 | NEC Special Trains | $4.6 | $0.3 | $0.5 | $0.8 | $3.8 | $0.2 | $1.1 | $3.6 | — | — |
| RT70 | NEC Bus Route | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | — | — |
| | Total | $1,009.4 | $82.2 | $240.6 | $322.8 | $686.6 | $317.6 | $640.4 | $369.0 | 20.7 | 10.7 |

| **State Supported and Other Short Distance Corridor Trains** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Route Number** | **Train Name** | **Total Revenue** | **Direct Labor** | **Other Direct Costs** | **Total Avoidable Costs** | **Contribution / (Loss) after Avoidable Costs** | **Total Shared Costs** | **Total Attributed Costs** | **Contribution / (Loss) (Exclude Dep & Int)** | **Contribution / (Loss) per Pass Mile (cents)** | **Contribution / (Loss) per Seat Mile (cents)** |
| RT03 | Ethan Allen Express | $3.7 | $0.9 | $1.6 | $2.5 | $1.2 | $1.5 | $4.0 | ($0.3) | (3.4) | (1.4) |
| RT04 | Vermonter | $6.9 | $1.9 | $5.0 | $6.9 | $0.2 | $2.2 | $8.9 | ($2.0) | (8.2) | (4.2) |
| RT07 | Albany-Niagara Falls-Toronto | $22.8 | $5.4 | $13.6 | $18.9 | $3.9 | $10.6 | $29.6 | ($6.7) | (6.1) | (3.3) |
| RT09 | The Downeaster | $11.1 | $2.2 | $5.6 | $7.8 | $3.3 | $4.4 | $12.2 | ($1.1) | (3.0) | (0.9) |
| RT12 | New Haven - Springfield | $10.2 | $3.4 | $8.6 | $12.0 | ($1.8) | $10.0 | $22.0 | ($11.8) | (37.6) | (17.6) |
| RT14 | Keystone Service | $32.1 | $6.6 | $10.3 | $16.9 | $16.2 | $20.8 | $37.7 | ($4.6) | (4.4) | (1.5) |
| RT16 | Empire Service | $42.2 | $9.8 | $23.6 | $33.4 | $8.8 | $27.9 | $61.4 | ($19.1) | (15.6) | (6.4) |
| RT20 | Chicago-St Louis | $32.2 | $5.4 | $11.7 | $17.1 | $15.1 | $11.3 | $28.4 | $3.8 | 4.4 | 2.0 |
| RT21 | Hiawathas | $23.5 | $2.8 | $7.7 | $10.5 | $13.0 | $14.4 | $24.9 | ($1.4) | (2.3) | (0.9) |
| RT22 | Wolverines | $18.4 | $5.1 | $15.1 | $20.2 | ($1.8) | $12.9 | $33.2 | ($14.7) | (14.6) | (0.0) |
| RT23 | Illini | $13.3 | $2.7 | $4.8 | $7.5 | $5.7 | $5.8 | $13.3 | ($0.0) | (0.0) | (0.0) |
| RT24 | Illinois Zephyr | $10.9 | $2.9 | $5.8 | $8.6 | $2.3 | $5.4 | $14.0 | ($3.1) | (9.8) | (3.8) |
| RT29 | Heartland Flyer | $5.7 | $1.3 | $3.1 | $4.4 | $1.3 | $1.5 | $5.9 | ($0.2) | (1.5) | (0.6) |
| RT35 | Pacific Surfliner | $77.1 | $17.1 | $42.2 | $59.3 | $17.8 | $32.4 | $91.8 | ($14.7) | (6.1) | (2.2) |
| RT36 | Cascades | $41.3 | $10.6 | $20.2 | $30.7 | $10.5 | $16.5 | $47.2 | ($5.9) | (5.1) | (2.8) |
| RT37 | Capitols | $43.7 | $12.6 | $27.1 | $39.7 | $3.9 | $18.1 | $57.9 | ($14.2) | (12.8) | (3.7) |
| RT39 | San Joaquins | $62.0 | $10.2 | $48.6 | $58.8 | $9.0 | $14.7 | $71.5 | ($8.7) | (6.3) | (2.4) |
| RT40 | Adirondack | $11.0 | $2.3 | $4.9 | $7.2 | $3.8 | $3.9 | $11.1 | ($0.1) | (0.3) | (0.2) |
| RT41 | Blue Water | $9.0 | $2.1 | $5.0 | $7.1 | $1.9 | $4.3 | $11.3 | ($2.4) | (8.8) | (7.1) |
| RT47 | Washington-Newport News | $28.1 | $4.7 | $11.4 | $16.1 | $12.0 | $9.3 | $25.4 | $2.7 | 2.7 | 1.6 |
| RT54 | Hoosier State | $0.8 | $0.9 | $1.4 | $2.4 | ($1.6) | $1.3 | $3.7 | ($3.0) | (59.4) | (21.0) |
| RT56 | Kansas City-St Louis | $7.2 | $2.8 | $4.3 | $7.2 | ($0.0) | $4.0 | $11.1 | ($4.0) | (14.0) | (5.2) |
| RT57 | Pennsylvanian | $8.5 | $2.3 | $5.2 | $7.5 | $1.0 | $6.2 | $13.7 | ($5.2) | (10.6) | (7.8) |
| RT65 | Pere Marquette | $5.5 | $1.2 | $2.6 | $3.8 | $1.7 | $2.7 | $6.5 | ($1.0) | (5.7) | (3.6) |
| RT66 | Carolinian | $20.3 | $4.1 | $7.3 | $11.4 | $8.9 | $8.4 | $19.8 | $0.4 | 0.5 | 0.3 |
| RT67 | Piedmont | $2.6 | $1.1 | $0.6 | $1.7 | $0.9 | $1.8 | $3.5 | ($0.9) | (11.1) | (4.8) |
| RT92 | Central Unknown (Crew Labor) | $0.0 | $0.7 | $0.2 | $0.8 | ($0.8) | $0.0 | $0.8 | ($0.8) | — | — |
| RT93 | Crew Labor | $0.0 | $0.8 | ($0.0) | $0.8 | ($0.8) | $0.0 | $0.8 | ($0.8) | — | — |
| RT98 | Non NEC Special Trains | $5.2 | $0.6 | $1.7 | $2.3 | $2.9 | $0.7 | $3.1 | $2.1 | 12.9 | 9.6 |
| | State Supported Rt Buses | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | — | — |
| | Total | $556.9 | $124.6 | $296.9 | $421.5 | $135.4 | $253.0 | $674.4 | ($117.5) | (6.6) | (2.9) |

| **Long Distance Trains** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Route Number** | **Train Name** | **Total Revenue** | **Direct Labor** | **Other Direct Costs** | **Total Avoidable Costs** | **Contribution / (Loss) after Avoidable Costs** | **Total Shared Costs** | **Total Attributed Costs** | **Contribution / (Loss) (Exclude Dep & Int)** | **Contribution / (Loss) per Pass Mile (cents)** | **Contribution / (Loss) per Seat Mile (cents)** |
| RT16 | Silver Star | $31.4 | $17.6 | $29.0 | $46.7 | ($15.3) | $29.1 | $75.6 | ($44.4) | (22.6) | (13.1) |
| RT17 | Three Rivers | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | — | — |
| RT18 | Cardinal | $7.7 | $5.7 | $9.8 | $14.8 | ($8.9) | $9.2 | $22.8 | ($16.1) | (34.2) | (10.8) |
| RT19 | Silver Meteor | $33.8 | $15.5 | $28.8 | $44.3 | ($10.5) | $27.3 | $71.6 | ($37.8) | (19.4) | (12.0) |
| RT25 | Empire Builder | $64.0 | $28.6 | $48.6 | $75.5 | ($11.5) | $29.0 | $104.5 | ($40.5) | (9.9) | (6.7) |
| RT26 | Capitol Limited | $19.5 | $9.0 | $17.9 | $26.9 | ($7.4) | $16.3 | $43.2 | ($23.7) | (22.9) | (14.7) |
| RT27 | California Zephyr | $44.0 | $28.9 | $48.1 | $77.0 | ($33.1) | $28.3 | $105.4 | ($50.4) | (21.6) | (11.1) |
| RT28 | Southwest Chief | $44.9 | $22.2 | $40.9 | $63.2 | ($18.3) | $27.6 | $90.8 | ($45.9) | (14.8) | (9.4) |
| RT30 | City of New Orleans | $16.4 | $7.6 | $16.8 | $24.3 | ($7.9) | $9.0 | $33.3 | ($16.9) | (18.1) | (11.4) |
| RT32 | Texas Eagle | $21.8 | $13.6 | $22.8 | $36.6 | ($14.8) | $14.6 | $51.2 | ($29.4) | (19.1) | (10.1) |
| RT33 | Sunset Limited | $9.3 | $13.2 | $16.1 | $29.3 | ($20.0) | $11.4 | $40.7 | ($31.4) | (47.5) | (26.4) |
| RT34 | Coast Starlight | $32.0 | $16.9 | $34.6 | $51.5 | ($19.5) | $20.0 | $71.5 | ($39.5) | (21.4) | (13.1) |
| RT45 | Lake Shore Limited | $26.4 | $13.1 | $24.2 | $37.3 | ($10.9) | $26.7 | $63.9 | ($37.5) | (24.8) | (15.0) |
| RT48 | Palmetto | $14.5 | $5.0 | $10.1 | $15.1 | ($0.6) | $11.1 | $26.2 | ($11.8) | (16.4) | (7.0) |
| RT52 | Crescent | $30.2 | $15.2 | $29.1 | $44.3 | ($14.0) | $24.0 | $69.3 | ($38.8) | (25.9) | (13.2) |
| RT63 | Auto Train | $56.5 | $16.6 | $31.9 | $48.5 | $10.0 | $20.5 | $69.0 | ($10.5) | (5.2) | (3.3) |
| | Total | $454.5 | $228.1 | $408.1 | $635.2 | ($180.7) | $301.1 | $936.3 | ($481.8) | (19.5) | (10.9) |

| | Total Revenue | Direct Labor | Other Direct Costs | Total Avoidable Costs | Contribution / (Loss) after Avoidable Costs | Total Shared Costs | Total Attributed Costs | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| Total All Trains | $2,020.8 | $435.9 | $943.6 | $1,379.5 | $641.3 | $871.6 | $2,251.1 | ($230.3) | (3.7) | (1.9) |
| Top-side adjustments | — | — | — | — | — | $6.3 | $6.3 | — | — | — |
| Total National Train System | $2,020.6 | $435.9 | $943.6 | $1,379.5 | $641.3 | $877.9 | $2,257.4 | ($236.8) | (3.8) | (2.0) |

**Reconciling Items between SBL and Consolidated Statement of Operations**

| | Revenue | Expense | Net |
|---|---|---|---|
| Total National Train System | $2,020.8 | $2,257.4 | ($236.6) |
| Infrastructure Management | $195.1 | $265.1 | ($70.0) |
| Ancillary Businesses | $298.2 | $204.5 | $93.7 |
| Unallocated System | $14.1 | $257.8 | ($243.7) |
| Eliminations | ($101.2) | ($101.2) | $0.0 |
| Operating Results | $2,427.1 | $2,893.7 | ($466.6) |
| Interest Expense, Net | $0.0 | $89.4 | ($89.4) |
| Depreciation | $0.0 | $504.9 | ($504.9) |
| Federal and State Capital Payments | $27.3 | $0.0 | $27.3 |
| Net (Income) Loss from Discont Ops | $0.0 | $0.0 | $0.0 |
| **Net Results** | $2,454.4 | $3,478.0 | ($1,023.6) |

Notes

- Prior year data may not match previously published reports at the individual route level. FY08 Route Structure reflects Strategic Business Line format.
- Direct Labor represents T&E and OBS wages, benefits and support.
- Other Direct Costs include Host Railroad MofW and Performance Incentives, Fuel and Power, Car and Locomotive maint. and Turnaround Costs, Commissions, Reservations, Call Centers, Psgr Inconvenience, and Route Stations.
- Total Avoidable Costs equals Direct Labor plus Other Direct Costs.
- Shared Costs include Shared Stations, MoE Supervision and Training, Yard Ops, Marketing and Distribution, Insurance, Terminal Payments, Procurement/Purchasing, Police/Environmental and Safety, T&E Overhead, NTS infrastructure, and System Costs.
- Total Attributed Costs equals Total Avoidable Costs plus Shared Costs.

C - 1

## National Railroad Passenger Corporation (Amtrak)

**Financial Performance of Routes - Strategic Business Line (SBL) format**

**September 2007 YTD**

Route Performance Results Exclude Federal Support for Operations, Unallocated System costs and Capital Charges

All numbers are in $ millions except Passenger Mile and Seat Mile Calculations

| Northeast Corridor Trains<br>Route Number | Train Name | Total Revenue | Direct Labor | Other Direct Costs | Total Avoidable Costs | Contribution / (Loss) after Avoidable Costs | Total Shared Costs | Total Attributed Costs | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RT01 | Acela | $421.4 | $23.7 | $105.5 | $129.2 | $292.2 | $119.6 | $248.8 | $172.5 | 29.9 | 17.6 |
| RT05 | Regional | $459.5 | $46.7 | $129.5 | $176.2 | $283.3 | $201.4 | $377.7 | $81.8 | 8.4 | 3.6 |
| RT91 | NEC Unknown (Crew Labor) | $0.0 | $0.7 | $0.0 | $0.7 | ($0.7) | ($0.0) | $0.7 | ($0.7) | — | — |
| RT06/98/99 | NEC Special Trains | $4.3 | $0.2 | $0.3 | $0.5 | $3.8 | $0.1 | $0.6 | $3.7 | — | — |
| RT70 | NEC Bus Route | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | — | — |
| | Total | $885.2 | $71.3 | $235.3 | $306.6 | $578.6 | $321.2 | $627.8 | $257.4 | 16.6 | 8.0 |

| State Supported and Other Short Distance Corridor Trains<br>Route Number | Train Name | Total Revenue | Direct Labor | Other Direct Costs | Total Avoidable Costs | Contribution / (Loss) after Avoidable Costs | Total Shared Costs | Total Attributed Costs | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RT03 | Ethan Allen Express | $2.4 | $0.8 | $1.9 | $2.7 | $0.7 | $1.5 | $4.2 | ($0.8) | (8.7) | (3.8) |
| RT04 | Vermonter | $6.4 | $1.6 | $3.1 | $4.6 | $1.8 | $2.1 | $6.7 | ($0.3) | (1.5) | (0.6) |
| RT07 | Albany-Niagara Falls-Toronto | $17.9 | $5.0 | $10.2 | $15.2 | $2.7 | $10.6 | $25.8 | ($7.9) | (9.0) | (4.1) |
| RT09 | The Downeaster | $8.9 | $1.8 | $4.4 | $6.2 | $2.6 | $3.7 | $9.9 | ($1.1) | (4.0) | (1.4) |
| RT12 | New Haven - Springfield | $9.0 | $2.9 | $8.0 | $10.9 | ($2.0) | $9.0 | $19.9 | ($10.9) | (39.5) | (16.9) |
| RT14 | Keystone Service | $29.8 | $5.8 | $10.5 | $18.3 | $12.3 | $21.8 | $37.8 | ($9.3) | (10.8) | (2.4) |
| RT15 | Empire Service | $39.5 | $9.2 | $21.8 | $31.0 | $8.5 | $29.5 | $60.6 | ($21.0) | (17.8) | (6.0) |
| RT20 | Chicago-St.Louis | $23.7 | $4.3 | $9.9 | $13.3 | $10.4 | $10.5 | $23.8 | ($0.1) | (0.1) | (0.1) |
| RT21 | Hiawathas | $21.9 | $2.7 | $5.7 | $8.3 | $13.9 | $14.2 | $22.5 | ($1.2) | (2.6) | (1.0) |
| RT22 | Wolverines | $17.4 | $4.7 | $12.0 | $16.6 | $0.8 | $13.1 | $29.7 | ($12.3) | (12.8) | (6.7) |
| RT23 | Illini | $13.9 | $2.2 | $4.1 | $6.4 | $7.5 | $5.6 | $12.0 | $1.8 | 4.4 | 2.0 |
| RT24 | Illinois Zephyr | $11.8 | $2.4 | $4.0 | $6.4 | $5.4 | $4.9 | $11.3 | $0.5 | 1.7 | 0.6 |
| RT29 | Heartland Flyer | $5.0 | $1.2 | $2.1 | $3.2 | $1.8 | $1.6 | $4.8 | $0.2 | 2.1 | 0.9 |
| RT35 | Pacific Surfliner | $72.1 | $15.7 | $39.1 | $54.8 | $17.4 | $32.0 | $86.8 | ($14.7) | (6.6) | (2.3) |
| RT36 | Cascades | $35.2 | $9.0 | $17.8 | $26.8 | $8.4 | $16.2 | $43.1 | ($7.8) | (7.6) | (3.8) |
| RT37 | Capitols | $39.2 | $10.6 | $22.6 | $33.2 | $6.0 | $18.7 | $51.9 | ($12.6) | (13.1) | (3.5) |
| RT39 | San Joaquins | $53.4 | $9.0 | $40.0 | $49.0 | $4.4 | $14.5 | $63.5 | ($10.1) | (8.4) | (3.0) |
| RT40 | Adirondack | $9.0 | $2.0 | $4.4 | $6.4 | $2.6 | $3.6 | $10.0 | ($1.1) | (3.4) | (2.2) |
| RT41 | Blue Water | $7.5 | $1.8 | $3.7 | $5.5 | $1.9 | $3.7 | $9.2 | ($1.7) | (6.8) | (4.8) |
| RT47 | Washington-Newport News | $22.8 | $4.0 | $7.6 | $11.6 | $11.2 | $9.7 | $21.3 | $1.6 | 1.8 | 0.9 |
| RT54 | Hoosier State | $0.6 | $0.7 | $1.2 | $1.9 | ($1.2) | $1.2 | $3.1 | ($2.5) | (59.6) | (21.1) |
| RT56 | Kansas City-St.Louis | $7.3 | $2.6 | $4.3 | $6.8 | $0.3 | $3.8 | $10.8 | ($3.8) | (16.8) | (4.7) |
| RT57 | Pennsylvanian | $7.2 | $2.0 | $5.0 | $6.9 | $0.2 | $6.1 | $13.1 | ($5.8) | (14.1) | (8.8) |
| RT65 | Pere Marquette | $6.4 | $1.1 | $2.0 | $3.1 | $3.3 | $2.6 | $5.7 | $0.6 | 3.9 | 2.4 |
| RT66 | Carolinian | $17.3 | $3.9 | $6.0 | $9.9 | $7.4 | $8.4 | $18.3 | ($1.0) | (1.3) | (0.9) |
| RT67 | Piedmont | $2.4 | $0.9 | $0.4 | $1.3 | $1.1 | $1.7 | $3.1 | ($0.6) | (10.2) | (4.1) |
| RT92 | Central Unknown (Crew Labor) | $0.0 | $0.9 | $0.0 | $0.8 | ($0.8) | $0.0 | $0.8 | ($0.9) | — | — |
| RT93 | Crew Labor | $0.0 | $0.5 | $0.0 | $0.5 | ($0.5) | $0.0 | $0.5 | ($0.5) | — | — |
| RT95 | Non NEC Special Trains | $4.7 | $0.9 | $1.7 | $2.5 | $2.2 | $0.7 | $3.2 | $1.5 | 8.9 | 6.1 |
| | State Supported Rt Buses | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | — | — |
| | Total | $491.6 | $110.2 | $252.4 | $362.6 | $129.0 | $251.0 | $613.6 | ($121.9) | (7.9) | (3.2) |

| Long Distance Trains<br>Route Number | Train Name | Total Revenue | Direct Labor | Other Direct Costs | Total Avoidable Costs | Contribution / (Loss) after Avoidable Costs | Total Shared Costs | Total Attributed Costs | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RT16 | Silver Star | $29.3 | $16.6 | $26.1 | $42.7 | ($13.4) | $26.8 | $69.5 | ($40.2) | (21.2) | (11.9) |
| RT17 | Three Rivers | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | — | — |
| RT18 | Cardinal | $6.5 | $4.9 | $7.7 | $12.7 | ($6.1) | $7.4 | $20.1 | ($13.5) | (36.8) | (18.4) |
| RT19 | Silver Meteor | $30.6 | $14.6 | $24.5 | $39.0 | ($8.4) | $25.1 | $64.1 | ($33.5) | (19.7) | (10.9) |
| RT25 | Empire Builder | $58.0 | $26.1 | $41.6 | $67.6 | ($9.6) | $24.6 | $92.3 | ($34.3) | (8.6) | (5.3) |
| RT26 | Capitol Limited | $17.3 | $8.5 | $15.1 | $23.6 | ($6.3) | $15.3 | $38.9 | ($21.6) | (22.5) | (13.5) |
| RT27 | California Zephyr | $40.8 | $25.9 | $41.3 | $67.2 | ($26.4) | $22.6 | $89.8 | ($49.0) | (18.0) | (9.2) |
| RT28 | Southwest Chief | $42.1 | $20.2 | $42.3 | $62.6 | ($20.5) | $23.5 | $86.1 | ($44.0) | (14.5) | (8.4) |
| RT30 | City of New Orleans | $14.7 | $7.0 | $13.2 | $20.2 | ($5.5) | $8.4 | $28.6 | ($13.9) | (16.5) | (9.5) |
| RT32 | Texas Eagle | $18.6 | $12.4 | $18.8 | $31.3 | ($12.7) | $12.5 | $43.8 | ($25.2) | (19.3) | (8.8) |
| RT33 | Sunset Limited | $8.1 | $12.9 | $14.3 | $27.1 | ($19.0) | $10.8 | $38.0 | ($29.8) | (49.8) | (25.3) |
| RT34 | Coast Starlight | $32.9 | $18.2 | $33.0 | $52.2 | ($19.3) | $21.6 | $73.7 | ($40.8) | (18.8) | (11.8) |
| RT45 | Lake Shore Limited | $23.9 | $12.6 | $21.5 | $34.1 | ($10.2) | $26.9 | $61.0 | ($37.2) | (25.9) | (15.8) |
| RT48 | Palmetto | $12.9 | $5.0 | $9.6 | $14.6 | ($1.7) | $10.5 | $25.1 | ($12.2) | (17.5) | (7.8) |
| RT52 | Crescent | $27.2 | $14.9 | $24.0 | $38.6 | ($11.6) | $22.8 | $61.6 | ($34.4) | (25.1) | (11.9) |
| RT63 | Auto Train | $53.5 | $15.8 | $27.2 | $43.1 | $10.5 | $19.5 | $62.6 | ($9.1) | (4.8) | (2.8) |
| | Total | $416.5 | $216.6 | $360.1 | $576.7 | ($160.2) | $278.6 | $855.2 | ($438.8) | (17.6) | (10.0) |

| | Total Revenue | Direct Labor | Other Direct Costs | Total Avoidable Costs | Contribution / (Loss) after Avoidable Costs | Total Shared Costs | Total Attributed Costs | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| Total All Trains | $1,793.3 | $398.1 | $847.8 | $1,245.9 | $547.4 | $850.7 | $2,096.6 | ($303.3) | (5.4) | (2.6) |
| Unallocated audit adjustments | $1.3 | — | — | — | — | ($32.5) | ($32.5) | — | — | — |
| Total National Train System | $1,794.6 | $399.1 | $847.8 | $1,245.9 | $549.7 | $818.2 | $2,064.1 | ($269.5) | (4.8) | (2.3) |

**Reconciling Items between SBL and Consolidated Statement of Operations**

| | Revenue | Expense | Net |
|---|---|---|---|
| Total National Train System | $1,794.6 | $2,064.1 | ($269.5) |
| Infrastructure Management | $197.5 | $243.0 | ($45.5) |
| Ancillary Businesses | $254.4 | $170.2 | $84.1 |
| Unallocated System | $2.3 | $327.3 | ($325.0) |
| Eliminations | ($98.3) | ($98.3) | $0.0 |
| Operating Results | $2,150.5 | $2,706.4 | ($555.9) |
| Interest Expense, Net | $0.0 | $93.9 | ($93.9) |
| Depreciation | $0.0 | $473.1 | ($473.1) |
| Federal and State Capital Payments | $2.0 | $0.0 | $2.0 |
| Net (Income) Loss from Discont Ops | $0.0 | $0.0 | $0.0 |
| **Net Results** | $2,152.5 | $3,273.4 | ($1,120.9) |

Notes:

Prior year data may not match previously published reports at the individual route level. FY08 Route Structure reflects Strategic Business Line format.

-Direct Labor represents T&E and OBS wages, benefits and support.

- Other Direct Costs include Host Railroad MofW and Performance Incentives, Fuel and Power, Car and Locomotive maint. and Turnaround Costs, Commissions, Reservations, Call Centers, Psgr Inconvenience, and Route Stations.

-Total Avoidable Costs equals Direct Labor plus Other Direct Costs.

-Shared Costs include Shared Stations, MoE Supervision and Training, Yard Ops, Marketing and Distribution, Insurance, Terminal Payments, Procurement/Purchasing, Police/Environmental and Safety, T&E Overhead, NTS Infrastructure, and System Costs.

-Total Attributed Costs equals Total Avoidable Costs plus Shared Costs.

C - 2

## FY07

| | Ridership | | | | | Ticket Revenue | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | % change vs. | | | | | % change vs. | |
| ***NEC Spine*** | FY07 | FY06 | Budget | FY06 | Budget | FY07 | FY06 | Budget | FY06 | Budget |
| 1 - Acela | 3,191,321 | 2,668,174 | 2,823,419 | +19.6 | +13.0 | $403,571,410 | $328,215,839 | $346,862,566 | +23.0 | +16.3 |
| 5 - Regionals* | 6,836,646 | 6,755,085 | 6,636,281 | +1.2 | +3.0 | $424,721,134 | $396,149,944 | $417,010,775 | +7.2 | +1.8 |
| 99 - Special trains | 7,045 | 8,020 | 9,050 | -12.2 | -22.2 | $1,011,903 | $1,067,843 | $1,457,121 | -5.2 | -30.6 |
| **Subtotal** | **10,035,012** | **9,431,279** | **9,468,750** | **+6.4** | **+6.0** | **$829,304,447** | **$725,433,626** | **$765,330,462** | **+14.3** | **+8.4** |
| ***State Supported and Other Short Distance Corridors*** | | | | | | | | | | |
| 3 - Ethan Allen | 43,942 | 42,763 | 43,714 | +2.8 | +0.5 | $2,190,959 | $2,024,865 | $2,234,898 | +8.2 | -2.0 |
| 4 - Vermonter | 63,299 | 54,273 | 53,645 | +16.6 | +18.0 | $3,357,124 | $2,947,174 | $3,178,666 | +13.9 | +5.6 |
| 7 - Albany-Niagara Falls-Toronto | 288,365 | 298,159 | 293,614 | -3.3 | -1.8 | $16,854,750 | $15,943,468 | $16,972,715 | +5.7 | -0.7 |
| 9 - Downeaster | 361,634 | 337,921 | 350,373 | +7.0 | +3.2 | $4,800,036 | $4,559,208 | $4,735,032 | +5.3 | +1.4 |
| 12 - New Haven-Springfield | 320,852 | 318,066 | 286,369 | +0.9 | +12.0 | $8,840,099 | $7,830,307 | $7,753,754 | +12.9 | +14.0 |
| 14 - Keystone | 988,454 | 823,097 | 1,070,648 | +20.1 | -7.7 | $20,582,838 | $15,860,374 | $22,910,433 | +29.8 | -10.2 |
| 15 - Empire (NYP-ALB) | 957,583 | 918,241 | 906,491 | +4.3 | +5.6 | $38,592,354 | $34,683,321 | $37,215,156 | +11.3 | +3.7 |
| 20 - Chicago-St. Louis | 408,807 | 262,320 | 421,961 | +55.8 | -3.1 | $8,822,785 | $6,183,734 | $9,999,367 | +42.7 | -11.8 |
| 21 - Hiawatha | 595,336 | 580,333 | 595,819 | +2.6 | -0.1 | $10,230,272 | $9,590,387 | $10,460,185 | +6.7 | -2.2 |
| 22 - Wolverine | 449,107 | 438,529 | 438,117 | +2.4 | +2.5 | $14,934,656 | $14,352,124 | $15,282,293 | +4.1 | -2.3 |
| 23 - Chicago-Carbondale [illegible] | 228,695 | 136,640 | 243,915 | +67.4 | -6.2 | $6,187,835 | $4,097,292 | $7,329,538 | +51.0 | -15.6 |
| 24 - Chicago-Quincy (IL Zephyr/Carl Sandburg) | 169,258 | 119,719 | 211,430 | +41.4 | -19.9 | $3,937,263 | $3,037,149 | $5,374,277 | +29.6 | -26.7 |
| 29 - Heartland Flyer | 68,246 | 64,078 | 64,844 | +6.5 | +5.2 | $1,260,579 | $1,174,234 | $1,189,940 | +7.4 | +5.9 |
| 35 - Pacific Surfliner | 2,707,188 | 2,657,773 | 2,698,186 | +1.9 | +0.3 | $46,788,081 | $43,068,554 | $47,376,872 | +8.6 | -1.2 |
| 36 - Cascades | 674,153 | 627,664 | 718,921 | +7.4 | -6.2 | $18,165,351 | $16,524,315 | $20,360,791 | +9.9 | -10.8 |
| 37 - Capitol Corridor | 1,450,069 | 1,263,504 | 1,497,760 | +14.8 | -3.2 | $18,059,715 | $14,941,005 | $19,087,051 | +20.9 | -5.4 |
| 39 - San Joaquins | 804,785 | 799,879 | 810,895 | +0.6 | -0.8 | $24,544,160 | $24,502,495 | $26,809,616 | +0.2 | -8.5 |
| 40 - Adirondack | 101,097 | 94,021 | 92,108 | +7.5 | +9.8 | $5,065,860 | $4,443,126 | $4,767,024 | +14.0 | +6.3 |
| 41 - Blue Water | 127,642 | 123,823 | 128,234 | +3.1 | -0.5 | $3,557,216 | $3,356,033 | $3,687,630 | +6.0 | -3.5 |
| 47 - Washington-Newport News | 401,510 | 401,361 | 399,401 | +0.0 | +0.5 | $20,914,840 | $21,145,321 | $22,951,589 | -1.1 | -8.9 |
| 54 - Hoosier State | 26,347 | 20,096 | 19,784 | +31.1 | +33.2 | $529,270 | $393,595 | $415,547 | +34.5 | +27.4 |
| 56 - Kansas City-St. Louis | 116,517 | 119,257 | 143,067 | -2.3 | -18.6 | $2,508,912 | $2,721,764 | $3,292,283 | -7.8 | -23.8 |
| 57 - Pennsylvanian | 180,140 | 184,049 | 179,164 | -2.1 | +0.5 | $6,620,783 | $7,036,861 | $7,575,842 | -5.9 | -12.6 |
| 65 - Pere Marquette | 104,819 | 101,932 | 104,438 | +2.8 | +0.4 | $2,666,416 | $2,573,414 | $2,820,461 | +3.6 | -5.5 |
| 66 - Carolinian | 256,212 | 243,434 | 249,461 | +5.2 | +2.7 | $13,512,362 | $13,498,981 | $14,853,807 | +0.1 | -9.0 |
| 67 - Piedmont | 50,551 | 53,846 | 55,671 | -6.1 | -9.2 | $831,383 | $804,482 | $877,082 | +3.3 | -5.2 |
| 74-81 - Buses | - | - | - | - | - | $4,878,943 | $4,580,194 | $4,905,759 | +6.5 | -0.5 |
| 96 - Special Trains | 48,644 | 59,652 | 46,120 | -18.5 | +5.5 | $4,622,911 | $5,943,512 | $4,877,083 | -22.2 | -5.2 |
| **Subtotal** | **11,993,252** | **11,144,430** | **12,124,172** | **+7.6** | **-1.1** | **$313,857,753** | **$287,817,288** | **$329,294,687** | **+9.0** | **-4.7** |
| ***Long Distance*** | | | | | | | | | | |
| 16 - Silver Star | 329,132 | 311,509 | 297,866 | +5.7 | +10.5 | $25,715,553 | $25,080,837 | $25,354,689 | +2.5 | +1.4 |
| 18 - Cardinal | 96,896 | 95,076 | 93,326 | +1.9 | +3.8 | $5,453,083 | $5,552,736 | $5,883,768 | -1.8 | -7.3 |
| 19 - Silver Meteor | 291,735 | 272,879 | 269,845 | +6.9 | +8.1 | $27,379,452 | $25,972,938 | $27,700,028 | +5.4 | -1.2 |
| 25 - Empire Builder | 504,977 | 497,020 | 490,371 | +1.6 | +3.0 | $53,177,760 | $48,695,783 | $51,521,806 | +9.2 | +3.2 |
| 26 - Capitol Ltd. | 193,748 | 198,044 | 198,397 | -2.2 | -2.3 | $14,877,428 | $14,638,855 | $15,631,808 | +1.6 | -4.8 |
| 27 - California Zephyr | 329,840 | 335,443 | 322,313 | -1.7 | +2.3 | $35,719,619 | $35,111,789 | $35,921,025 | +1.7 | -0.6 |
| 28 - Southwest Chief | 316,668 | 300,416 | 295,072 | +5.4 | +7.3 | $37,935,113 | $35,616,121 | $37,870,066 | +6.5 | +0.2 |
| 30 - City of New Orleans | 180,473 | 175,237 | 161,891 | +3.0 | +11.5 | $13,311,213 | $12,487,624 | $12,384,904 | +6.6 | +7.5 |
| 32 - Texas Eagle | 218,321 | 232,654 | 228,284 | -6.2 | -4.4 | $16,424,146 | $16,839,655 | $17,067,509 | -2.5 | -3.8 |
| 33 - Sunset Ltd. | 63,336 | 51,860 | 50,825 | +22.1 | +24.6 | $6,955,881 | $5,282,241 | $5,168,442 | +31.7 | +34.6 |
| 34 - Coast Starlight | 343,542 | 331,939 | 318,639 | +3.5 | +7.8 | $29,171,278 | $27,740,039 | $26,035,863 | +5.2 | +12.0 |
| 45 - Lake Shore Ltd. | 312,643 | 323,480 | 314,816 | -3.4 | -0.7 | $21,421,657 | $21,840,125 | $23,258,043 | -1.9 | -7.9 |
| 48 - Palmetto | 156,998 | 146,083 | 144,689 | +7.5 | +8.5 | $11,280,047 | $10,805,478 | $11,904,002 | +4.4 | -5.2 |
| 52 - Crescent | 263,136 | 252,072 | 234,585 | +4.4 | +12.2 | $24,262,171 | $23,005,056 | $22,457,495 | +5.5 | +8.0 |
| 63 - Auto Train | 217,822 | 207,544 | 208,675 | +5.0 | +4.4 | $52,883,481 | $49,351,664 | $51,408,674 | +7.2 | +2.9 |
| **Subtotal** | **3,819,267** | **3,731,256** | **3,629,593** | **+2.4** | **+5.2** | **$375,967,883** | **$358,020,941** | **$369,568,122** | **+5.0** | **+1.7** |
| **Amtrak Total** | **25,847,531** | **24,306,965** | **25,222,515** | **+6.3** | **+2.5** | **$1,519,130,083** | **$1,371,271,855** | **$1,464,193,270** | **+10.8** | **+3.8** |

* [illegible]

A - 3.5

## National Railroad Passenger Corporation (Amtrak)

### Financial Performance of Routes - Strategic Business Line (SBL) format

### September 2006 YTD

**Route Performance Results Exclude Federal Support for Operations, Unallocated System costs and Capital Charges**

All numbers are in $ millions except Passenger Mile and Seat Mile Calculations

| Northeast Corridor Trains<br>Route Number | Train Name | Total Revenue | Direct Labor | Other Direct Costs | Total Avoidable Costs | Contribution / (Loss) after Avoidable Costs | Total Shared Costs | Total Attributed Costs | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RT01/02 | Acela/Metroliner | $347.5 | $23.2 | $90.3 | $113.4 | $234.1 | $99.4 | $212.8 | $134.7 | 28.5 | 14.6 |
| RT05 | Regional | $439.9 | $49.6 | $135.6 | $185.4 | $254.6 | $185.4 | $370.7 | $69.2 | 7.2 | 3.0 |
| RT91 | NEC Unknown (Crew Labor) | $0.0 | $0.2 | $0.0 | $0.2 | ($0.2) | $0.0 | $0.2 | ($0.2) | — | — |
| RT08/98/99 | NEC Special Trains | $7.3 | $0.8 | $0.6 | $1.0 | $6.3 | $0.2 | $1.1 | $6.1 | — | — |
| RT70 | NEC Bus Route | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | — | — |
| | Total | $794.7 | $73.4 | $226.5 | $299.9 | $494.8 | $284.9 | $584.9 | $209.8 | 14.7 | 6.6 |

| State Supported and Other Short Distance Corridor Trains<br>Route Number | Train Name | Total Revenue | Direct Labor | Other Direct Costs | Total Avoidable Costs | Contribution / (Loss) after Avoidable Costs | Total Shared Costs | Total Attributed Costs | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RT03 | Ethan Allen Express | $2.8 | $0.7 | $1.7 | $2.4 | $0.4 | $1.2 | $3.6 | ($0.8) | (9.7) | (3.7) |
| RT04 | Vermonter | $5.4 | $1.7 | $2.8 | $4.4 | $1.0 | $1.5 | $5.9 | ($0.5) | (2.9) | (0.9) |
| RT07 | Albany-Niagara Falls-Toronto | $16.9 | $5.6 | $8.2 | $13.8 | $3.1 | $8.9 | $22.7 | ($5.8) | (6.4) | (2.9) |
| RT09 | The Downeaster | $9.0 | $1.9 | $4.0 | $5.9 | $3.1 | $2.7 | $8.7 | $0.4 | 1.4 | 0.4 |
| RT12 | New Haven - Springfield | $7.8 | $3.4 | $9.8 | $13.2 | ($5.3) | $8.6 | $21.7 | ($13.9) | (55.7) | (18.3) |
| RT14 | Keystone Service | $23.7 | $5.2 | $12.3 | $17.5 | $6.2 | $18.4 | $35.9 | ($12.2) | (17.3) | (7.0) |
| RT15 | Empire Service | $36.9 | $9.1 | $21.8 | $30.9 | $6.0 | $28.2 | $59.0 | ($22.1) | (19.6) | (6.5) |
| RT20 | Chicago-St Louis | $11.4 | $2.6 | $5.9 | $8.5 | $2.9 | $6.3 | $14.8 | ($3.4) | (7.1) | (3.7) |
| RT21 | Hiawathas | $20.2 | $3.0 | $5.7 | $8.8 | $11.5 | $12.3 | $21.1 | ($0.9) | (1.9) | (0.7) |
| RT22 | Wolverines | $17.0 | $4.9 | $10.6 | $15.5 | $1.5 | $11.6 | $27.1 | ($10.1) | (10.7) | (5.4) |
| RT23 | Illini | $8.4 | $1.4 | $3.1 | $4.4 | $4.0 | $3.9 | $8.3 | $0.1 | 0.5 | 0.3 |
| RT24 | Illinois Zephyr | $7.2 | $1.3 | $2.6 | $3.9 | $3.3 | $2.9 | $6.8 | $0.5 | 2.3 | 1.2 |
| RT29 | Heartland Flyer | $4.9 | $1.2 | $2.4 | $3.6 | $1.3 | $1.2 | $4.8 | $0.1 | 0.4 | 0.3 |
| RT35 | Pacific Surfliner | $69.1 | $14.7 | $39.3 | $54.0 | $15.1 | $29.2 | $83.2 | ($14.1) | (6.4) | (2.1) |
| RT36 | Cascades | $36.4 | $8.5 | $16.8 | $25.2 | $11.2 | $13.1 | $38.3 | ($1.9) | (2.1) | (1.0) |
| RT37 | Capitols | $35.6 | $9.6 | $20.0 | $29.5 | $6.0 | $14.5 | $44.0 | ($8.4) | (9.7) | (2.8) |
| RT39 | San Joaquins | $51.9 | $10.4 | $36.4 | $46.7 | $5.2 | $11.8 | $58.5 | ($6.6) | (5.4) | (1.9) |
| RT40 | Adirondack | $8.7 | $2.1 | $3.8 | $5.9 | $2.8 | $2.8 | $8.7 | ($0.0) | (0.1) | (0.1) |
| RT41 | Blue Water | $7.7 | $1.8 | $3.2 | $5.0 | $2.8 | $3.2 | $8.2 | ($0.5) | (1.9) | (0.9) |
| RT47 | Washington-Newport News | $23.0 | $4.2 | $10.1 | $14.4 | $8.7 | $9.3 | $23.7 | ($0.6) | (0.8) | (0.4) |
| RT54 | Hoosier State | $0.5 | $0.5 | $1.2 | $1.7 | ($1.2) | $1.1 | $2.8 | ($2.3) | (71.0) | (39.8) |
| RT56 | Kansas City-St Louis | $9.3 | $2.9 | $4.2 | $7.0 | $2.3 | $3.0 | $10.1 | ($0.7) | (3.2) | (1.1) |
| RT57 | Pennsylvanian | $7.7 | $2.1 | $3.7 | $5.8 | $1.9 | $5.9 | $11.7 | ($4.0) | (8.9) | (5.8) |
| RT65 | Pere Marquette | $6.7 | $1.1 | $1.9 | $3.0 | $3.6 | $2.3 | $5.3 | $1.4 | 9.2 | 5.5 |
| RT66 | Carolinian | $17.2 | $3.9 | $6.4 | $10.3 | $6.9 | $7.0 | $17.3 | ($0.0) | (0.0) | (0.0) |
| RT67 | Piedmont | $2.3 | $0.8 | $0.3 | $1.2 | $1.2 | $1.4 | $2.6 | ($0.2) | (3.4) | (1.7) |
| RT92 | Central Unknown (Crew Labor) | $0.0 | $0.3 | $0.0 | $0.3 | ($0.3) | $0.0 | $0.3 | ($0.3) | — | — |
| RT98 | Crew Labor | $0.0 | $0.1 | $0.0 | $0.1 | ($0.1) | $0.0 | $0.1 | ($0.1) | — | — |
| RT96 | Non NEC Special Trains | $5.4 | $0.8 | $2.1 | $2.9 | $2.4 | $0.5 | $3.5 | $1.9 | 7.7 | 7.9 |
| | State Supported Rt Buses | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | — | — |
| | Total | $453.4 | $105.6 | $240.2 | $345.8 | $107.6 | $212.6 | $558.4 | ($105.0) | (7.3) | (3.0) |

| Long Distance Trains<br>Route Number | Train Name | Total Revenue | Direct Labor | Other Direct Costs | Total Avoidable Costs | Contribution / (Loss) after Avoidable Costs | Total Shared Costs | Total Attributed Costs | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RT16 | Silver Star | $29.1 | $18.1 | $27.1 | $45.2 | ($16.1) | $24.4 | $69.6 | ($40.5) | (21.7) | (11.9) |
| RT17 | Three Rivers | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | — | — |
| RT18 | Cardinal | $6.7 | $4.8 | $7.5 | $12.3 | ($5.6) | $6.8 | $19.1 | ($12.5) | (32.1) | (16.5) |
| RT19 | Silver Meteor | $29.4 | $16.3 | $24.6 | $40.9 | ($11.5) | $22.8 | $63.8 | ($34.3) | (19.4) | (11.2) |
| RT25 | Empire Builder | $53.9 | $26.8 | $37.3 | $64.1 | ($10.3) | $25.2 | $89.3 | ($35.5) | (9.5) | (5.6) |
| RT26 | Capitol Limited | $17.4 | $9.5 | $14.4 | $23.9 | ($6.5) | $16.0 | $39.8 | ($22.5) | (22.0) | (14.1) |
| RT27 | California Zephyr | $40.7 | $27.2 | $40.4 | $67.5 | ($26.8) | $23.4 | $91.0 | ($50.3) | (18.8) | (9.5) |
| RT28 | Southwest Chief | $40.2 | $20.7 | $47.0 | $67.7 | ($27.5) | $25.9 | $93.6 | ($53.3) | (18.3) | (11.5) |
| RT20 | City of New Orleans | $14.1 | $7.6 | $14.5 | $22.2 | ($8.0) | $9.1 | $31.3 | ($17.1) | (21.1) | (10.4) |
| RT32 | Texas Eagle | $19.4 | $14.0 | $21.9 | $35.8 | ($16.5) | $12.3 | $48.2 | ($28.8) | (20.9) | (10.3) |
| RT33 | Sunset Limited | $6.4 | $12.1 | $13.4 | $25.6 | ($19.1) | $8.2 | $33.8 | ($27.3) | (57.2) | (25.6) |
| RT34 | Coast Starlight | $31.8 | $23.9 | $32.3 | $56.1 | ($24.3) | $19.7 | $75.9 | ($44.1) | (22.1) | (12.5) |
| RT45 | Lake Shore Limited | $24.6 | $13.5 | $21.5 | $35.0 | ($10.4) | $26.8 | $61.9 | ($37.2) | (24.7) | (15.7) |
| RT48 | Palmetto | $12.5 | $5.2 | $9.4 | $14.7 | ($2.2) | $9.0 | $23.7 | ($11.2) | (17.2) | (7.6) |
| RT52 | Crescent | $26.5 | $15.3 | $25.6 | $40.8 | ($14.4) | $22.1 | $62.9 | ($36.4) | (26.9) | (13.2) |
| RT63 | Auto Train | $50.1 | $16.7 | $28.4 | $45.1 | $5.0 | $17.2 | $62.3 | ($12.2) | (6.8) | (3.6) |
| | Total | $402.7 | $231.9 | $365.0 | $596.9 | ($194.2) | $269.0 | $866.0 | ($463.2) | (19.1) | (10.5) |

| | Total Revenue | Direct Labor | Other Direct Costs | Total Avoidable Costs | Contribution / (Loss) after Avoidable Costs | Total Shared Costs | Total Attributed Costs | Contribution / (Loss) (Exclude Dep & Int) | Contribution / (Loss) per Pass Mile (cents) | Contribution / (Loss) per Seat Mile (cents) |
|---|---|---|---|---|---|---|---|---|---|---|
| Total All Trains | $1,650.8 | $411.0 | $831.7 | $1,242.6 | $408.2 | $766.6 | $2,009.3 | ($358.4) | (6.8) | (3.2) |

**Reconciling Items between SBL and Consolidated Statement of Operations**

| | Revenue | Expense | Net |
|---|---|---|---|
| Total National Train System | $1,650.8 | $2,009.3 | ($358.4) |
| Infrastructure Management | $186.4 | $244.5 | ($58.1) |
| Ancillary Businesses | $265.9 | $181.4 | $84.5 |
| Unallocated System | $2.4 | $200.6 | ($198.4) |
| Eliminations | ($97.6) | ($97.6) | $0.0 |
| Operating Results | $2,009.5 | $2,536.4 | ($526.9) |
| Interest Expense, Net | $0.0 | $105.1 | ($105.1) |
| Depreciation | $0.0 | $467.1 | ($467.1) |
| Federal and State Capital Payments | $33.0 | $0.0 | $33.0 |
| Net (Income) Loss from Discont Ops | $0.0 | $0.0 | $0.0 |
| **Net Results** | $2,042.6 | $3,110.6 | ($1,068.0) |

Notes:

- Prior year data may not match previously published reports at the individual route level. FY07 Route Structure reflects Strategic Business Line format.
- Direct Labor represents T&E and OBS wages, benefits and support
- Other Direct Costs include Host Railroad MofW and Performance Incentives, Fuel and Power, Car and Locomotive maint. and Turnaround Costs, Commissions, Reservations, Call Centers, Psgr Inconvenience, and Route Stations.
- Total Avoidable Costs equals Direct Labor plus Other Direct Costs.
- Shared Costs include Shared Stations, MoE Supervision and Training, Yard Ops, Marketing and Distribution, Insurance, Terminal Payments, Procurement/Purchasing, Police/Environmental and Safety, T&E Overhead, IT & Infrastructure, and System Costs.
- Total Attributed Costs equals Total Avoidable Costs plus Shared Costs.

## FY06

| | Ridership | | | | | Ticket Revenue | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | % change vs. | | | | | % change vs. | |
| ***NEC Spine*** | FY06 | FY05 | Budget | FY05 | Budget | FY06 | FY05 | Budget | FY05 | Budget |
| 1/2 - Acela/Metroliner | 2,668,174 | 2,452,902 | 2,623,801 | +8.8 | +1.7 | $328,215,839 | $276,211,184 | $350,364,221 | +18.8 | -6.3 |
| 5 - Regionals* | 6,755,085 | 7,115,698 | 6,691,576 | -5.1 | +2.5 | $396,149,944 | $368,675,501 | $363,106,766 | +7.5 | +9.1 |
| 99 - Special trains | 8,020 | 17,580 | 6,725 | -54.4 | +19.3 | $1,067,843 | $1,219,518 | $1,055,000 | -12.4 | +1.2 |
| **Subtotal** | **9,431,279** | **9,586,180** | **9,222,102** | **-1.6** | **+2.3** | **$725,433,626** | **$646,106,203** | **$714,525,987** | **+12.3** | **+1.5** |
| ***State Supported and Other Short Distance Corridors*** | | | | | | | | | | |
| 3 - Ethan Allen | 42,763 | 37,371 | 38,299 | +14.4 | +11.7 | $2,024,865 | $1,694,530 | $1,858,757 | +19.5 | +8.9 |
| 4 - Vermonter | 54,273 | 49,864 | 50,604 | +8.8 | +7.3 | $2,947,174 | $2,842,230 | $3,062,612 | +3.7 | -3.8 |
| 7 - Albany-Niagara Falls-Toronto | 298,159 | 272,665 | 275,988 | +9.3 | +8.0 | $15,943,468 | $14,034,392 | $14,759,723 | +13.6 | +8.0 |
| 9 - Downeaster | 337,921 | 274,966 | 267,085 | +22.9 | +26.5 | $4,559,208 | $3,585,128 | $3,761,373 | +27.2 | +21.2 |
| 12 - New Haven-Springfield | 318,066 | 319,373 | 300,396 | -0.4 | +5.9 | $7,830,307 | $6,412,231 | $6,694,441 | +22.1 | +17.0 |
| 14 - Keystone | 823,097 | 730,360 | 723,728 | +12.7 | +13.7 | $15,860,374 | $13,746,943 | $14,344,142 | +15.4 | +10.6 |
| 15 - Empire (NYP-ALB) | 918,241 | 928,058 | 865,649 | -1.1 | +6.1 | $34,683,321 | $32,639,335 | $34,306,053 | +6.3 | +1.1 |
| 20 - Chicago-St. Louis | 262,320 | 242,144 | 231,362 | +8.3 | +13.4 | $6,183,734 | $5,353,840 | $5,474,793 | +15.5 | +12.9 |
| 21 - Hiawatha | 580,333 | 525,239 | 512,671 | +10.5 | +13.2 | $9,590,387 | $8,409,534 | $8,828,466 | +14.0 | +8.6 |
| 22 - Wolverine | 438,529 | 406,499 | 398,496 | +7.9 | +10.0 | $14,352,124 | $11,751,120 | $12,524,971 | +22.1 | +14.6 |
| 23 - Illini | 136,640 | 127,808 | 121,371 | +6.9 | +12.6 | $4,097,292 | $3,422,753 | $3,521,253 | +19.7 | +16.4 |
| 24 - Illinois Zephyr | 119,719 | 118,493 | 112,792 | +1.0 | +6.1 | $3,037,149 | $2,716,432 | $2,797,287 | +11.8 | +8.6 |
| 29 - Heartland Flyer | 64,078 | 66,968 | 63,979 | -4.3 | +0.2 | $1,174,234 | $1,187,567 | $1,214,424 | -1.1 | -3.3 |
| 35 - Pacific Surfliner | 2,657,773 | 2,520,444 | 2,591,416 | +5.4 | +2.6 | $43,068,554 | $37,043,513 | $39,608,787 | +16.3 | +8.7 |
| 36 - Cascades | 627,664 | 623,255 | 613,034 | +0.7 | +2.4 | $16,524,315 | $15,168,349 | $15,462,087 | +8.9 | +6.9 |
| 37 - Capitols | 1,263,504 | 1,260,249 | 1,282,156 | +0.3 | -1.5 | $14,941,005 | $14,122,233 | $14,621,235 | +5.8 | +2.2 |
| 39 - San Joaquins | 799,879 | 755,851 | 753,034 | +5.8 | +6.2 | $24,502,495 | $21,311,205 | $21,973,551 | +15.0 | +11.5 |
| 40 - Adirondack | 94,021 | 86,744 | 85,247 | +8.4 | +10.3 | $4,443,126 | $3,960,271 | $4,189,678 | +12.2 | +6.0 |
| 41 - Blue Water | 123,823 | 111,630 | 108,000 | +10.9 | +14.7 | $3,356,033 | $2,757,061 | $2,869,247 | +21.7 | +17.0 |
| 47 - Washington-Newport News | 401,361 | 438,115 | 436,446 | -8.4 | -8.0 | $21,145,321 | $20,825,464 | $22,585,522 | +1.5 | -6.4 |
| 54 - Hoosier State | 20,096 | 20,191 | 19,743 | -0.5 | +1.8 | $393,595 | $346,255 | $355,154 | +13.7 | +10.8 |
| 56 - Kansas City-St. Louis | 119,257 | 136,701 | 133,407 | -12.8 | -10.6 | $2,721,764 | $3,112,244 | $3,243,053 | -12.5 | -16.1 |
| 57 - Pennsylvanian | 184,049 | 189,345 | 176,523 | -2.8 | +4.3 | $7,036,861 | $7,756,672 | $6,826,310 | -9.3 | +3.1 |
| 65 - Pere Marquette | 101,932 | 96,471 | 95,518 | +5.7 | +6.7 | $2,573,414 | $2,144,443 | $2,284,395 | +20.0 | +12.7 |
| 66 - Carolinian | 243,434 | 219,418 | 243,764 | +10.9 | -0.1 | $13,498,981 | $10,630,083 | $12,576,351 | +27.0 | +7.3 |
| 67 - Piedmont | 53,846 | 45,851 | 44,749 | +17.4 | +20.3 | $804,482 | $625,407 | $649,073 | +28.6 | +23.9 |
| 74-81 - Buses | - | - | - | - | - | $4,580,194 | $4,088,575 | $4,158,202 | +12.0 | +10.1 |
| 96 - Special Trains | 59,652 | 59,865 | 16,800 | -0.4 | +255.1 | $5,943,512 | $5,457,397 | $3,055,000 | +8.9 | +94.6 |
| **Subtotal** | **11,144,430** | **10,663,938** | **10,562,261** | **+4.5** | **+5.5** | **$287,817,288** | **$257,145,207** | **$267,605,940** | **+11.9** | **+7.6** |
| ***Long Distance*** | | | | | | | | | | |
| 16 - Silver Star | 311,509 | 295,709 | 332,357 | +5.3 | -6.3 | $25,080,837 | $22,410,663 | $28,088,850 | +11.9 | -10.7 |
| 18 - Cardinal | 95,076 | 90,542 | 88,311 | +5.0 | +7.7 | $5,552,736 | $4,788,362 | $4,987,269 | +16.0 | +11.3 |
| 19 - Silver Meteor | 272,879 | 288,457 | 285,370 | -5.4 | -4.4 | $25,972,938 | $25,127,911 | $25,401,714 | +3.4 | +2.2 |
| 25 - Empire Builder | 497,020 | 476,531 | 477,662 | +4.3 | +4.1 | $48,695,783 | $42,131,741 | $46,099,462 | +15.6 | +5.6 |
| 26 - Capitol Ltd. | 198,044 | 195,051 | 209,866 | +1.5 | -5.6 | $14,638,855 | $13,093,077 | $14,373,355 | +11.8 | +1.8 |
| 27 - California Zephyr | 335,443 | 347,856 | 363,565 | -3.6 | -7.7 | $35,111,789 | $33,196,514 | $36,181,090 | +5.8 | -3.0 |
| 28 - Southwest Chief | 300,416 | 295,515 | 303,335 | +1.7 | -1.0 | $35,616,121 | $32,473,666 | $34,879,784 | +9.7 | +2.1 |
| 30 - City of New Orleans | 175,237 | 183,237 | 184,446 | -4.4 | -5.0 | $12,487,624 | $11,869,134 | $12,891,017 | +5.2 | -3.1 |
| 32 - Texas Eagle | 232,654 | 239,278 | 232,708 | -2.8 | -0.0 | $16,839,655 | $15,978,146 | $16,752,514 | +5.4 | +0.5 |
| 33 - Sunset Ltd. | 51,860 | 81,348 | 84,238 | -36.2 | -38.4 | $5,282,241 | $9,375,374 | $9,986,800 | -43.7 | -47.1 |
| 34 - Coast Starlight | 331,939 | 372,304 | 372,023 | -10.8 | -10.8 | $27,740,039 | $27,386,338 | $29,106,861 | +1.3 | -4.7 |
| 45 - Lake Shore Ltd. | 323,480 | 312,779 | 296,193 | +3.4 | +9.2 | $21,840,125 | $20,048,928 | $21,237,170 | +8.9 | +2.8 |
| 48 - Palmetto | 146,083 | 134,669 | 120,325 | +8.5 | +21.4 | $10,805,478 | $8,664,475 | $8,984,036 | +24.7 | +20.3 |
| 52 - Crescent | 252,072 | 263,080 | 258,979 | -4.2 | -2.7 | $23,005,056 | $22,355,583 | $23,405,535 | +2.9 | -1.7 |
| 63 - Auto Train | 207,544 | 204,698 | 206,390 | +1.4 | +0.6 | $49,351,664 | $47,045,471 | $49,113,563 | +4.9 | +0.5 |
| **Subtotal** | **3,731,256** | **3,781,052** | **3,815,747** | **-1.3** | **-2.2** | **$358,020,941** | **$335,945,403** | **$361,489,019** | **+6.6** | **-1.0** |
| **Amtrak Total** | **24,306,965** | **24,031,170** | **23,600,110** | **+1.1** | **+3.0** | **$1,371,271,855** | **$1,239,196,813** | **$1,343,620,946** | **+10.7** | **+2.1** |

Reconciling items to Operating Income Statement:

| | FY06 | FY05 | Budget |
|---|---|---|---|
| Food and Beverage Credit | (30,509,232) | (32,139,709) | (32,886,187) |
| Other Passenger Revenue | 3,224,349 | 4,110,466 | 2,700,000 |
| Guest Rewards | (1,945,972) | (6,451,098) | (8,927,510) |
| Private Car Movements | 1,653,940 | 1,812,112 | 999,600 |
| Adjustment for Deferred Revenue | 2,001,528 | 0 | 0 |
| Adjustment for Clockers | 605,062 | 9,554,622 | 0 |
| Net Ticket Revenue per Operating Statement | $1,346,301,530 | $1,216,083,206 | $1,305,506,849 |

Notes: - Data reflects new route definitions for FY06.
- FY06 ridership and ticket revenues reflect deferred ridership of [illegible] and deferred ticket revenues of [illegible]
* Regionals excludes MIT reimbursable ridership & ticket revenues in both FY05 and FY06.

A - 3.3

## National Railroad Passenger Corporation (Amtrak)

**Financial Performance of Routes - Strategic Business Line (SBL) format**

**September 2005 YTD**

**Route Performance Results Exclude Federal Support for Operations, Unallocated System costs and Capital Charges**

All numbers are in $ millions except Passenger Mile and Seat Mile Calculations

| **Northeast Corridor Trains** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Route Number** | **Train Name** | **Total Revenue** | **Direct Labor** | **Other Direct Costs** | **Total Avoidable Costs** | **Contribution / (Loss) after Avoidable Costs** | **Total Shared Costs** | **Total Attributed Costs** | **Contribution / (Loss) (Exclude Dep & Int)** | **Contribution / (Loss) per Pass Mile (cents)** | **Contribution / (Loss) per Seat Mile (cents)** |
| RT01/02 | Acela/Metroliner | $290.2 | $23.5 | $56.1 | $79.6 | $210.6 | $77.4 | $157.0 | $133.2 | 31.6 | 15.1 |
| RT05 | Regional | $403.4 | $50.1 | $100.7 | $150.7 | $252.7 | $161.1 | $311.8 | $91.6 | 8.8 | 3.8 |
| RT91 | NEC Unknown (Crew Labor) | ($0.1) | $0.4 | $0.0 | $0.4 | ($0.5) | $0.0 | $0.4 | ($0.5) | — | — |
| RT08/98/99 | NEC Special Trains | $3.3 | $0.2 | $0.5 | $0.7 | $2.6 | $0.1 | $0.9 | $2.4 | — | — |
| RT70 | NEC Bus Route | $0.4 | $0.0 | $0.0 | $0.0 | $0.4 | $0.0 | $0.0 | $0.4 | — | — |
| | Total | $697.2 | $74.3 | $157.2 | $231.5 | $465.7 | $238.6 | $470.1 | $227.1 | 15.5 | 6.9 |

| **State Supported and Other Short Distance Corridor Trains** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Route Number** | **Train Name** | **Total Revenue** | **Direct Labor** | **Other Direct Costs** | **Total Avoidable Costs** | **Contribution / (Loss) after Avoidable Costs** | **Total Shared Costs** | **Total Attributed Costs** | **Contribution / (Loss) (Exclude Dep & Int)** | **Contribution / (Loss) per Pass Mile (cents)** | **Contribution / (Loss) per Seat Mile (cents)** |
| RT03 | Ethan Allen Express | $2.5 | $0.7 | $1.4 | $2.1 | $0.5 | $1.0 | $3.1 | ($0.5) | (7.0) | (2.2) |
| RT04 | Vermonter | $5.2 | $1.5 | $2.4 | $3.9 | $1.3 | $1.4 | $5.3 | ($0.1) | (0.5) | (0.1) |
| RT07 | Albany-Niagara Falls-Toronto | $14.8 | $5.3 | $8.4 | $13.7 | $1.2 | $8.6 | $22.3 | ($7.4) | (9.0) | (3.3) |
| RT09 | The Downeaster | $7.8 | $1.8 | $3.5 | $5.3 | $2.5 | $2.0 | $7.3 | $0.5 | 2.0 | 0.6 |
| RT12 | New Haven - Springfield | $5.9 | $3.4 | $8.9 | $12.3 | ($6.4) | $8.7 | $21.1 | ($15.2) | (64.3) | (19.3) |
| RT14 | Keystone Service | $25.4 | $5.3 | $10.4 | $15.7 | $9.7 | $17.0 | $32.7 | ($7.3) | (11.1) | (5.1) |
| RT15 | Empire Service | $34.3 | $9.2 | $19.5 | $28.7 | $5.6 | $18.9 | $47.6 | ($13.3) | (11.7) | (3.6) |
| RT20 | Chicago-St.Louis | $10.1 | $2.5 | $6.0 | $8.4 | $1.6 | $6.7 | $15.1 | ($5.0) | (11.3) | (5.4) |
| RT21 | Hiawathas | $17.6 | $3.1 | $5.7 | $8.8 | $8.8 | $13.5 | $22.3 | ($4.7) | (11.0) | (4.0) |
| RT22 | Wolverines | $14.0 | $4.9 | $10.0 | $15.0 | ($0.9) | $11.6 | $26.5 | ($12.5) | (14.2) | (7.2) |
| RT23 | Illini | $7.7 | $1.3 | $3.2 | $4.5 | $3.2 | $3.8 | $8.3 | ($0.7) | (2.5) | (1.3) |
| RT24 | Illinois Zephyr | $6.8 | $1.3 | $2.4 | $3.7 | $3.1 | $3.0 | $6.7 | $0.1 | 0.5 | 0.2 |
| RT29 | Heartland Flyer | $4.9 | $1.2 | $2.4 | $3.5 | $1.3 | $1.1 | $4.6 | $0.3 | 2.4 | 0.9 |
| RT35 | Pacific Surfliner | $60.9 | $13.6 | $33.8 | $47.3 | $13.6 | $24.8 | $72.0 | ($11.1) | (5.5) | (1.8) |
| RT36 | Cascades | $32.3 | $8.2 | $15.5 | $23.7 | $8.6 | $12.0 | $35.9 | ($3.4) | (3.8) | (1.7) |
| RT37 | Capitols | $34.7 | $9.1 | $18.8 | $27.9 | $6.8 | $12.9 | $40.8 | ($6.1) | (7.1) | (2.0) |
| RT39 | San Joaquins | $44.6 | $10.5 | $31.6 | $42.1 | $2.5 | $10.8 | $52.9 | ($8.3) | (7.2) | (2.4) |
| RT40 | Adirondack | $8.7 | $1.9 | $4.0 | $5.8 | $2.9 | $2.1 | $7.9 | $0.8 | 3.3 | 2.0 |
| RT41 | Blue Water | $7.0 | $1.6 | $3.1 | $4.7 | $2.3 | $3.2 | $8.0 | ($0.9) | (4.2) | (1.9) |
| RT47 | Washington-Newport News | $22.0 | $3.9 | $8.2 | $12.2 | $9.8 | $8.5 | $20.7 | $1.3 | 1.5 | 0.8 |
| RT54 | Hoosier State | $0.4 | $0.5 | $1.0 | $1.5 | ($1.0) | $1.1 | $2.6 | ($2.2) | (65.1) | (27.1) |
| RT56 | Kansas City-St.Louis | $9.6 | $2.8 | $4.5 | $7.3 | $2.2 | $2.9 | $10.2 | ($0.7) | (2.4) | (0.9) |
| RT57 | Pennsylvanian | $5.7 | $1.7 | $2.4 | $4.1 | $1.6 | $4.5 | $8.7 | ($3.0) | (9.7) | (5.2) |
| RT65 | Pere Marquette | $6.2 | $1.2 | $1.7 | $3.0 | $3.3 | $2.4 | $5.4 | $0.8 | 5.7 | 3.4 |
| RT66 | Carolinian | $13.4 | $3.6 | $5.2 | $8.7 | $4.7 | $5.9 | $14.6 | ($1.2) | (1.7) | (0.8) |
| RT67 | Piedmont | $2.2 | $0.8 | $0.3 | $1.1 | $1.1 | $1.2 | $2.3 | ($0.1) | (2.0) | (0.8) |
| RT92 | Central Unknown (Crew Labor) | ($0.1) | $0.5 | $0.0 | $0.5 | ($0.5) | ($0.0) | $0.5 | ($0.5) | — | — |
| RT98 | Crew Labor | $0.0 | $0.2 | $0.0 | $0.2 | ($0.2) | $0.0 | $0.2 | ($0.2) | — | — |
| RT96 | Non NEC Special Trains | $7.7 | $0.9 | $1.8 | $2.7 | $4.9 | $0.5 | $3.3 | $4.4 | 16.5 | 9.3 |
| | State Supported Rt Buses | $11.5 | $0.0 | $0.0 | $0.0 | $11.5 | $0.0 | $0.0 | $11.5 | — | — |
| | Total | $424.0 | $102.5 | $216.2 | $318.6 | $105.4 | $190.0 | $508.6 | ($84.6) | (6.2) | (2.4) |

| **Long Distance Trains** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Route Number** | **Train Name** | **Total Revenue** | **Direct Labor** | **Other Direct Costs** | **Total Avoidable Costs** | **Contribution / (Loss) after Avoidable Costs** | **Total Shared Costs** | **Total Attributed Costs** | **Contribution / (Loss) (Exclude Dep & Int)** | **Contribution / (Loss) per Pass Mile (cents)** | **Contribution / (Loss) per Seat Mile (cents)** |
| RT16 | Silver Star | $25.2 | $17.9 | $25.7 | $43.6 | ($18.5) | $21.2 | $64.9 | ($39.7) | (21.6) | (11.9) |
| RT17 | Three Rivers | $3.9 | $3.0 | $4.0 | $7.0 | ($3.1) | $5.8 | $12.8 | ($8.8) | (30.1) | (12.9) |
| RT18 | Cardinal | $5.8 | $5.0 | $6.9 | $11.9 | ($6.2) | $2.7 | $14.7 | ($8.9) | (23.7) | (11.9) |
| RT19 | Silver Meteor | $27.8 | $15.8 | $23.8 | $39.6 | ($11.8) | $20.9 | $60.5 | ($32.7) | (17.6) | (10.7) |
| RT25 | Empire Builder | $46.3 | $25.3 | $36.6 | $62.0 | ($15.7) | $23.2 | $85.1 | ($38.9) | (10.6) | (6.2) |
| RT26 | Capitol Limited | $14.9 | $9.4 | $13.2 | $22.6 | ($7.7) | $15.2 | $37.9 | ($22.9) | (28.8) | (15.0) |
| RT27 | California Zephyr | $37.2 | $26.3 | $36.6 | $62.9 | ($25.7) | $22.2 | $85.0 | ($47.9) | (17.3) | (9.5) |
| RT28 | Southwest Chief | $36.3 | $21.5 | $41.2 | $62.7 | ($26.4) | $25.0 | $87.6 | ($51.4) | (17.4) | (10.9) |
| RT30 | City of New Orleans | $13.4 | $8.0 | $14.9 | $22.9 | ($9.5) | $10.1 | $32.9 | ($19.5) | (22.8) | (11.6) |
| RT32 | Texas Eagle | $18.2 | $13.7 | $19.6 | $33.4 | ($15.2) | $12.3 | $45.8 | ($27.5) | (18.7) | (9.4) |
| RT33 | Sunset Limited | $10.8 | $15.9 | $15.0 | $30.9 | ($20.2) | $10.8 | $41.7 | ($30.9) | (34.6) | (20.4) |
| RT34 | Coast Starlight | $30.8 | $22.0 | $27.5 | $49.5 | ($18.8) | $17.6 | $67.1 | ($36.3) | (17.0) | (10.5) |
| RT45 | Lake Shore Limited | $22.3 | $12.9 | $19.1 | $32.0 | ($9.7) | $23.9 | $55.9 | ($33.6) | (21.6) | (13.9) |
| RT48 | Palmetto | $10.1 | $5.6 | $9.5 | $14.1 | ($4.0) | $9.9 | $24.0 | ($14.0) | (24.4) | (9.1) |
| RT52 | Crescent | $25.1 | $14.5 | $23.0 | $37.5 | ($12.4) | $20.1 | $57.6 | ($32.5) | (23.0) | (11.5) |
| RT63 | Auto Train | $47.2 | $15.0 | $26.8 | $41.8 | $5.4 | $15.1 | $56.9 | ($9.7) | (5.5) | (3.1) |
| | Total | $375.1 | $231.8 | $342.6 | $574.4 | ($199.3) | $255.9 | $830.4 | ($455.3) | (18.0) | (10.2) |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Total All Trains | $1,496.4 | $408.6 | $716.0 | $1,124.6 | $371.8 | $684.5 | $1,809.1 | ($312.7) | (5.8) | (2.6) |

**Reconciling Items between SBL and Consolidated Statement of Operations**

| | Revenue | Expense | Net |
|---|---|---|---|
| Total National Train System | $1,496.4 | $1,809.1 | ($312.7) |
| Infrastructure Management | $123.4 | $237.5 | ($114.2) |
| Ancillary Businesses | $263.6 | $177.8 | $85.8 |
| Unallocated System | $6.7 | $174.6 | ($167.8) |
| Eliminations | ($35.1) | ($35.1) | $0.0 |
| Operating Results | $1,657.6 | $2,163.9 | ($506.3) |
| Interest Expense, Net | $0.0 | $125.0 | ($124.7) |
| Depreciation | $0.0 | ($576.3) | ($576.3) |
| Federal and State Capital Payments | $28.7 | $0.0 | $28.7 |
| Net (Income) Loss from Discont Ops | $0.0 | ($13.6) | ($13.6) |
| **Net Results** | $1,686.3 | $1,890.9 | ($1,192.3) |

Notes
- Prior year data may not match previously published reports at the individual route level. FY06 Route Structure reflects Strategic Business Line format.
- Direct Labor represents T&E and OBS wages, benefits and support
- Other Direct Costs include Host Railroad MofW and Performance Incentives, Fuel and Power, Car and Locomotive maint. and Turnaround Costs, Commissions, Reservations, Call Centers, Psgr Inconvenience, and Route Stations
- Total Avoidable Costs equals Direct Labor plus Other Direct Costs
- Shared Costs include Shared Stations, MoE Supervision and Training, Yard Ops, Marketing and Distribution, Insurance, Terminal Payments, Procurement/Purchasing, Police/Environmental and Safety, T&E Overhead, NTC, Infrastructure, and System Costs.
- Total Attributed Costs equals Total Avoidable Costs plus Shared Costs

C - 2

## National Railroad Passenger Corporation

September YTD FY05 Revenue and Ridership Data

| Route | Train Name | Ridership FY05 | Ridership FY04 | Ridership Budget | Ridership % change vs. FY04 | Ridership % change vs. Budget | Ticket Revenue FY05 | Ticket Revenue FY04 | Ticket Revenue Budget | Ticket Revenue % change vs. FY04 | Ticket Revenue % change vs. Budget |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Northeast Corridor Trains** | | | | | | | | | | | |
| RT01 | Acela Express | 1,772,868 | 2,568,935 | 2,873,340 | (31.0) | (38.3) | $204,494,310 | $294,654,392 | $330,790,551 | (30.6) | (38.2) |
| RT02 | Metroliner | 680,034 | 397,608 | 284,445 | 71.0 | 139.1 | 71,716,874 | 41,123,945 | 28,515,658 | 74.4 | 151.5 |
| RT05A | Regional/Federal | 7,024,021 | 6,405,067 | 6,456,232 | 9.7 | 8.8 | 362,944,581 | 320,244,267 | 330,685,007 | 13.3 | 9.8 |
| RT13 | Clocker Service | 1,560,856 | 1,945,553 | 1,987,030 | (19.8) | (21.4) | 15,501,566 | 17,943,641 | 18,366,970 | (13.6) | (15.6) |
| | **Total** | **11,037,779** | **11,317,183** | **11,601,047** | **(2.5)** | **(4.9)** | **654,657,331** | **673,966,245** | **708,359,087** | **(2.9)** | **(7.6)** |
| **State Supported Trains** | | | | | | | | | | | |
| RT03 | Ethan Allen Express | 111,621 | 100,192 | 109,888 | 3.2 | 1.6 | 4,520,902 | 4,355,061 | 4,424,109 | 3.8 | 2.2 |
| RT04 | Vermonter | 264,082 | 252,238 | 255,247 | 4.7 | 3.5 | 14,827,947 | 13,538,514 | 13,707,987 | 9.5 | 8.2 |
| RT09 | The Downeaster | 274,966 | 250,028 | 249,286 | 10.0 | 10.3 | 3,585,128 | 3,458,080 | 3,447,761 | 3.7 | 4.0 |
| RT14 | Keystone Service | 1,068,572 | 901,170 | 943,270 | 18.6 | 13.3 | 25,511,265 | 19,861,096 | 21,067,693 | 28.4 | 21.1 |
| RT20 | Chicago-St.Louis | 242,144 | 212,999 | 215,106 | 13.7 | 12.6 | 5,353,840 | 4,399,823 | 4,452,950 | 21.7 | 20.2 |
| RT21 | Hiawathas | 525,239 | 460,430 | 490,847 | 14.1 | 7.0 | 8,409,534 | 7,567,323 | 8,092,903 | 11.1 | 3.9 |
| RT23 | Illini | 127,808 | 113,281 | 113,784 | 12.8 | 12.3 | 3,422,753 | 2,963,855 | 2,987,574 | 15.5 | 14.6 |
| RT24 | Illinois Zephyr | 118,493 | 108,856 | 110,198 | 8.9 | 7.5 | 2,716,432 | 2,405,535 | 2,442,739 | 12.9 | 11.2 |
| RT29 | Heartland Flyer | 66,968 | 54,403 | 54,827 | 23.1 | 22.1 | 1,187,567 | 900,980 | 905,093 | 31.8 | 31.2 |
| RT35 | Pacific Surfliner | 2,520,444 | 2,344,665 | 2,422,573 | 7.5 | 4.0 | 37,043,513 | 34,597,051 | 36,643,278 | 7.1 | 1.1 |
| RT36 | Cascades | 623,255 | 597,161 | 594,670 | 4.4 | 4.8 | 15,168,349 | 13,931,692 | 14,137,635 | 8.9 | 7.3 |
| RT37 | Capitols | 1,260,249 | 1,165,334 | 1,214,106 | 8.1 | 3.8 | 14,122,233 | 12,039,092 | 12,703,991 | 17.3 | 11.2 |
| RT39 | San Joaquins | 755,851 | 738,540 | 733,596 | 2.3 | 3.0 | 21,311,206 | 20,207,164 | 20,518,960 | 5.5 | 3.9 |
| RT40 | Adirondack | 126,165 | 132,700 | 134,424 | (5.7) | (6.9) | 5,441,106 | 5,800,720 | 5,890,662 | (6.2) | (7.6) |
| RT41 | Blue Water / International | 111,630 | 94,378 | 105,095 | 18.3 | 6.2 | 2,757,061 | 2,278,929 | 2,621,735 | 21.0 | 5.2 |
| RT56 | Kansas City-St.Louis | 136,701 | 128,084 | 128,339 | 6.7 | 6.5 | 3,112,244 | 2,952,478 | 2,976,666 | 5.4 | 4.5 |
| RT65 | Pere Marquette | 96,471 | 87,767 | 87,899 | 9.9 | 9.8 | 2,144,443 | 1,935,617 | 1,937,497 | 10.8 | 10.7 |
| RT66 | Carolinian | 275,057 | 305,016 | 324,582 | (9.8) | (15.3) | 12,921,311 | 14,951,318 | 16,169,084 | (13.6) | (20.1) |
| RT67 | Piedmont | 45,851 | 44,828 | 45,837 | 2.3 | 0.0 | 625,407 | 582,364 | 588,265 | 7.4 | 6.3 |
| | **Total** | **8,750,567** | **8,100,070** | **8,333,574** | **8.0** | **5.0** | **184,182,229** | **168,727,392** | **175,716,862** | **9.2** | **4.8** |
| **Other Short Distance Trains** | | | | | | | | | | | |
| RT15A | Empire Service | 1,088,052 | 1,093,965 | 1,112,262 | (0.5) | (2.2) | 42,366,520 | 42,986,927 | 43,781,245 | (1.4) | (3.2) |
| RT22 | Chicago-Detroit/Pntiac/Tol | 406,499 | 366,291 | 370,045 | 11.0 | 9.9 | 11,751,120 | 10,123,627 | 10,262,596 | 16.1 | 14.5 |
| RT54 | Hoosier State | 20,191 | 17,934 | 17,745 | 12.6 | 13.8 | 346,255 | 294,258 | 287,522 | 17.7 | 20.4 |
| RT17/57 | Pennsylvania/Three Rivers | 213,413 | 324,325 | 219,992 | (34.2) | (3.0) | 8,737,087 | 15,015,145 | 8,494,909 | (41.8) | 2.9 |
| | Bus Services | 0 | 0 | 0 | 0.0 | 0.0 | 4,088,575 | 4,102,915 | 6,453,019 | (0.3) | (36.6) |
| RT99A | Special Trains | 77,445 | 92,475 | 70,630 | (16.3) | 9.6 | 6,676,915 | 7,420,901 | 5,900,000 | (10.0) | 13.2 |
| | **Total** | **1,805,600** | **1,894,990** | **1,790,674** | **(4.7)** | **0.8** | **73,966,473** | **79,943,774** | **75,179,291** | **(7.5)** | **(1.6)** |
| **Long Distance Trains** | | | | | | | | | | | |
| RT16A | Silver Service | 718,835 | 738,241 | 827,501 | (2.6) | (13.1) | 56,203,048 | 58,864,380 | 67,056,762 | (4.5) | (16.2) |
| RT18 | Cardinal | 90,542 | 88,930 | 92,351 | 1.8 | (2.0) | 4,786,362 | 4,410,907 | 4,560,567 | 8.6 | 5.0 |
| RT25 | Empire Builder | 476,531 | 437,191 | 444,263 | 9.0 | 7.3 | 42,131,741 | 39,130,724 | 39,902,433 | 7.7 | 5.6 |
| RT26 | Capitol Limited | 195,051 | 180,810 | 246,200 | 7.9 | (20.8) | 13,093,077 | 11,854,926 | 14,172,985 | 10.4 | (7.6) |
| RT27 | California Zephyr | 347,856 | 335,764 | 345,378 | 3.6 | 0.7 | 33,196,514 | 31,387,097 | 32,091,387 | 5.8 | 3.4 |
| RT28 | Southwest Chief | 295,515 | 290,003 | 299,975 | 1.9 | (1.5) | 32,473,686 | 31,736,281 | 32,850,409 | 2.3 | (1.1) |
| RT30 | City of New Orleans | 183,237 | 190,017 | 196,746 | (3.6) | (6.9) | 11,869,134 | 11,990,465 | 12,329,227 | (1.0) | (3.7) |
| RT32 | Texas Eagle | 239,276 | 234,619 | 243,104 | 2.0 | (1.6) | 15,978,146 | 15,720,151 | 16,242,541 | 1.6 | (1.6) |
| RT33 | Sunset Limited | 81,348 | 96,426 | 96,316 | (15.6) | (15.5) | 9,375,374 | 11,108,632 | 11,403,481 | (15.6) | (17.8) |
| RT34 | Coast Starlight | 372,304 | 415,598 | 441,111 | (10.4) | (15.6) | 27,386,338 | 28,903,486 | 30,727,612 | (5.2) | (10.9) |
| RT45 | Lake Shore Limited | 312,779 | 279,662 | 296,048 | 11.8 | 5.7 | 20,048,928 | 19,587,525 | 20,931,353 | 2.4 | (4.2) |
| RT52 | Crescent | 263,080 | 256,577 | 265,214 | 2.5 | (0.8) | 22,355,583 | 22,255,825 | 23,082,617 | 0.4 | (3.2) |
| RT63 | Auto Train | 204,698 | 197,463 | 212,935 | 3.7 | (3.9) | 47,045,471 | 46,836,556 | 50,219,096 | 0.4 | (6.3) |
| | **Total** | **3,781,052** | **3,741,321** | **4,007,142** | **1.1** | **(5.6)** | **335,945,403** | **333,786,857** | **355,570,669** | **0.6** | **(5.5)** |
| **Grand Total** | | **25,374,998** | **25,053,564** | **25,732,437** | **1.3** | **(1.4)** | **$1,248,751,435** | **$1,256,424,267** | **$1,314,825,909** | **(0.6)** | **(5.0)** |

| | FY05 | FY04 | Budget |
|---|---|---|---|
| Reconciling items to Operating Income Statement: | | | |
| Food and Beverage Credit | (32,139,709) | (33,370,647) | (34,717,690) |
| Other Passenger Revenue | 3,079,945 | 11,492,400 | 3,790,420 |
| Guest Rewards | (7,967,108) | (5,172,187) | (7,013,781) |
| Private Car Movements | 1,612,112 | 1,377,678 | 500,000 |
| Net Ticket Revenue per Operating Statement | $1,213,536,675 | $1,230,751,511 | $1,277,384,858 |

Note: FY05 ridership and ticket revenues reflect deferred ridership of 470,446 and deferred ticket revenues of $24,500,127.

## Amtrak

### Financial Performance of Routes

### September 2005 YTD - Unaudited Results

**Route Performance Results Exclude Depreciation, Net Interest Expense and Discontinued Operations**

All numbers are in $ millions

| Northeast Corridor Trains Route Number | Train Name | Total Revenue | FRA Defined Costs | FRA Defined Contribution | Remaining Direct Costs | Total Non-Direct Costs (Exclude Dep, Int & Discont Ops) | Total Remaining Direct and Non-Direct Costs | Contribution / (Loss) (Exclude Dep, Int & Discont Ops) |
|---|---|---|---|---|---|---|---|---|
| RT01 | Acela Express | $206.8 | $63.1 | $143.7 | $53.5 | $39.3 | $92.8 | $51.0 |
| RT02 | Metroliner | $74.3 | $24.4 | $50.0 | $21.0 | $14.6 | $35.6 | $14.4 |
| RT05A | Regional/Federal | $371.5 | $162.6 | $208.9 | $133.5 | $102.1 | $235.6 | ($26.7) |
| RT13 | Clocker Service | $15.5 | $6.8 | $8.7 | $7.7 | $5.8 | $13.5 | ($4.8) |
| | Total | $668.1 | $256.9 | $411.3 | $215.7 | $161.7 | $377.5 | $33.8 |

| State Supported Trains Route Number | Train Name | Total Revenue | FRA Defined Costs | FRA Defined Contribution | Remaining Direct Costs | Total Non-Direct Costs (Exclude Dep, Int & Discont Ops) | Total Remaining Direct and Non-Direct Costs | Contribution / (Loss) (Exclude Dep, Int & Discont Ops) |
|---|---|---|---|---|---|---|---|---|
| RT03 | Ethan Allen Express | $5.3 | $4.6 | $0.7 | $2.5 | $1.3 | $3.8 | ($3.1) |
| RT04 | Vermonter | $17.1 | $9.5 | $7.6 | $5.3 | $4.4 | $9.7 | ($2.1) |
| RT09 | The Downeaster | $7.7 | $5.2 | $2.5 | $2.0 | $1.1 | $3.1 | ($0.6) |
| RT14 | Keystone Service | $31.7 | $21.1 | $10.7 | $20.0 | $16.8 | $36.9 | ($26.2) |
| RT20 | Chicago-St Louis | $9.4 | $8.5 | $1.0 | $4.5 | $2.2 | $6.7 | ($5.7) |
| RT21 | Hiawathas | $15.9 | $8.8 | $7.1 | $7.7 | $4.1 | $11.9 | ($4.8) |
| RT23 | Illini | $7.3 | $4.4 | $2.9 | $2.6 | $1.3 | $3.9 | ($1.0) |
| RT24 | Illinois Zephyr | $6.5 | $3.7 | $2.8 | $2.0 | $1.1 | $3.1 | ($0.2) |
| RT29 | Heartland Flyer | $4.8 | $3.5 | $1.3 | $0.9 | $0.7 | $1.6 | ($0.2) |
| RT35 | Pacific Surfliner | $62.0 | $47.5 | $14.5 | $21.6 | $12.5 | $34.1 | ($19.6) |
| RT36 | Cascades | $32.7 | $24.1 | $8.7 | $10.4 | $5.8 | $16.1 | ($7.4) |
| RT37 | Capitols | $35.9 | $27.8 | $8.1 | $11.4 | $6.0 | $17.4 | ($9.2) |
| RT39 | San Joaquins | $50.0 | $42.1 | $7.9 | $9.0 | $7.5 | $16.5 | ($8.6) |
| RT40 | Adirondack | $10.2 | $8.3 | $1.9 | $3.2 | $1.9 | $5.1 | ($3.2) |
| RT41 | Blue Water | $6.7 | $4.7 | $2.0 | $2.2 | $1.9 | $4.1 | ($2.1) |
| RT56 | Kansas City-St Louis | $9.5 | $7.4 | $2.1 | $2.3 | $1.5 | $3.9 | ($1.7) |
| RT65 | Pere Marquette | $5.9 | $3.0 | $3.0 | $1.4 | $0.8 | $2.2 | $0.7 |
| RT66 | Carolinian | $15.6 | $11.9 | $3.7 | $7.4 | $4.2 | $11.6 | ($7.9) |
| RT67 | Piedmont | $2.2 | $1.1 | $1.1 | $1.1 | $0.3 | $1.5 | ($0.4) |
| | Total | $336.7 | $247.3 | $89.5 | $117.6 | $75.1 | $192.7 | ($103.2) |

| Other Short Distance Trains Route Number | Train Name | Total Revenue | FRA Defined Costs | FRA Defined Contribution | Remaining Direct Costs | Total Non-Direct Costs (Exclude Dep, Int & Discont Ops) | Total Remaining Direct and Non-Direct Costs | Contribution / (Loss) (Exclude Dep, Int & Discont Ops) |
|---|---|---|---|---|---|---|---|---|
| RT15A | Empire/Maple Leaf | $44.1 | $37.2 | $6.9 | $24.8 | $12.4 | $37.2 | ($30.3) |
| RT22 | Wolverines | $12.9 | $15.0 | ($2.1) | $7.7 | $6.0 | $13.7 | ($15.8) |
| RT54 | Hoosier State | $0.3 | $1.5 | ($1.1) | $0.8 | $0.3 | $1.1 | ($2.2) |
| RT57A | Pennsylvanian/Three Rivers | $9.6 | $10.6 | ($1.0) | $7.3 | $5.1 | $12.3 | ($13.3) |
| RT91A | Other - Crew Labor | ($0.0) | $1.2 | ($1.2) | ($0.0) | $0.0 | ($0.0) | ($1.2) |
| RT99A | Special Trains | $6.8 | $3.5 | $3.3 | $0.6 | $0.2 | $0.7 | $2.5 |
| | Total | $73.6 | $69.0 | $4.6 | $41.0 | $24.0 | $64.9 | ($60.3) |

| Long Distance Trains Route Number | Train Name | Total Revenue | FRA Defined Costs | FRA Defined Contribution | Remaining Direct Costs | Total Non-Direct Costs (Exclude Dep, Int & Discont Ops) | Total Remaining Direct and Non-Direct Costs | Contribution / (Loss) (Exclude Dep, Int & Discont Ops) |
|---|---|---|---|---|---|---|---|---|
| RT16A | Silver Service | $60.9 | $97.5 | ($36.5) | $42.2 | $26.6 | $68.8 | ($105.3) |
| RT18 | Cardinal | $5.3 | $11.8 | ($6.5) | $4.4 | $2.8 | $7.2 | ($13.8) |
| RT25 | Empire Builder | $46.4 | $62.0 | ($15.6) | $16.8 | $12.6 | $29.4 | ($45.0) |
| RT26 | Capitol Limited | $14.3 | $22.6 | ($8.3) | $11.5 | $5.3 | $16.8 | ($25.1) |
| RT27 | California Zephyr | $36.7 | $63.0 | ($26.3) | $15.9 | $12.4 | $28.3 | ($54.6) |
| RT28 | Southwest Chief | $35.6 | $62.7 | ($27.1) | $18.0 | $13.7 | $31.7 | ($58.8) |
| RT30 | City of New Orleans | $12.8 | $22.7 | ($9.9) | $7.1 | $5.0 | $12.1 | ($22.1) |
| RT32 | Texas Eagle | $17.6 | $33.6 | ($15.9) | $8.5 | $6.5 | $15.0 | ($30.9) |
| RT33 | Sunset Limited | $10.8 | $30.9 | ($20.1) | $9.0 | $6.0 | $15.1 | ($35.2) |
| RT34 | Coast Starlight | $32.1 | $49.5 | ($17.3) | $14.8 | $9.8 | $24.6 | ($42.0) |
| RT45 | Lake Shore Limited | $21.6 | $32.1 | ($10.4) | $19.0 | $9.0 | $28.0 | ($38.4) |
| RT52 | Crescent | $24.0 | $37.6 | ($13.6) | $16.4 | $10.7 | $27.1 | ($40.8) |
| RT63 | Auto Train | $47.5 | $43.5 | $4.0 | $12.6 | $8.5 | $21.0 | ($17.1) |
| | Total | $365.6 | $569.6 | ($203.8) | $196.2 | $129.0 | $325.2 | ($529.0) |

| | Total All Trains | $1,444.3 | $1,142.7 | $301.6 | $570.5 | $389.8 | $960.3 | ($658.7) |
|---|---|---|---|---|---|---|---|---|

**Reconciling Items between RPS and Consolidated Statement of Operations**

| | Revenue | Expense | Net |
|---|---|---|---|
| Total All Trains | $1,444.3 | $2,103.0 | ($658.7) |
| Depreciation, Net | $0.0 | $560.2 | ($560.2) |
| Impairment | $0.0 | $0.0 | $0.0 |
| Adjustments Impacting Prior Year | $0.0 | $0.1 | ($0.1) |
| Federal and State Capital Payments | $28.7 | $0.0 | $28.7 |
| Non-Transportation and Other | $147.1 | $120.9 | $26.1 |
| Non-Core Amtrak Businesses | $263.6 | $177.8 | $85.8 |
| **Total Adjustments & Non-Core Businesses** | $439.4 | $859.0 | ($419.6) |
| Operating Results | $1,883.7 | $2,962.0 | ($1,078.3) |
| Interest, Net | $0.0 | $125.0 | ($125.0) |
| Net (Income) Loss from Discont Ops | $0.0 | $3.1 | ($3.1) |
| **FIS Net Results** | $1,383.7 | $3,090.0 | ($1,206.4) |

Notes:
- Pennsylvanian truncated in Pittsburgh with changed schedule
- Prior year data may not match previously published reports at the individual route level. This report reflects the FY 05 assignment of train segments to routes.
- FRA Defined Train Contribution / (Cost) represents train revenues less FRA allowable expenses. FRA allowable expenses include train costs, primarily train crews, food and beverage, fuel, railroad costs and commissions and certain shared costs, primarily equipment maintenance and reserves.
- Route level data from Amtrak's Route Profitability System (RPS). Remaining data is from Amtrak's Financial Information System (FIS).

C - 1

## Amtrak

### Financial Performance of Routes

### September 2004 YTD

Route Performance Results Exclude Depreciation, Net Interest Expense and Discontinued Operations

All numbers are in $ millions

| Northeast Corridor Trains<br>Route Number | Train Name | Total Revenue | FRA Defined Costs | FRA Defined Contribution | Remaining Direct Costs | Total Non-Direct Costs (Exclude Dep, Int & Discont Ops) | Total Remaining Direct and Non-Direct Costs | Contribution / (Loss) (Exclude Dep, Int & Discont Ops) |
|---|---|---|---|---|---|---|---|---|
| RT01 | Acela Express | $287.3 | $76.9 | $210.5 | $85.1 | $64.3 | $149.4 | $61.1 |
| RT02 | Metroliner | $47.4 | $14.5 | $33.0 | $13.6 | $12.0 | $25.6 | $7.4 |
| RT05A | Regional/Federal | $338.2 | $147.2 | $191.0 | $131.5 | $116.4 | $247.9 | ($56.9) |
| RT13 | Clocker Service | $17.9 | $6.9 | $11.0 | $8.5 | $7.4 | $16.0 | ($5.0) |
| | Total | $690.9 | $245.4 | $445.5 | $238.7 | $200.1 | $438.8 | $6.6 |

| State Supported Trains<br>Route Number | Train Name | Total Revenue | FRA Defined Costs | FRA Defined Contribution | Remaining Direct Costs | Total Non-Direct Costs (Exclude Dep, Int & Discont Ops) | Total Remaining Direct and Non-Direct Costs | Contribution / (Loss) (Exclude Dep, Int & Discont Ops) |
|---|---|---|---|---|---|---|---|---|
| RT03 | Ethan Allen Express | $5.0 | $4.3 | $0.8 | $2.5 | $1.3 | $3.8 | ($3.1) |
| RT04 | Vermonter | $15.6 | $8.3 | $7.4 | $5.6 | $4.8 | $10.5 | ($3.2) |
| RT09 | The Downeaster | $6.1 | $4.3 | $1.8 | $2.5 | $1.2 | $3.7 | ($1.9) |
| RT14 | Keystone Service | $26.2 | $15.9 | $10.3 | $15.8 | $13.3 | $29.1 | ($18.8) |
| RT20 | Chicago-St Louis | $9.0 | $7.8 | $1.2 | $4.8 | $2.4 | $7.2 | ($6.0) |
| RT21 | Hiawathas | $14.5 | $9.2 | $5.3 | $8.5 | $5.5 | $14.0 | ($8.7) |
| RT23 | Illini | $6.2 | $3.9 | $2.3 | $2.8 | $1.3 | $4.1 | ($1.8) |
| RT24 | Illinois Zephyr | $5.9 | $3.5 | $2.4 | $2.2 | $1.1 | $3.3 | ($0.9) |
| RT29 | Heartland Flyer | $4.5 | $3.3 | $1.2 | $1.0 | $0.6 | $1.6 | ($0.3) |
| RT35 | Pacific Surfliner | $59.2 | $43.4 | $15.8 | $22.8 | $10.8 | $33.6 | ($17.8) |
| RT36 | Cascades | $31.8 | $24.1 | $7.7 | $10.0 | $5.3 | $15.3 | ($7.6) |
| RT37 | Capitols | $34.0 | $25.2 | $8.8 | $10.8 | $5.7 | $16.5 | ($7.7) |
| RT39 | San Joaquins | $49.4 | $39.2 | $10.2 | $9.7 | $6.6 | $16.5 | ($6.3) |
| RT40 | Adirondack | $10.7 | $8.0 | $2.7 | $3.5 | $1.7 | $5.2 | ($2.5) |
| RT41 | Blue Water | $6.2 | $4.2 | $2.0 | $2.3 | $1.7 | $4.0 | ($2.0) |
| RT56 | Kansas City-St Louis | $9.4 | $6.6 | $2.8 | $2.6 | $1.3 | $3.9 | ($1.1) |
| RT65 | Pere Marquette | $5.7 | $2.4 | $3.3 | $1.7 | $0.9 | $2.6 | $0.7 |
| RT66 | Carolinian | $18.0 | $11.1 | $6.9 | $8.4 | $5.6 | $14.0 | ($7.1) |
| RT67 | Piedmont | $2.4 | $1.0 | $1.4 | $1.1 | $0.3 | $1.4 | ($0.0) |
| | Total | $319.8 | $225.6 | $94.2 | $118.6 | $71.8 | $190.4 | ($96.1) |

| Other Short Distance Trains<br>Route Number | Train Name | Total Revenue | FRA Defined Costs | FRA Defined Contribution | Remaining Direct Costs | Total Non-Direct Costs (Exclude Dep, Int & Discont Ops) | Total Remaining Direct and Non-Direct Costs | Contribution / (Loss) (Exclude Dep, Int & Discont Ops) |
|---|---|---|---|---|---|---|---|---|
| RT15A | Empire/Maple Leaf | $45.1 | $36.3 | $8.8 | $27.1 | $12.1 | $39.2 | ($30.4) |
| RT22 | Wolverines | $11.0 | $12.5 | ($1.5) | $8.6 | $6.1 | $14.7 | ($16.2) |
| RT54 | Hoosier State | $0.3 | $1.2 | ($0.9) | $0.8 | $0.3 | $1.1 | ($2.0) |
| RT57A | Pennsylvanian/Three Rivers | $27.6 | $28.4 | ($0.8) | $23.7 | $18.4 | $42.1 | ($42.9) |
| RT91A | Other - Crew Labor | ($0.0) | $3.6 | ($3.6) | $0.0 | $0.0 | $0.0 | ($3.6) |
| RT99A | Special Trains | $7.6 | $3.5 | $4.1 | $1.2 | $0.6 | $1.8 | $2.3 |
| | Total | $91.6 | $85.4 | $6.2 | $61.4 | $37.5 | $98.9 | ($92.7) |

| Long Distance Trains<br>Route Number | Train Name | Total Revenue | FRA Defined Costs | FRA Defined Contribution | Remaining Direct Costs | Total Non-Direct Costs (Exclude Dep, Int & Discont Ops) | Total Remaining Direct and Non-Direct Costs | Contribution / (Loss) (Exclude Dep, Int & Discont Ops) |
|---|---|---|---|---|---|---|---|---|
| RT16A | Silver Service | $73.5 | $87.6 | ($14.1) | $43.8 | $30.0 | $73.8 | ($87.9) |
| RT18 | Cardinal | $4.9 | $10.6 | ($5.7) | $4.0 | $2.6 | $6.6 | ($12.3) |
| RT25 | Empire Builder | $46.9 | $59.3 | ($12.4) | $19.6 | $13.1 | $32.7 | ($45.1) |
| RT26 | Capitol Limited | $16.7 | $21.6 | ($5.0) | $11.6 | $6.7 | $18.3 | ($23.3) |
| RT27 | California Zephyr | $40.5 | $57.7 | ($17.1) | $19.3 | $13.7 | $33.0 | ($50.1) |
| RT28 | Southwest Chief | $51.4 | $64.1 | ($12.7) | $28.8 | $22.2 | $50.9 | ($63.6) |
| RT30 | City of New Orleans | $13.2 | $20.9 | ($7.7) | $7.8 | $4.7 | $12.4 | ($20.1) |
| RT32 | Texas Eagle | $18.0 | $30.9 | ($12.9) | $9.6 | $5.4 | $15.0 | ($27.9) |
| RT33 | Sunset Limited | $12.6 | $27.4 | ($14.8) | $9.3 | $5.2 | $14.6 | ($29.3) |
| RT34 | Coast Starlight | $32.5 | $46.8 | ($14.2) | $16.1 | $9.6 | $24.7 | ($39.0) |
| RT45 | Lake Shore Limited | $24.2 | $29.2 | ($5.0) | $19.6 | $10.7 | $30.2 | ($35.2) |
| RT52 | Crescent | $26.1 | $34.3 | ($8.2) | $16.1 | $11.3 | $27.3 | ($35.6) |
| RT63 | Auto Train | $47.3 | $39.5 | $7.8 | $13.8 | $7.5 | $21.3 | ($13.5) |
| | Total | $407.8 | $529.7 | ($122.0) | $218.3 | $142.7 | $361.0 | ($483.0) |
| | Total All Trains | $1,510.1 | $1,086.2 | $424.0 | $636.9 | $452.2 | $1,089.1 | ($665.1) |

**Reconciling Items between RPS and Consolidated Statement of Operations**

| | Revenue | Expense | Net |
|---|---|---|---|
| Total All Trains | $1,510.1 | $2,175.3 | ($665.1) |
| Depreciation, Net | $0.0 | $551.4 | ($551.4) |
| Impairment | $0.0 | $0.0 | $0.0 |
| Adjustments Impacting Prior Year | $0.0 | ($26.0) | $26.0 |
| Federal and State Capital Payments | $21.8 | $0.0 | $21.8 |
| Non-Transportation and Other | $67.9 | $68.8 | ($0.9) |
| Non-Core Amtrak Businesses | $265.5 | $180.5 | $85.0 |
| **Total Adjustments & Non-Core Businesses** | $355.3 | $774.7 | ($419.4) |
| Operating Results | $1,865.4 | $2,950.0 | ($1,084.6) |
| Interest, Net | $0.0 | $129.6 | ($129.6) |
| Net (Income) Loss from Discont Ops | $0.0 | $94.7 | ($94.7) |
| **FIS Net Results** | $1,865.4 | $3,174.3 | ($1,308.9) |

Notes:
- Pennsylvanian truncated in Pittsburgh with changed schedule.
- Prior year data may not match previously published reports at the individual route level. This report reflects the FY05 assignment of train segments to routes.
- FRA Defined Train Contribution / (Cost) represents train revenues less FRA allowable expenses. FRA allowable expenses include train costs primarily train crews, food and beverage, fuel, railroad costs and commissions and certain shared costs, primarily equipment maintenance and reserves.
- Route-level data from Amtrak's Route Profitability System (RPS). Remaining data is from Amtrak's Financial Information System (FIS).

Preliminary and Unaudited

## National Railroad Passenger Corporation
### September YTD FY04 Revenue and Ridership Data

| Route | Train Name | Ridership FY04 | Ridership FY03 | Ridership Budget * | Ridership % change vs. FY03 | Ridership % change vs. Budget | Ticket Revenue FY04 | Ticket Revenue FY03 | Ticket Revenue Budget * | Ticket Revenue % change vs. FY03 | Ticket Revenue % change vs. Budget |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Northeast Corridor Trains** | | | | | | | | | | | |
| RT01 | Acela Express | 2,568,935 | 2,363,454 | 2,477,835 | 8.7 | 3.7 | $294,654,392 | $272,647,303 | $284,461,875 | 8.1 | 3.6 |
| RT02 | Metroliner | 397,608 | 573,431 | 604,704 | (30.7) | (34.2) | 41,123,945 | 59,840,505 | 64,461,463 | (31.3) | (36.2) |
| RT05A | Regional/Federal | 6,405,087 | 5,850,975 | 6,262,612 | 9.5 | 2.3 | 320,244,267 | 299,148,786 | 320,011,878 | 7.1 | 0.1 |
| RT13 | Clocker Service | 1,945,553 | 1,957,903 | 1,988,681 | (0.6) | (2.2) | 17,943,641 | 18,817,113 | 19,204,080 | (4.6) | (6.6) |
| | **Total** | **11,317,183** | **10,745,763** | **11,333,832** | **5.3** | **(0.1)** | **673,966,245** | **650,453,707** | **688,159,296** | **3.6** | **(2.1)** |
| **State Supported Trains** | | | | | | | | | | | |
| RT03 | Ethan Allen Express | 108,192 | 109,584 | 117,231 | (1.3) | (7.7) | 4,355,061 | 4,291,998 | 4,636,639 | 1.5 | (6.1) |
| RT04 | Vermonter | 252,238 | 260,102 | 274,169 | (3.0) | (8.0) | 13,538,514 | 13,335,582 | 14,041,752 | 1.5 | (3.6) |
| RT09 | The Downeaster | 250,028 | 254,030 | 266,769 | (1.6) | (6.3) | 3,458,080 | 3,745,786 | 3,910,562 | (7.7) | (11.6) |
| RT14 | Keystone Service | 901,170 | 886,003 | 899,216 | 1.7 | 0.2 | 19,861,096 | 20,678,274 | 21,017,884 | (4.0) | (5.5) |
| RT20 | Chicago-St.Louis | 212,999 | 195,599 | 206,292 | 8.9 | 3.3 | 4,399,823 | 3,867,131 | 4,034,634 | 13.8 | 9.1 |
| RT21 | Hiawathas | 460,430 | 417,366 | 433,323 | 10.3 | 6.3 | 7,567,323 | 6,806,018 | 7,045,427 | 11.2 | 7.4 |
| RT23 | Illini | 113,281 | 102,684 | 108,110 | 10.3 | 4.8 | 2,963,855 | 2,569,917 | 2,648,887 | 15.3 | 11.9 |
| RT24 | Illinois Zephyr | 108,856 | 103,924 | 108,843 | 4.7 | 0.0 | 2,405,535 | 2,109,391 | 2,166,971 | 14.0 | 10.0 |
| RT29 | Heartland Flyer | 54,403 | 46,592 | 48,153 | 16.8 | 13.0 | 900,980 | 756,272 | 792,379 | 19.1 | 13.7 |
| RT35 | Pacific Surfliner | 2,344,665 | 2,179,427 | 2,293,728 | 7.6 | 2.2 | 34,597,851 | 32,300,086 | 34,101,994 | 7.1 | 1.5 |
| RT36 | Cascades | 597,161 | 589,947 | 616,827 | 1.2 | (3.2) | 13,931,592 | 13,028,721 | 13,725,082 | 6.9 | 1.5 |
| RT37 | Capitols | 1,165,334 | 1,139,136 | 1,176,768 | 2.3 | (1.0) | 12,039,092 | 11,548,364 | 12,196,961 | 4.2 | (1.3) |
| RT39 | San Joaquins | 738,540 | 782,778 | 806,086 | (5.7) | (8.4) | 20,207,164 | 18,965,042 | 19,866,544 | 6.5 | 1.7 |
| RT40 | Adirondack | 132,700 | 131,366 | 141,226 | 1.0 | (6.0) | 5,800,720 | 5,514,485 | 5,922,261 | 5.2 | (2.1) |
| RT41 | Blue Water | 94,378 | 80,880 | 65,517 | 16.7 | 10.4 | 2,278,929 | 2,068,453 | 2,143,984 | 10.2 | 6.3 |
| RT56 | Kansas City-St.Louis | 128,084 | 139,823 | 145,408 | (8.4) | (11.9) | 2,952,478 | 2,826,603 | 2,889,721 | 4.5 | 2.2 |
| RT65 | Pere Marquette | 87,767 | 73,392 | 77,089 | 19.6 | 13.9 | 1,935,617 | 1,677,636 | 1,767,580 | 15.4 | 9.5 |
| RT66 | Carolinian | 305,016 | 321,561 | 333,996 | (5.2) | (8.7) | 14,951,318 | 16,361,973 | 17,239,636 | (8.6) | (13.3) |
| RT67 | Piedmont | 44,828 | 39,159 | 40,730 | 14.5 | 10.1 | 582,364 | 500,688 | 526,376 | 16.3 | 10.6 |
| | **Total** | **8,100,070** | **7,853,383** | **8,179,480** | **3.1** | **(1.0)** | **168,727,392** | **162,952,419** | **170,695,274** | **3.5** | **(1.2)** |
| **Other Short Distance Trains** | | | | | | | | | | | |
| RT15A | Empire Service | 1,093,965 | 1,081,997 | 1,153,551 | 1.1 | (5.2) | 42,986,927 | 42,123,847 | 44,897,857 | 2.0 | (4.3) |
| RT22 | Chicago-Detroit/Pntiac/Tol | 366,291 | 326,367 | 375,170 | 12.2 | (2.4) | 10,123,627 | 9,121,421 | 10,270,021 | 11.0 | (1.4) |
| RT54 | Hoosier State | 17,934 | 19,179 | 14,545 | (6.5) | 23.3 | 294,258 | 364,505 | 173,809 | (19.3) | 69.3 |
| RT57 | Pennsylvanian | 171,483 | 124,372 | 146,199 | 37.9 | 17.3 | 5,903,816 | 4,374,263 | 5,070,659 | 35.0 | 16.4 |
| | Bus Services | 0 | 0 | 0 | 0.0 | 0.0 | 4,102,915 | 2,297,153 | 1,922,228 | 78.6 | 113.4 |
| RT99A | Special Trains | 92,475 | 108,118 | 80,650 | (14.5) | 14.7 | 7,420,901 | 7,032,625 | 7,220,556 | 5.5 | 2.8 |
| | **Total** | **1,742,148** | **1,660,033** | **1,770,215** | **4.9** | **(1.6)** | **70,832,445** | **65,313,815** | **69,555,130** | **8.4** | **1.8** |
| **Long Distance Trains** | | | | | | | | | | | |
| RT16A | Silver Service | 738,241 | 726,460 | 729,313 | 1.6 | 1.2 | 58,864,380 | 61,890,477 | 65,877,966 | (4.9) | (10.6) |
| RT17 | Three Rivers | 152,842 | 137,234 | 136,724 | 11.4 | 11.8 | 9,111,329 | 8,969,507 | 9,251,695 | 1.6 | (1.5) |
| RT18 | Cardinal | 88,930 | 72,230 | 74,641 | 23.1 | 19.1 | 4,410,907 | 3,269,686 | 3,516,340 | 34.9 | 25.4 |
| RT25 | Empire Builder | 437,191 | 415,722 | 436,138 | 5.2 | 0.2 | 39,130,724 | 36,125,335 | 37,768,449 | 8.3 | 3.6 |
| RT26 | Capitol Limited | 180,810 | 153,969 | 163,241 | 17.4 | 10.8 | 11,854,928 | 11,010,362 | 11,722,984 | 7.7 | 1.1 |
| RT27 | California Zephyr | 335,764 | 323,389 | 335,415 | 3.8 | 0.1 | 31,387,097 | 31,808,774 | 31,601,605 | (1.3) | (0.7) |
| RT28 | Southwest Chief | 290,003 | 273,271 | 283,384 | 6.1 | 2.3 | 31,736,281 | 31,369,915 | 33,062,296 | 1.2 | (4.0) |
| RT30 | City of New Orleans | 190,017 | 181,802 | 176,923 | 4.5 | 7.4 | 11,990,465 | 10,883,980 | 11,713,574 | 10.2 | 2.4 |
| RT32 | Texas Eagle | 234,619 | 214,350 | 223,060 | 9.5 | 5.2 | 15,720,151 | 14,922,402 | 15,799,402 | 5.3 | (0.5) |
| RT33 | Sunset Limited | 96,426 | 105,033 | 108,794 | (8.2) | (11.4) | 11,108,532 | 11,932,883 | 12,916,794 | (6.9) | (14.0) |
| RT34 | Coast Starlight | 415,598 | 444,430 | 464,522 | (6.5) | (10.5) | 28,903,486 | 28,749,287 | 30,342,103 | 0.5 | (4.7) |
| RT45 | Lake Shore Limited | 279,562 | 265,715 | 280,790 | 5.2 | (0.4) | 19,587,525 | 19,296,335 | 21,090,524 | 1.5 | (7.1) |
| RT52 | Crescent | 256,577 | 255,531 | 253,652 | 0.4 | 1.2 | 22,255,825 | 21,916,204 | 23,558,727 | 1.5 | (5.5) |
| RT63 | Auto Train | 197,483 | 199,804 | 210,127 | (1.2) | (6.0) | 46,836,556 | 45,395,171 | 48,077,011 | 3.2 | (2.6) |
| | **Total** | **3,894,163** | **3,768,940** | **3,876,714** | **3.3** | **0.5** | **342,898,186** | **337,540,317** | **356,319,470** | **1.6** | **(3.8)** |
| **Grand Total** | | **25,053,564** | **24,028,119** | **25,160,241** | **4.3** | **(0.4)** | **$1,256,424,267** | **$1,216,260,257** | **$1,284,729,170** | **3.3** | **(2.2)** |

| Reconciling items to Operating Income Statement: | FY04 | FY03 | Budget |
|---|---|---|---|
| Food and Beverage Credit | (33,370,647) | (33,738,246) | (33,899,206) |
| Other Passenger Revenue | 3,892,400 | 1,792,163 | 2,259,212 |
| Guest Rewards | (5,172,187) | 0 | 0 |
| Private Car Movements | 1,377,678 | 1,218,621 | 0 |
| Net Ticket Revenue per Operating Statement | $1,223,151,511 | $1,185,532,795 | $1,253,089,176 |

Notes: FY04 ridership and ticket revenues reflect deferred ridership of 357,426 and deferred ticket revenues of $18,766,759.
The data reflects new route definitions for FY04:
1) the Adirondack, Ethan Allen, Vermonter, Carolinian, & Texas Eagle include trips on the entire train, with subsequent adjustments to Empire, Regional and Chicago-St. Louis.
2) the Federal & Maple Leaf are included in Regional & Empire respectively.

* Reflects revised August/September FY04 ridership and ticket revenue Budget at the route level. No Budget change was made at the overall Amtrak level.

A - 24

## Financial Performance of Scheduled Amtrak Routes

Route Performance Results Exclude Depreciation and Net Interest Expense
($millions)

| Description | FY03 YTD September 2003 Revenue | FY03 Cost | FY03 Profit / (Loss) | FY02 YTD September 2002 Revenue | FY02 Cost | FY02 Profit / (Loss) | Variance Year over Year Revenue | Variance Cost | Variance Profit / (Loss) |
|---|---|---|---|---|---|---|---|---|---|
| **Corridor Trains** | | | | | | | | | |
| Route 01 Acela Express | $276.6 | $218.9 | $57.9 | $300.4 | $235.3 | $65.1 | ($23.7) | $16.4 | ($7.2) |
| Route 02 Metroliner | $61.1 | $53.0 | $8.1 | $69.7 | $54.9 | $14.8 | ($8.6) | $1.9 | ($6.7) |
| Route 03 Ethan Allen Express | $5.7 | $9.0 | ($3.3) | $5.0 | $10.2 | ($5.1) | $0.6 | $1.1 | $1.8 |
| Route 04 Vermonter | $16.0 | $20.4 | ($4.4) | $15.7 | $23.2 | ($7.5) | $0.3 | $2.8 | $3.1 |
| Route 05 Regional | $208.3 | $361.3 | ($62.9) | $296.6 | $362.9 | ($66.4) | $1.8 | $1.7 | $3.4 |
| Route 06 Federal | $11.4 | $25.6 | ($14.2) | $14.6 | $25.7 | ($15.0) | ($3.2) | $4.1 | $0.8 |
| Route 07 Maple Leaf | $9.2 | $14.3 | ($5.1) | $10.1 | $14.7 | ($4.6) | ($0.9) | $0.3 | ($0.5) |
| Route 09 The Downeaster | $6.2 | $8.3 | ($2.1) | $4.7 | $10.7 | ($6.0) | $1.4 | $2.4 | $3.9 |
| Route 13 Clocker Service | $18.9 | $28.8 | ($9.9) | $18.9 | $25.7 | ($6.8) | ($0.0) | ($3.1) | ($3.1) |
| Route 14 Keystone Service | $27.3 | $44.2 | ($16.9) | $26.5 | $44.6 | ($18.1) | $0.8 | $0.4 | $1.2 |
| Route 15 Empire Service | $34.9 | $64.4 | ($29.5) | $35.9 | $66.2 | ($30.3) | ($1.0) | $1.8 | $0.8 |
| Route 20 State House | $8.4 | $14.6 | ($6.2) | $8.8 | $16.1 | ($7.3) | ($0.4) | $1.5 | $1.1 |
| Route 21 Hiawathas | $12.6 | $23.5 | ($10.9) | $12.1 | $22.5 | ($10.5) | $0.5 | ($1.0) | ($0.5) |
| Route 22 Wolverine | $9.8 | $26.1 | ($16.2) | $10.5 | $27.5 | ($17.0) | ($0.6) | $1.4 | $0.8 |
| Route 23 Illini | $5.5 | $7.2 | ($1.7) | $5.7 | $7.3 | ($1.6) | ($0.2) | $0.1 | ($0.1) |
| Route 24 Illinois Zephyr | $5.2 | $7.1 | ($1.9) | $5.3 | $7.5 | ($2.3) | ($0.1) | $0.5 | $0.4 |
| Route 29 Heartland Flyer | $5.5 | $4.5 | $1.0 | $5.9 | $4.7 | $1.3 | ($0.4) | $0.1 | ($0.3) |
| Route 35 Pacific Surfliner | $56.0 | $70.4 | ($14.4) | $55.4 | $75.1 | ($19.7) | $0.6 | $4.7 | $5.3 |
| Route 36 Cascades | $30.8 | $38.2 | ($7.4) | $24.7 | $32.9 | ($8.1) | $6.1 | ($5.3) | $0.8 |
| Route 37 Capitols | $33.6 | $40.2 | ($6.6) | $36.1 | $43.0 | ($6.9) | ($2.5) | $2.7 | $0.3 |
| Route 39 San Joaquins | $46.8 | $52.6 | ($5.7) | $46.7 | $58.1 | ($11.4) | $0.1 | $5.5 | $5.6 |
| Route 40 Adirondack | $9.3 | $13.0 | ($3.8) | $7.1 | $13.5 | ($6.4) | $2.2 | $0.4 | $2.6 |
| Route 41 International | $6.1 | $7.5 | ($1.4) | $6.8 | $8.7 | ($1.9) | ($0.7) | $1.2 | $0.4 |
| Route 54 Hoosier State | $0.4 | $4.8 | ($4.4) | $1.3 | $8.1 | ($6.8) | ($0.9) | $3.4 | $2.5 |
| Route 56 Mules | $9.3 | $10.1 | ($0.8) | $9.6 | $10.8 | ($1.1) | ($0.3) | $0.6 | $0.3 |
| Route 65 Pere Marquette | $4.0 | $5.2 | ($1.2) | $4.0 | $5.3 | ($1.3) | ($0.0) | $0.1 | $0.1 |
| Route 66 Carolinian | $21.2 | $27.6 | ($6.3) | $21.3 | $27.6 | ($6.3) | ($0.0) | ($0.0) | ($0.1) |
| Route 67 Piedmont | $2.5 | $2.5 | ($0.1) | $3.2 | $3.6 | ($0.4) | ($0.7) | $1.1 | $0.4 |
| Route Total Special Trains | $7.1 | $5.5 | $1.6 | $6.1 | $4.7 | $1.4 | $7.1 | ($5.5) | $1.6 |
| **Total Corridor Trains** | $1,040.0 | $1,206.8 | ($166.9) | $1,068.8 | $1,254.9 | ($186.2) | ($22.7) | $41.4 | $18.7 |
| **Long Distance Trains** | | | | | | | | | |
| Route 16 Silver Star | $26.7 | $59.5 | ($32.8) | $31.6 | $58.7 | ($27.0) | ($5.0) | ($0.8) | ($5.8) |
| Route 17 Three Rivers | $20.5 | $54.7 | ($34.2) | $24.6 | $54.1 | ($29.5) | ($4.1) | ($0.6) | ($4.7) |
| Route 18 Cardinal | $3.7 | $15.1 | ($11.4) | $4.4 | $16.6 | ($12.2) | ($0.7) | $1.5 | $0.9 |
| Route 19 Silver Meteor | $29.1 | $52.9 | ($23.8) | $32.4 | $51.5 | ($19.1) | ($3.3) | ($1.4) | ($4.7) |
| Route 25 Empire Builder | $45.2 | $89.4 | ($44.2) | $51.9 | $94.9 | ($43.0) | ($6.7) | $5.5 | ($1.2) |
| Route 26 Capitol Limited | $17.1 | $38.2 | ($21.1) | $21.6 | $42.1 | ($20.6) | ($4.5) | $4.0 | ($0.5) |
| Route 27 California Zephyr | $42.1 | $91.6 | ($49.4) | $50.0 | $97.2 | ($47.2) | ($7.9) | $5.6 | ($2.2) |
| Route 28 Southwest Chief | $53.3 | $122.7 | ($69.4) | $69.8 | $126.9 | ($57.1) | ($16.5) | $4.3 | ($12.2) |
| Route 30 City of New Orleans | $12.3 | $31.3 | ($19.0) | $13.6 | $30.6 | ($17.1) | ($1.3) | ($0.5) | ($1.8) |
| Route 32 Texas Eagle | $18.1 | $46.7 | ($28.6) | $22.1 | $55.3 | ($33.3) | ($4.0) | $8.7 | $4.7 |
| Route 33 Sunset Limited | $14.2 | $44.0 | ($29.8) | $18.9 | $51.3 | ($32.4) | ($4.7) | $7.3 | $2.6 |
| Route 34 Coast Starlight | $32.5 | $68.6 | ($36.1) | $37.6 | $73.2 | ($35.6) | ($5.1) | $4.6 | ($0.5) |
| Route 45 Lake Shore Limited | $24.8 | $61.6 | ($36.8) | $31.2 | $69.6 | ($38.4) | ($6.4) | $8.0 | $1.6 |
| Route 48 Palmetto | $21.8 | $43.0 | ($21.2) | $27.3 | $52.3 | ($25.1) | ($5.5) | $9.4 | $3.9 |
| Route 52 Crescent | $25.4 | $63.0 | ($37.6) | $30.8 | $60.8 | ($30.0) | ($5.4) | ($2.2) | ($7.6) |
| Route 57 Pennsylvanian | $7.0 | $17.0 | ($10.0) | $11.5 | $32.8 | ($21.4) | ($4.4) | $15.8 | $11.4 |
| Route 63 Auto Train | $45.9 | $57.8 | ($11.9) | $51.1 | $61.5 | ($10.4) | ($5.3) | $3.7 | ($1.6) |
| **Total Long Distance Trains** | $439.8 | $957.0 | ($517.2) | $530.5 | $1,029.6 | ($499.3) | ($90.7) | $72.6 | ($17.9) |
| **All Amtrak Route Operations** | $1,479.8 | $2,165.9 | ($686.1) | $1,599.3 | $2,284.8 | ($685.4) | ($113.4) | $114.2 | $0.8 |

**Reconciling Items between RPS and Consolidated Statement of Operations***

| Description | FY03 Revenue | FY03 Cost | FY03 Profit / (Loss) | FY02 Revenue | FY02 Cost | FY02 Profit / (Loss) |
|---|---|---|---|---|---|---|
| Depreciation, Net | $0.0 | $606.1 | ($606.1) | $0.0 | $44.3 | ($44.3) |
| Adjustments Impacting Prior Year | $0.0 | ($3.1) | $3.1 | $0.0 | ($19.9) | $19.9 |
| Federal and State Capital Payments | $16.6 | $0.0 | $16.6 | $16.4 | $0.0 | $16.4 |
| Non-Transportation and Other | $129.8 | $119.7 | $10.0 | $132.7 | $556.2 | ($423.5) |
| Non-Core Amtrak Businesses | $448.4 | $317.7 | $130.7 | $479.8 | $358.3 | $121.5 |
| **Total Adjustments and Non-Core Busine** | $596.8 | $1,040.4 | ($443.7) | $628.9 | $938.8 | ($309.9) |
| Operating Results | $2,076.6 | $3,206.3 | ($1,129.7) | $2,228.2 | $3,223.6 | ($995.4) |
| Interest Expense, Net | $0.0 | $144.6 | ($144.6) | $0.0 | $136.5 | ($136.5) |
| **FIS Net Results** | $2,076.6 | $3,350.9 | ($1,274.3) | $2,228.2 | $3,360.1 | ($1,131.9) |

*Route-level data from Amtrak's Route Profitability System (RPS). Remaining data is from Amtrak's Financial Information System (FIS).

Note: Prior year data might not match previously published reports at the individual route level. This report reflects the FY04 assignment of train segments to routes.

1-15

## October-September FY03

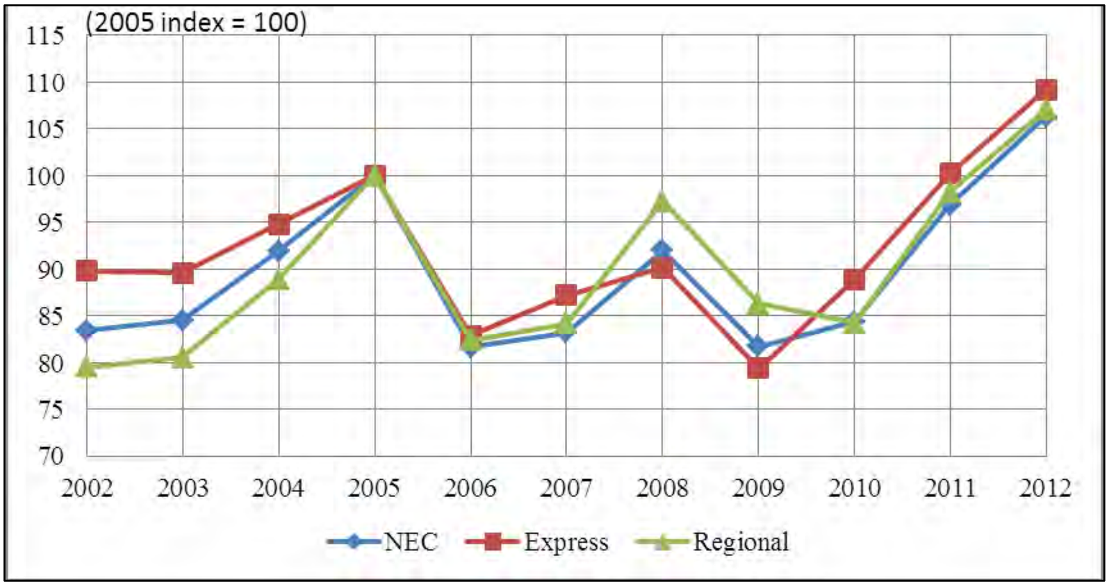
| Eastern Region | | Ridership FY03 | Ridership FY02 | Ridership Budget | Ridership % change vs. FY02 | Ridership % change vs. Budget | Ticket Revenue FY03 | Ticket Revenue FY02 | Ticket Revenue Budget | Ticket Revenue % change vs. FY02 | Ticket Revenue % change vs. Budget |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Short Distance | 1 - Acela/Metroliner | 2,936,885 | 3,213,981 | 3,350,147 | -8.6 | -12.3 | $332,487,806 | $364,149,582 | $396,724,719 | -8.7 | -16.6 |
| | 3 - Ethan Allen | 35,585 | 38,522 | 38,892 | -7.6 | -8.5 | $1,587,412 | $1,726,465 | $1,770,338 | -8.1 | -10.3 |
| | 4 - Vermonter | 60,891 | 66,843 | 69,863 | -8.9 | -12.8 | $3,477,545 | $3,758,517 | $3,908,100 | -7.5 | -11.0 |
| | 5 - Regional | 5,974,806 | 5,760,499 | 5,629,755 | +3.7 | +6.1 | $303,168,232 | $298,787,635 | $304,201,320 | +1.5 | -0.3 |
| | 6 - Federal | 179,154 | 215,141 | 217,292 | -16.7 | -17.6 | $10,264,168 | $13,290,678 | $13,999,425 | -22.8 | -26.7 |
| | 7/15 - Maple Leaf/Empire | 1,201,242 | 1,240,857 | 1,224,613 | -3.2 | -1.9 | $46,520,943 | $47,853,239 | $49,533,719 | -2.8 | -6.1 |
| | 9 - Downeaster | 254,030 | 245,135 | 296,368 | +3.6 | -14.3 | $3,745,786 | $3,844,068 | $4,676,055 | -2.6 | -19.9 |
| | 13 - Clocker | 1,957,903 | 1,976,533 | 1,986,632 | -1.0 | -1.5 | $18,817,113 | $18,867,001 | $19,339,089 | -0.3 | -2.7 |
| | 14 - Keystone | 886,003 | 948,899 | 937,566 | -6.6 | -5.5 | $20,678,274 | $21,969,339 | $22,498,094 | -5.9 | -8.1 |
| | 40 - Adirondack | 86,120 | 91,060 | 92,392 | -5.4 | -6.8 | $3,821,975 | $4,115,630 | $4,223,237 | -7.1 | -9.6 |
| | 66 - Carolinian | 217,807 | 215,033 | 218,605 | +1.3 | -0.4 | $11,936,396 | $11,328,164 | $11,614,135 | +5.4 | +2.8 |
| | 67 - Piedmont | 39,159 | 44,352 | 45,494 | -11.7 | -13.9 | $500,688 | $595,725 | $624,294 | -16.0 | -19.8 |
| | 99 - Special trains | 36,693 | 34,728 | 32,000 | +5.7 | +14.7 | $1,542,382 | $1,592,465 | $1,600,000 | -3.1 | -3.6 |
| | **Subtotal** | **13,866,278** | **14,093,583** | **14,141,639** | **-1.6** | **-1.9** | **$758,548,722** | **$791,878,509** | **$836,712,586** | **-4.2** | **-9.3** |
| Long Distance | 16 - Silver Star | 245,530 | 252,240 | 255,604 | -2.7 | -3.9 | $21,748,263 | $25,087,604 | $26,439,044 | -13.3 | -17.7 |
| | 17 - Three Rivers | 137,234 | 126,659 | 125,952 | +8.3 | +9.0 | $8,969,507 | $9,862,808 | $10,156,310 | -9.1 | -11.7 |
| | 18 - Cardinal | 72,230 | 74,023 | 72,364 | -2.4 | -0.2 | $3,269,666 | $3,920,814 | $3,707,812 | -16.6 | -11.8 |
| | 19 - Silver Meteor | 286,321 | 248,467 | 255,871 | +15.2 | +11.9 | $25,758,190 | $28,346,599 | $31,138,888 | -9.1 | -17.3 |
| | 26 - Capitol Ltd. | 153,969 | 145,750 | 146,291 | +5.6 | +5.2 | $11,010,362 | $12,558,003 | $13,008,519 | -12.3 | -15.4 |
| | 45 - Lake Shore Ltd. | 265,715 | 287,779 | 289,496 | -7.7 | -8.2 | $19,296,335 | $24,295,100 | $25,221,919 | -20.6 | -23.5 |
| | 48 - Palmetto | 194,609 | 205,930 | 195,144 | -5.5 | -0.3 | $14,384,004 | $18,262,183 | $16,056,321 | -21.2 | -10.4 |
| | 52 - Crescent | 256,531 | 245,660 | 247,499 | +4.0 | +3.2 | $21,916,204 | $25,286,694 | $26,330,310 | -13.3 | -16.8 |
| | 57 - Pennsylvanian | 124,372 | 75,617 | 80,391 | +64.5 | +54.7 | $4,374,263 | $2,855,030 | $3,349,804 | +53.2 | +30.6 |
| | 63 - Auto Train | 199,804 | 201,580 | 206,111 | -0.9 | -3.1 | $45,395,171 | $50,741,898 | $53,807,844 | -10.5 | -15.3 |
| | **Subtotal** | **1,935,315** | **1,863,705** | **1,874,745** | **+3.8** | **+3.2** | **$176,122,004** | **$201,216,731** | **$209,018,770** | **-12.5** | **-15.7** |
| **Eastern Region Total** | | **15,801,593** | **15,957,288** | **16,016,384** | **-1.0** | **-1.3** | **$934,670,726** | **$993,095,240** | **$1,045,731,356** | **-5.9** | **-10.6** |

| Western Region | | Ridership FY03 | Ridership FY02 | Ridership Budget | Ridership % change vs. FY02 | Ridership % change vs. Budget | Ticket Revenue FY03 | Ticket Revenue FY02 | Ticket Revenue Budget | Ticket Revenue % change vs. FY02 | Ticket Revenue % change vs. Budget |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Short Distance | 20 - State House | 254,946 | 225,629 | 228,101 | +13.0 | +11.8 | $5,396,567 | $5,855,609 | $5,826,913 | -4.6 | -7.4 |
| | 21 - Hiawatha | 417,366 | 404,009 | 402,475 | +3.3 | +3.7 | $6,806,018 | $6,689,402 | $6,727,737 | +1.7 | +1.2 |
| | 22 - Wolverine | 326,367 | 299,729 | 298,674 | +8.9 | +9.3 | $9,121,421 | $9,695,427 | $10,173,345 | -5.9 | -10.3 |
| | 23 - Illini | 102,684 | 92,143 | 92,885 | +11.4 | +10.5 | $2,569,917 | $2,886,282 | $2,961,758 | -11.0 | -13.2 |
| | 24 - Illinois Zephyr | 103,924 | 94,480 | 94,959 | +10.0 | +9.4 | $2,109,391 | $2,338,675 | $2,419,991 | -9.8 | -12.8 |
| | 29 - Heartland Flyer | 46,592 | 52,584 | 53,704 | -11.4 | -13.2 | $756,272 | $903,405 | $933,236 | -16.3 | -19.0 |
| | 35 - Pacific Surfliner | 2,179,427 | 1,725,234 | 1,737,755 | +26.3 | +25.4 | $32,300,086 | $28,356,741 | $28,721,917 | +13.9 | +12.5 |
| | 36 - Cascades | 589,947 | 579,646 | 584,767 | +1.8 | +0.9 | $13,028,721 | $13,003,750 | $13,369,172 | +0.2 | -2.5 |
| | 37 - Capitols | 1,139,136 | 1,050,109 | 1,076,080 | +5.5 | +5.7 | $11,548,364 | $11,013,563 | $11,083,173 | +4.9 | +4.2 |
| | 39 - San Joaquins | 782,776 | 734,238 | 766,941 | +6.6 | +2.1 | $18,965,042 | $17,619,999 | $18,372,083 | +7.6 | +3.2 |
| | 41 - International | 80,890 | 91,714 | 92,358 | -11.8 | -12.4 | $2,068,453 | $2,774,139 | $2,835,592 | -25.4 | -27.1 |
| | 54 - Kentucky Cardinal | 19,179 | 20,707 | 18,856 | 7.4 | +1.7 | $364,505 | $664,435 | $517,896 | 45.1 | -29.6 |
| | 56 - Mules | 139,823 | 144,201 | 146,911 | -3.0 | -4.8 | $2,826,603 | $3,152,611 | $3,263,452 | -10.3 | -13.4 |
| | 65 - Pere Marquette | 73,392 | 60,127 | 61,639 | +22.1 | +19.1 | $1,677,636 | $1,603,951 | $1,641,433 | +4.6 | +2.2 |
| | 74 - Transbay Buses | - | - | - | - | - | $69,167 | $76,038 | $76,332 | -9.0 | -9.4 |
| | 75 - Interline Buses | - | - | - | - | - | $1,375,199 | $1,510,696 | $1,541,812 | -9.0 | -10.8 |
| | 81 - Thruway Buses | - | - | - | - | - | $852,787 | $1,058,223 | $1,100,963 | -19.4 | -22.5 |
| | 96 - Special Trains | 71,425 | 62,884 | 73,100 | +13.6 | -2.3 | $5,490,243 | $4,402,806 | $6,400,000 | +24.7 | -14.2 |
| | **Subtotal** | **6,327,876** | **5,667,432** | **5,731,205** | **+11.7** | **+10.4** | **$117,326,392** | **$113,405,812** | **$117,966,806** | **+3.5** | **-0.5** |
| Long Distance | 25 - Empire Builder | 415,722 | 368,061 | 365,082 | +12.9 | +13.9 | $36,125,335 | $39,717,403 | $41,113,253 | -9.0 | -12.1 |
| | 27 - California Zephyr | 323,389 | 326,991 | 323,689 | -1.1 | -0.1 | $31,808,774 | $36,521,077 | $36,830,337 | -12.9 | -13.6 |
| | 28 - Southwest Chief | 273,271 | 255,856 | 258,812 | +6.8 | +5.6 | $31,369,915 | $36,769,919 | $38,063,601 | -14.7 | -17.6 |
| | 30 - City of New Orleans | 181,802 | 158,747 | 158,914 | +14.5 | +14.4 | $10,883,980 | $11,676,428 | $12,214,533 | -6.8 | -10.9 |
| | 32 - Texas Eagle | 155,003 | 129,208 | 130,692 | +20.0 | +18.6 | $13,392,965 | $14,348,668 | $14,892,745 | -6.7 | -10.1 |
| | 33 - Sunset Ltd. | 105,033 | 97,366 | 98,677 | +7.9 | +6.4 | $11,932,883 | $13,793,567 | $14,380,020 | -13.5 | -17.0 |
| | 34 - Coast Starlight | 444,430 | 445,646 | 452,358 | -0.3 | -1.8 | $28,749,287 | $33,271,620 | $34,785,580 | -13.6 | -17.4 |
| | **Subtotal** | **1,898,650** | **1,781,877** | **1,788,174** | **+6.6** | **+6.2** | **$164,263,139** | **$186,098,692** | **$192,280,068** | **-11.7** | **-14.6** |
| **Western Region Total** | | **8,226,526** | **7,449,309** | **7,519,379** | **+10.4** | **+9.4** | **$281,589,531** | **$299,504,505** | **$310,246,874** | **-6.0** | **-9.2** |
| **Short Distance Total** | | **20,194,154** | **19,761,015** | **19,872,844** | **+2.2** | **+1.6** | **$875,875,114** | **$905,284,321** | **$954,679,392** | **-3.2** | **-8.3** |
| **Long Distance Total** | | **3,833,965** | **3,645,582** | **3,662,919** | **+5.2** | **+4.7** | **$340,385,143** | **$387,315,423** | **$401,298,836** | **-12.1** | **-15.2** |
| **Amtrak Total** | | **24,028,119** | **23,406,597** | **23,535,763** | **+2.7** | **+2.1** | **$1,216,260,257** | **$1,292,599,745** | **$1,355,978,229** | **-5.9** | **-10.3** |

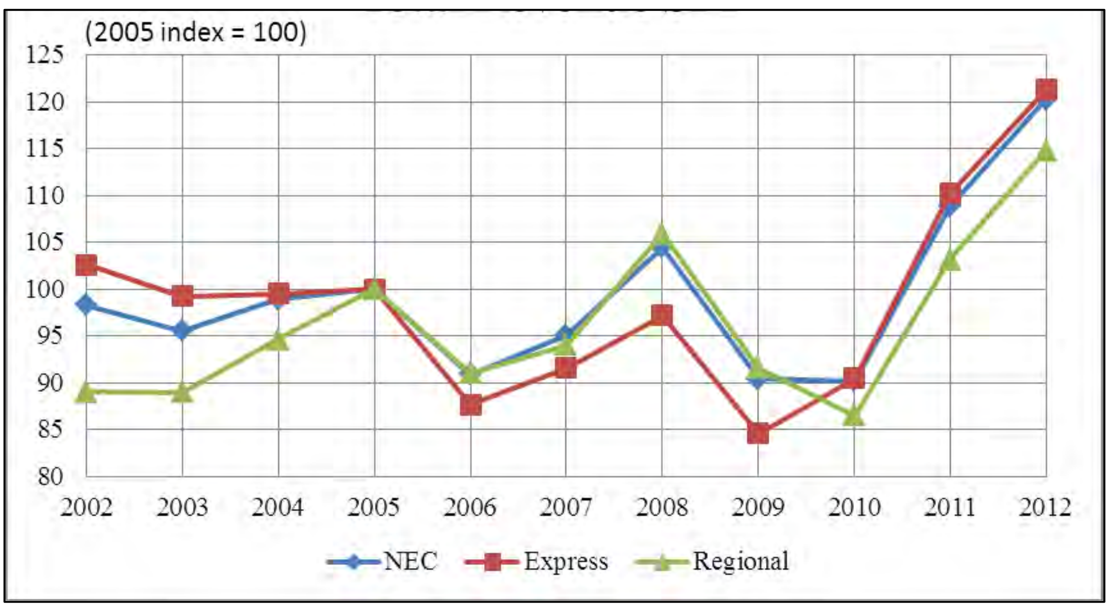
Note: FY03 ridership and ticket revenues reflect deferred ridership of 464,550 and deferred ticket revenues of $25,106,865.

## Appendix B: Additional NEC SFP Figures and Tables FY 2002-2012

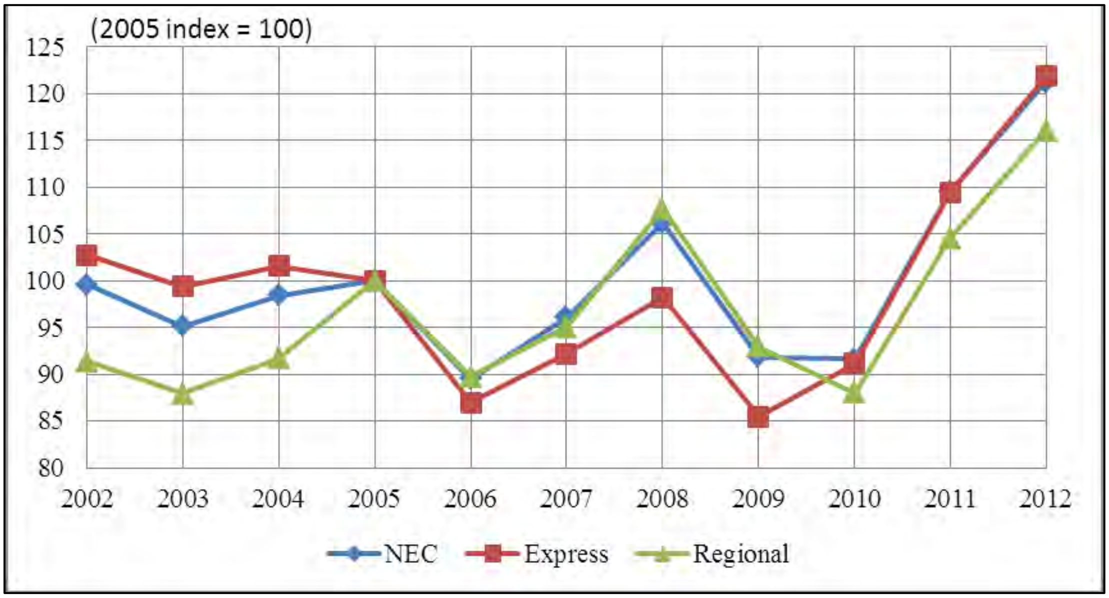
Ridership-Total Cost SFP, FY 2002-2012



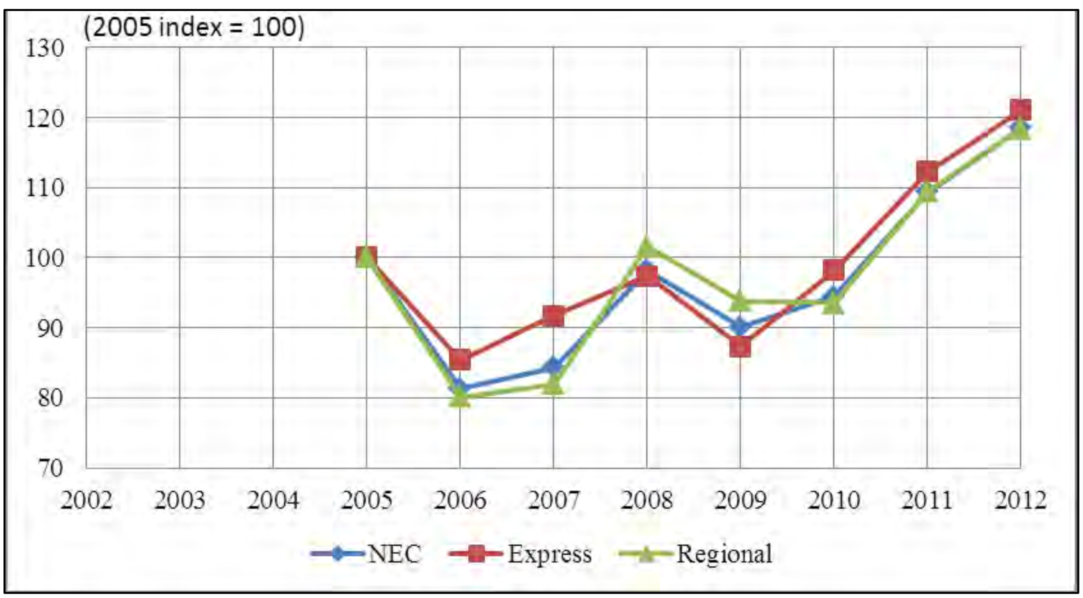

Total Revenue-Total Cost SFP, FY 2002-2012



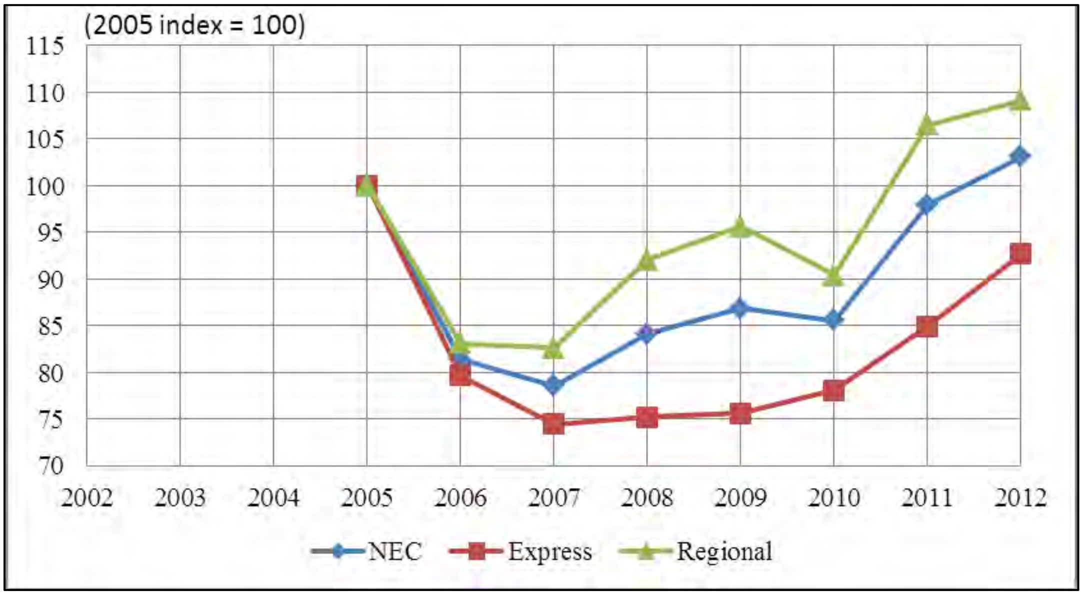
Ticket Revenue-Total Cost SFP, FY 2002-2012




RPM-Total Cost SFP, FY 2005-2012



ASM-Total Cost SFP, FY 2005-2012




NEC, Year-To-Year SFP Growth, FY 2002-2005

| NEC (excl. Clocker) | Ridership SFP | Total Revenue SFP | Ticket Revenue SFP |
|---|---|---|---|
| 2004-2005 | 13% | 1% | 2% |
| 2003-2004 | 9% | 3% | 3% |
| 2002-2003 | 1% | -2% | -4% |

Acela Express, Year-To-Year SFP Growth, FY 2002-2005

| Acela | Ridership SFP | Total Revenue SFP | Ticket Revenue SFP |
|---|---|---|---|
| 2004-2005 | 4% | 8% | 4% |
| 2003-2004 | 8% | -3% | 1% |
| 2002-2003 | --- | -2% | |

Metroliner, Year-To-Year SFP Growth, FY 2002-2005

| Metroliner | Ridership SFP | Total Revenue SFP | Ticket Revenue SFP |
|---|---|---|---|
| 2004-2005 | 18% | 8% | 21% |
| 2003-2004 | -6% | -1% | -13% |
| 2002-2003 | --- | -10% | --- |

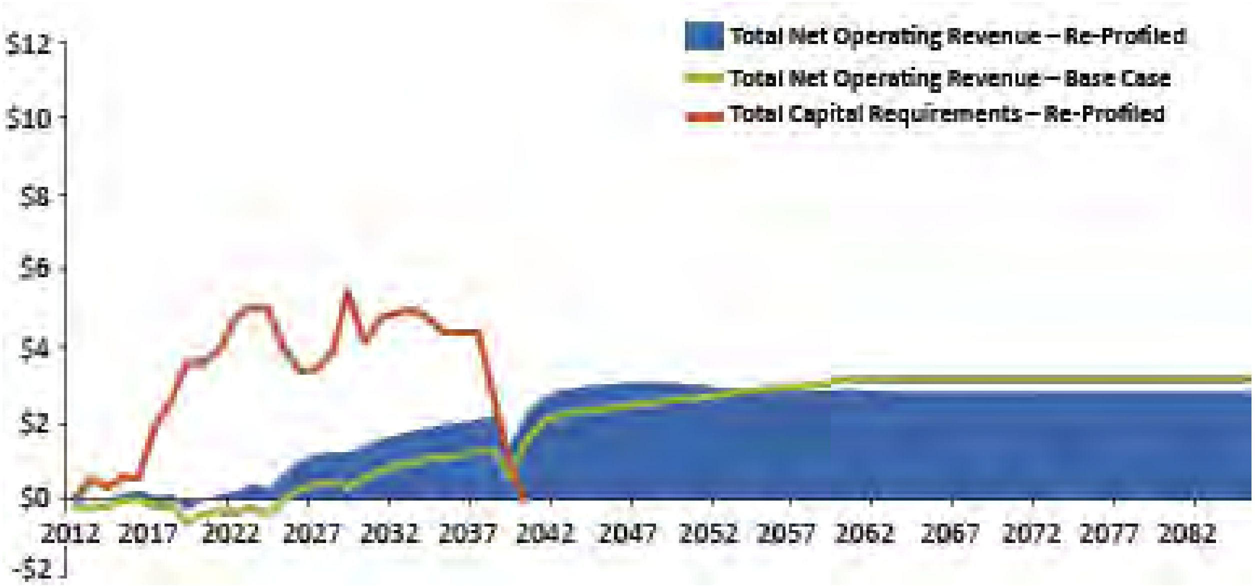
**Appendix C: Future Data NEC VISION 2013-2040**

NEC VISION – Data adapted from Amtrak (2012), as described in Section 4.5.1: Data for the NEC VISION 2013-2040.

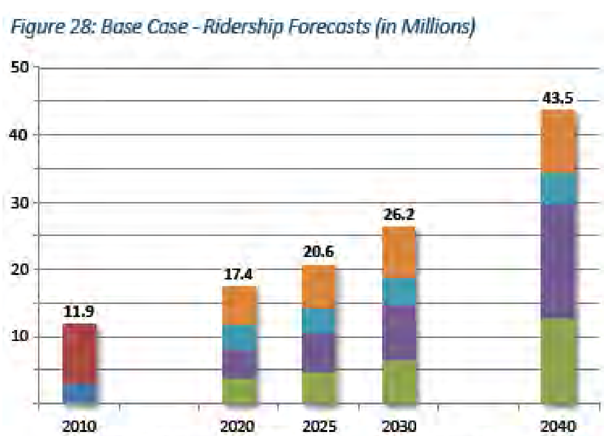
| Year | Total Net Operating Revenue ($ billion) | Ridership (million) | Revenue ($ billion) | Cost ($ billion) |
|---|---|---|---|---|
| **2010** | 0.06 | 10.38 | 0.92 | 0.86 |
| **2011** | 0.21 | 10.90 | 1.02 | 0.81 |
| **2012** | 0.29 | 11.42 | 1.08 | 0.79 |
| **2013** | 0.02 | 12.17 | 1.15 | 1.13 |
| **2014** | 0.04 | 12.92 | 1.22 | 1.18 |
| **2015** | 0.04 | 13.66 | 1.30 | 1.26 |
| **2016** | 0.12 | 14.41 | 1.37 | 1.25 |
| **2017** | 0.04 | 15.16 | 1.44 | 1.40 |
| **2018** | -0.04 | 15.91 | 1.51 | 1.56 |
| **2019** | -0.29 | 16.65 | 1.59 | 1.87 |
| **2020** | -0.37 | 17.40 | 1.66 | 2.03 |
| **2021** | -0.20 | 18.04 | 1.74 | 1.94 |
| **2022** | -0.20 | 18.68 | 1.81 | 2.02 |
| **2023** | -0.12 | 19.32 | 1.89 | 2.01 |
| **2024** | -0.20 | 19.96 | 1.96 | 2.17 |
| **2025** | 0.04 | 20.60 | 2.04 | 2.00 |
| **2026** | 0.37 | 21.72 | 2.17 | 1.80 |
| **2027** | 0.53 | 22.84 | 2.30 | 1.77 |
| **2028** | 0.61 | 23.96 | 2.43 | 1.82 |
| **2029** | 0.53 | 25.08 | 2.56 | 2.03 |
| **2030** | 0.61 | 26.20 | 2.69 | 2.08 |
| **2031** | 0.86 | 27.93 | 2.91 | 2.05 |
| **2032** | 0.94 | 29.66 | 3.12 | 2.19 |
| **2033** | 1.10 | 31.39 | 3.34 | 2.24 |
| **2034** | 1.18 | 33.12 | 3.56 | 2.37 |
| **2035** | 1.18 | 34.85 | 3.78 | 2.59 |
| **2036** | 1.27 | 36.58 | 3.99 | 2.73 |
| **2037** | 1.35 | 38.31 | 4.21 | 2.86 |
| **2038** | 1.35 | 40.04 | 4.43 | 3.08 |
| **2039** | 1.18 | 41.77 | 4.64 | 3.46 |
| **2040** | 1.51 | 43.50 | 4.86 | 3.35 |

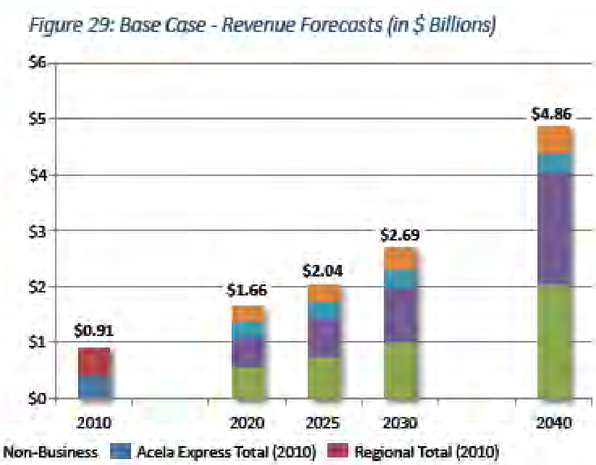
**Appendix D: Baseline Figures NEC VISION**

Re-Profiled Base Case – Total Net Operating Revenue (in $ Billions) (Source: Amtrak (2012))




Ridership Forecasts (in Millions) and Revenue Forecasts (in $ Billions) (Source: Amtrak (2012))



Key Projects Assumed by Milestone Year (Source: Amtrak (2012))

*Figure 14: Key Projects Assumed by Milestone Year*

| **2015 : Acquire 40 Additional *Acela Express* Passenger Cars** |
|---|
| Acquisition and deployment of 40 *Acela Express* passenger cars |
| Extension of HSR S&I facilities (BOS, NYC, WAS) |
| **2020 : Double High-Speed Service - New York to Washington, and Regional Capacity Improvements** |
| Acquisition and deployment of new HSR train-sets |
| Expansion of HSR S&I and layover facilities (NYC, WAS) |
| Kingston Siding Track and Freight Improvements (RI) |
| Pelham Bay Bridge Replacement (NY) |
| "Harold" Interlocking Flyover - Bypass Track (NY) |
| Sunnyside Yard Reconfiguration following East Side Access (NY) |
| Moynihan Station - Phase 1 and 2 (NY) |
| North Portal Bridge over Hackensack River (NJ) |
| NEC NJ Section Improvements - Track, Catenary, Signals (NJ) |
| Delaware 3rd Track - "Ragan" to "Yard" Interlockings (DE) |
| BWI Station - Center Platform and 4th Track (MD) |
| Washington Terminal - Track and Platform Improvements (DC) |
| **2025 : Gateway Program, and Trip-Time / Frequency Improvements - Washington to New York to Boston** |
| Acquisition and deployment of additional HSR train-sets |
| 3rd Track - "Palmers Cove" to "Groton" Interlockings (CT) |
| Connecticut River Bridge Replacement - Old Saybrook (CT) |
| Gateway Program: New Hudson River Tunnels (NY-NJ), New Infrastructure from New York to Newark (NY-NJ), Moynihan/ Penn Station Expansion (NY), South Portal Bridge (NJ) |
| "Hunter" Interlocking Flyover - Bypass Track (NJ) |
| Elizabeth Area Improvements - Curve Modifications (NJ) |
| North Brunswick Loop, Trenton Capacity Improvements (NJ) |
| "Morris" to "Frankford" Interlockings - 160 mph MAS (PA) |
| "Phil" to "Holly" Interlockings - 160 mph MAS (PA-DE) |
| Bellevue Flyover - Bypass Track (DE) |
| "Ragan" to "Bacon" Interlockings - 160 mph MAS (DE-MD) |
| Susquehanna, Bush, Gunpowder Bridge Replacements (MD) |
| Aberdeen to Martin Airport - 160 mph MAS (MD) |
| B&P Tunnel Rehabilitation and Replacement (MD) |
| "Grove" to "Piney" - 4th Track, New Carrollton 3rd Platform (MD) |
| Washington Union Terminal Station Area Improvements (DC) |
| **2030 : NextGen HSR - New York to Washington Segment** |
| New HSR Infrastructure (Track, Stations, Systems) NYC - WAS |
| **2040 : NextGen HSR - New York to Boston Segment** |
| Deployment of remaining HSR train-sets |
| New HSR Infrastructure (Track, Stations, Systems) NYC - BOS |

**Additional Publications**

**Amtrak's Productivity in the Northeast Corridor: Past and Future (attached)**

Andres F. Archila and Joseph M. Sussman

**Amtrak's Productivity in the Northeast Corridor: Past and Future**

**Andrés F. Archila & Joseph Sussman**

Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, Cambridge, MA

**Productivity analysis, the relationship between outputs and inputs in any given process, is used to evaluate the performance of the main passenger rail services in the Northeast Corridor (NEC) during FY 2002-2012 and to make inferences about high-speed rail (HSR) for the next 30 years.**

**A non-parametric single factor productivity (SFP) Törnqvist trans-log index sets ridership, revenue, revenue passenger-miles (RPM) and available seat-miles (ASM) as outputs, and operating costs as inputs. According to the analysis, the NEC experienced considerable yet highly volatile productivity growth during FY 2002-2012 (in the range of 1-3% per year). Amtrak, the National Railroad Passenger Corporation, increased its ability to fill up trains and economically exploit the available capacity, but did not perform equally well on the supply side. Service changes, technical problems with train sets, targeted capital investments, and economic recession and recovery were the main drivers of productivity change. Amtrak's two primary services, the Acela Express and Northeast Regional were very sensitive to external events, had large economies of scale, and implemented slow adjustment of capacity via rolling stock and infrastructure improvements, which varied depending on the service.**

**Inferences about future productivity were based on Amtrak projections for the post-2012 period. The geographic and socioeconomic characteristics of the NEC reveal a potential for a successful introduction of HSR. But while Amtrak's vision for HSR in the NEC is realistic in terms of productivity gains, it is risky and possibly inadequately ambitious in terms of speed of implementation. Revising the current projections to make them more aggressive, incorporating additional planning approaches, accelerating key stages of**

**Amtrak's vision, and coordinating with the FAA in the planning process may improve the implementation of HSR in the NEC.**

**The NEC from 2000 to 2012**

The Northeast Corridor (NEC), stretching from Washington, D.C., to Boston, MA, is the most densely settled region and one of the economic engines of the country. The NEC is a complex multi-state, multi-operator, multi-use, and multi-owner railway corridor. It runs through several major metropolitan areas, 12 states and the District of Columbia, and involves eight commuter operators and one intercity travel operator (Amtrak).


*Figure 1. NEC Ownership and Operations [1]*

Besides the NEC as a whole, two Amtrak services are the subject of study: the Acela Express and the Northeast Regional (NR). Average operating speeds are 70-80 mph for the Acela and 60-65 mph for the NR, and total travel time is 6 ½ and 8 hours, respectively, from Boston to Washington.

The period from 2000 to 2012 was characterized by regional congestion, increased rail transportation demand, route changes in 2005-06, technical problems with Acela trains in 2002 and 2005, economic recession in 2008-09, and allocation of federal funding for capital investments since 2009. In this period, the capacity-constrained NEC gained significant air/rail market share and operational surplus, with a particularly profitable Acela and increasingly utilized NR, but maintenance backlogs and infrastructure constraints remained.

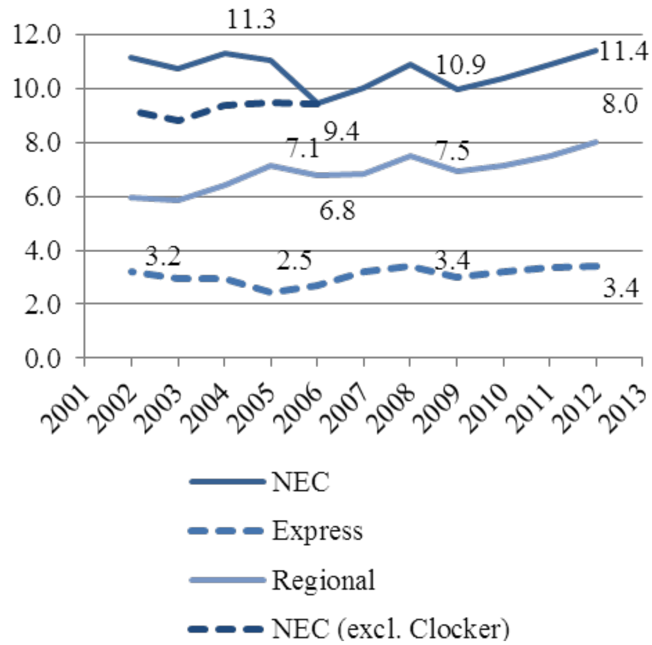



*Figure 2. NEC Ridership (million passengers) [2]*

**Productivity Methodology**

Productivity is, at the most fundamental level, a relationship between outputs and inputs used to evaluate the performance of an entity such as a country, industry, firm, system or process. Its popularity among researchers is due to the possibility of explaining the long-term growth of an entity, as well as the sources of growth. Of interest are the factors behind such a change in productivity, the drivers of productivity, which can be classified as technological change, organizational change, and externalities.

This research uses Single-Factor Productivity (SFP), which simplifies the analysis to a single-output single-input process.

Output and input data were reported by Amtrak. The available outputs were ridership, (ticket) revenue, revenue passenger-miles (RPM), and available seat-miles (ASM). The available inputs were operating costs. Monetary quantities were inflated by the corresponding CPI to 2012 dollars.

As there is only a single input but four distinct outputs, four SFP metrics were used to strengthen and validate the analysis, each providing different insights: On the supply side, ASM SFP with respect to operating costs is a proxy for the effectiveness at generating transportation capacity; on the demand side, ridership, revenue, and RPM SFP with respect to operating costs are measures of the effectiveness at exploiting the available capacity. Revenue SFP with respect to operating costs, in particular, reflects how effective Amtrak was at economically exploiting the available capacity.

Each year-to-year SFP metric was calculated via a non-parametric Törnqvist trans-log index, and then compounded to obtain the cumulative SFP, with 2005 as the base year for all calculations. Finally, a sensitivity analysis with respect to the route definitions and the inflation parameters showed that results were robust to changes in key assumptions.

**NEC Productivity 2002-2012**

As shown in Figure 3, from FY 2002-2012, the NEC experienced highly volatile but overall considerable SFP growth (in the range of 1-3% per year), which was boosted by the notable SFP improvements of the past three years.

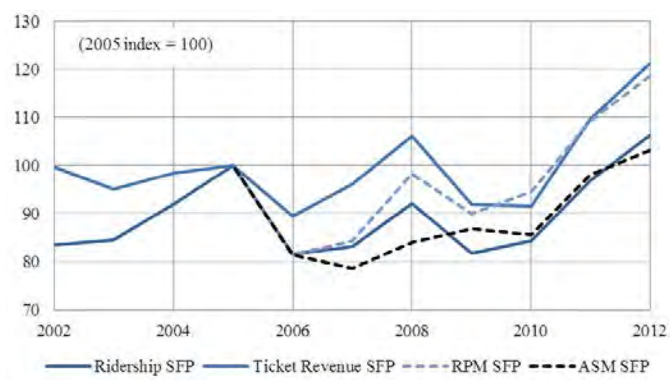



*Figure 3. NEC Cumulative SFP Growth FY 2002-2012 [2]*

The differences in demand-side (RPM SFP) and supply-side (ASM SFP) productivity metrics show that Amtrak increased its ability to fill up and economically exploit the available capacity, but did not perform equally well on the supply side. Service changes, technical problems with trains, targeted capital investments, and economic recession and recovery were the main drivers of productivity change. For example, the technical problems of 2005-06 and the economic recession of 2008 resulted in yearly productivity dips as low as -19%, while the recent surge in ridership and allocation of funding produced increments as high as 20%.

Acela and NR services were very sensitive to external events, had large economies of scale, and implemented slow adjustment of capacity, but their performance was not uniform. Acela was more sensitive than NR to changing conditions.

As far as productivity concerns go, the ability to implement and operate HSR in the NEC was more tied to the state of the regional economy, and less to managerial and operational practices.

**Inferred NEC Productivity 2012-2040**

For studying future productivity, a scenario of analysis for 2012-2040 was based on Amtrak's Vision for HSR in the NEC [3]. This is a proposed $150-billion stair-step phasing investment strategy with two sequenced programs: the NEC Upgrade Program (NEC-UP), which would reach top speeds of 160 mph, and the NEC Next Generation HSR (NextGen HSR), which would reach top speeds of 220 mph and reduced travel time to 3 hours from Boston to Washington.

The six stages of the program are:

(1) 40% additional capacity of the Acela Express achieved through additional passenger cars by 2015.

(2) Doubling of the HSR frequencies from New York to Washington by 2020.

(3 - 4) Improved and expanded service on the entire alignment, thanks to the Gateway program, track improvements, and additional HSR trains by 2025.

(5) Completion of the New York-Washington NextGen HSR segment by 2030.

(6) Full establishment of the Boston-Washington NextGen HSR service by 2040.

In this scenario, the available (projected) outputs are ridership and revenue, while the inputs are operating costs.

By 2040, the NEC could become 20–40% more productive (on the demand side) with respect to 2013. The expected yearly average growth in ridership (0.7%) and revenue SFP (1.3%) would be within the ranges of what the NEC achieved in the past (~0.5%–3.0%), though perhaps on the low side. Productivity increments would be highly variable and most likely occur in later stages.

Peak changes, however, are within the ranges of productivity gains or losses that the NEC showed in the past: +/- 13–18% on peak years.

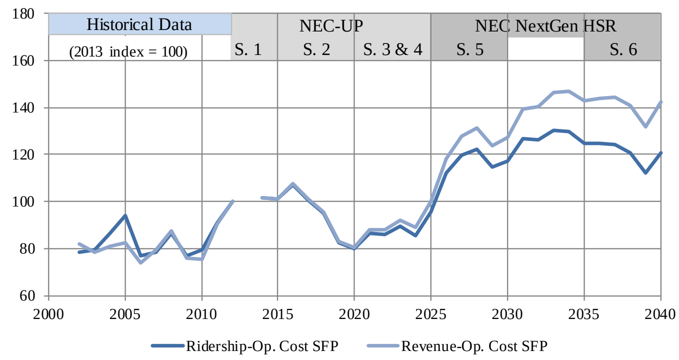



*Figure 4. NEC Cumulative SFP Growth 2002-12, 2013-40 [2]*

However, there are some risks. Since productivity benefits may take years to realize, and if financial leverage and political support are lacking during adverse times, or if the market and managers are slow in adapting to changing conditions, the successful implementation of HSR is uncertain.

Moreover, the NEC VISION lacks ambition in some ways, since projected cumulative productivity growth is low in comparison to the growth of the past decade (20-40% in the next 30 years vs. 20% in the past 10). Also, the plan to improve management is not explicitly mentioned, but improved management within Amtrak and coordination with other major travel modes may reveal a greater potential for productivity improvements.

Thus, we offer the following recommendations to decision-makers: revise projections of ridership and revenue; involve the FAA in the planning process and consider air/rail cooperation explicitly; consider the possibility of improved management practices within Amtrak and other stakeholders of the NEC; prioritize stages of the implementation that promise the highest productivity improvements, e.g., the Gateway Program; and use scenario planning and design flexibility in the investment alternatives.

**References**

[1] The NEC Master Plan Working Group (MPWG) (2010). The Northeast Corridor Infrastructure Master Plan.

[2] Archila, A. F. (2013). Intercity Passenger Rail Productivity in the Northeast Corridor: Implications for the Future of High-Speed Rail (S.M. in Transportation, MIT)

[3] Amtrak (2012). The Amtrak Vision for the Northeast Corridor: 2012 Update Report.

*The authors would like to thank NURail, the Speedwell Foundation and Shelter Hill Foundation for sponsoring this research.*