

Relationship Building with Freight Railroads Critical to Support Intercity Passenger Rail Development

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THESIS

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LIST OF ABBREVIATIONS

AAR	Association of American Railroads
ABS	Automatic Block Signaling
BNSF	Burlington Northern Santa Fe Railway
CN	Canadian National Railway
CP	Canadian Pacific Railway
CCJPA	Capitol Corridor Joint Powers Authority
CTC	Centralized Traffic Control
DOT	Department of Transportation
FRA	Federal Railroad Administration
FEC	Florida East Coast Railroad
HSR	High Speed Rail
IC	Illinois Central Railroad
IDOT	Illinois Department of Transportation
IPR	Intercity Passenger Rail
ICC	Interstate Commerce Commission
KCS	Kansas City Southern Railroad
MDOT	Michigan Department of Transportation
NRPC	National Railroad Passenger Corporation
NS	Norfolk Southern Railroad
OMB	Office of Management and Budget
OTP	On-time Performance
PRIIA	Passenger Rail Improvement and Investment Act
PTC	Positive Train Control
PPP	Public Private Partnership
RRIF	Railroad Rehabilitation and Improvement Financing
SP	Southern Pacific Railroad
STB	Surface Transportation Board
UP	Union Pacific Railroad
WSDOT	Washington State Department of Transportation

SUMMARY

With a renewed push for intercity passenger rail development set by President Barack Obama and other key public officials, a new generation of policymakers and passenger rail advocates are becoming introduced to the labyrinthine world of freight railroading – an integral stakeholder in passenger rail operation and expansion considering freight rail owned infrastructure is overwhelmingly utilized by intercity passenger trains. As Amtrak begins its 42nd year of operation – still languishing on the periphery of the nation’s collective intercity passenger market – this paper seeks to empower policymakers with the information, tools and strategies necessary to effectively interact, build new relationships and foster long term collaboration with the nation’s freight railroad carriers to expand and enhance rail service.

Through a unique combination of academic research and author’s firsthand experience in the railroad industry, this paper analyzes four interwoven aspects that impact existing and future partnership with the freight rail industry: (1) railroad history; (2) freight railroad operations and economics; (3) shared use policy, planning and operations; (4) and railroad funding and financing. Research, evaluation and synthesis in each of these categories was performed utilizing news articles, published trade and government reports, case studies, conversations with leading railroad professionals as well as the author’s own experiences in the rail industry.

Altogether, this paper uncovers the major flaws effecting contemporary interactions between government and the freight railroad industry concerning intercity passenger rail operation and development. Existing approaches fail to build trust between both stakeholders and share risks and benefits of partnership. The result is a pervading animosity and intense combativeness harbored by both stakeholders.

SUMMARY (continued)

This paper argues that passenger rail development strategies employed by policymakers must be overhauled to achieve the characteristics of a true public private partnership if meaningful development and long term collaboration is to be achieved. With a foundation based upon heavy handed interactions to force freight railroad compliance, domestic intercity passenger rail development has stagnated and the rift between both parties has deepened, making future cooperation all the more difficult.

Policymakers must better understand the freight railroad industry as a whole – how past and current interaction have manifested the industry’s intense distrust of government partnership and how the industry’s reliance on private financing has instituted a paradigm of risk aversion. To counter this reality, this paper offers recommendations to policymakers to alter negative perceptions and generate greater utility to freight railroad carriers in public partnership.

Likewise, freight rail carriers must understand government’s main intention in partnership: to serve the public good. If the industry hopes to leverage public support to address their own goals while producing adequate dividends for policymakers, rail carriers must address transparency issues and better market their desires, the impact of intercity passenger rail on their business and how freight rail can better serve the public alongside shareholders.

Intercity passenger rail policy founded upon utilizing private freight railroad infrastructure must conform to the limitations of shared use, respect the perspectives and desires of each stakeholder and collectively advance each party’s goals. This paradigm can counteract ongoing resentment and make long term partnership more robust and sustainable. For America’s railroad industry – both passenger and freight components – to reach its full potential in regards to revenue generation and market share, collaboration between both sectors is mandatory.

1. THE WORLD OF AMERICAN RAILROADING

1.1 American Intercity Passenger Rail

In 2009, a newly elected President Barack Obama announced \$8 billion in appropriated capital spending for intercity passenger rail (IPR) development and expansion projects as part of his stimulus program. Painting a rousing scene at the official press conference, President Obama asked transportation, environmental and government officials in attendance to:

Imagine whisking through towns at speeds over 100 miles an hour, walking only a few steps to public transportation and ending up just blocks from your destination. It is happening right now; it's been happening for decades. The problem is, it's been happening elsewhere, not here. (Knowlton, 2009)

This quote accurately captures the unique case of IPR in America. The National Railroad Passenger Corporation (NRPC) – doing business through its service mark Amtrak – has endured a rocky 42 year existence as the nation's sole IPR provider. Despite numerous high profile investment and reform efforts, lackluster service has been a consistent characteristic of the railroad throughout its history. Outside of a few city pairs and corridors, the vast majority of Americans still lack access to reliable, frequent, convenient and comfortable IPR service. Subsequently, the overall impact of the mode on America's transportation network remains miniscule; Amtrak's 30 million riders in 2011 amounted to only 5% of domestic airline ridership while IPR passenger miles languish at only 2%¹ in comparison to intercity bus. (Bureau of Transportation Statistics, 2013)

As a result, IPR development has become a major policy drive for public officials seeking to ensure a balanced intercity transportation network, spur economic development, promote energy efficiency and improve connections between communities. (Federal Railroad Administration, 2009) Indeed, IPR is a vital component of the transportation system of many developed nations and a mode

¹ This statistic includes scheduled intercity bus service as well as unscheduled charter service.

deserving of government investment and attention for its public benefits. (Sperry et al., 2011) In light of this, Amtrak's ongoing inability to capture market share has been a source of great frustration for political, transportation and environmental officials. From their chagrin, two questions have arisen:

1. Why does passenger rail as a mode lag so far behind other modes of intercity travel within the United States?
2. How can passenger rail's diminished position be reversed?

The answers to these questions are much less clear cut. Without hyperbole, the political, economic and operational complexity of America's rail system is unmatched by any other nation. A multitude of institutions and factors that collectively exemplify American railroading all play a major role in determining Amtrak's contemporary situation and future.

1.2 The World of American Railroading

Amtrak is a truly anomalous component of America's intercity passenger transportation network. Typically, privately owned transportation operators utilize publicly funded infrastructure to do business, as exemplified in the aviation and intercity bus industry. While Amtrak is chartered as a private, for-profit corporation, the vast majority of its stock is held by the federal Department of Transportation (DOT). With consistent operating losses and an inability to fund its capital budget, Amtrak is dependent upon an annual infusion of public cash to conduct operations, plan and undertake projects, thus institutionalizing the railroad as a *de facto* government agency and subjecting it to the rigors of politics and public oversight. Amtrak remains the government's only foray into the intercity passenger business.

To depart even further from transportation norms, the vast majority of Amtrak's approximately 21,000 route miles operate on infrastructure owned by neither the railroad nor any government body. Rather, the trackage Amtrak depends upon is owned and operated by the America's freight railroad industry – an amalgamation of privately held, for-profit corporations of various sizes.

Like Amtrak, America's freight rail carriers are atypical of domestic transportation funding and financing. Freight railroads remain the only mode of transportation whose infrastructure is built, owned, operated and maintained by the carriers themselves through privately sourced financing. With this, two interesting situations arise. First, as freight rail carriers operate largely devoid of public funding and capital planning oversight, a disjointed information vacuum between policymakers and the railroad industry pervades.

Second, the freight rail industry's self-financing has made rail carriers furiously protective of their investments to support future revenue generation. A 2007 study projected freight tonnage moved by rail to increase 88% by 2035, requiring an estimated \$148 billion in capital investment to meet demand while preserving current levels of service. (Association of American Railroads, 2007) Motivated by profit and beholden to their shareholders to produce adequate dividends, the railroad industry is insular and employs shrewd risk management in its capital and business planning.

The industry's disconnect has begat a veritable "good ol' boy" network of individuals deeply passionate for railroading. (Loving, 2008, Pg. 9) Data concerning operations, billing, business and capital planning, service and management structures are closely guarded company secrets while an esoteric lexicon of acronyms and slang demarcates railroading from other transportation modes. Without little transparency, industry outsiders are perplexed by the industry's characteristics, motivations, strengths, weaknesses and opportunities for public partnership. Combined, these factors have had a profound impact on IPR development.

In daily exercise of running passenger trains, Amtrak utilizes a shared use operational method³ – where both passenger and freight trains utilize the same physical infrastructure. This contrasts to shared right-of-way or shared corridors – where differing rail traffic types operate within close proximity but are sequestered by service type. (Transportation Research Board, 2010) Of these three methods shared

³ Synonymous with "shared track." For uniformity's sake, this paper will utilize the label "shared use."

use by far the least demanding of capital, thus making it a very appealing approach for policymakers seeking to spur IPR development in spite of stretched budgets. (Prozzi et al., 2006) However, the capital needs for shared use operations are by no means non-existent. Coalescing differing service types is highly complex from an operational, legal, political and engineering perspective. Lacking specific expertise, transparency and a strong relationship with the nation's freight railroad carriers, public officials have been flustered by the ongoing difficulties in real world shared use operations.

With the nation's freight railroad owned tracks crowded by slower moving freight railroads, Amtrak has had great difficulty in adhering to published schedules, increasing trip frequencies and developing new routes. While Amtrak's ridership has steadily increased throughout most of the railroad's history – from 16 million in 1972 to 31 million in 2012 – the railroad's overall marketability has been greatly impacted by lackluster market reach and perceptions of unreliability. Short-haul Amtrak routes operating on freight railroad infrastructure posted a cumulative on-time performance (OTP) rate of 82% in 2012. For long distance trains, this figure was 71%. (National Railroad Passenger Corporation, 2013) As these statistics do not factor in Amtrak's ample schedule "padding," actual OTP figures are considerably less.⁴ (Federal Railroad Administration, 2012)

1.3 Defining the Issues: A Hate-Hate Relationship and a Chance for Change

Amtrak's ongoing reliability and expansion issues has resulted in heated condemnations from Amtrak's government financiers, who accuse hosting freight railroads of prioritizing their own freight trains and actively discouraging IPR expansion. (Durbin, 2012) Freight carriers have countered these

⁴ All of Amtrak's routes contain padding. This is additional time factored into a schedule to make up time should a train be running late. In more extreme cases, as with some long distance routes, padding can amount to almost an hour; meaning that if a train ran with no delay it could arrive into a station an hour early. Typically, padding is placed in the schedule at terminal or major station stops. Amtrak's on-time performance measures are further skewed by a delay allowance which is dictated by distance traveled. For routes under 250 miles, this allowance is 10 minutes. Between 250 and 350 miles, it is 15 minutes. For 350 to 450 miles, it is 20 minutes. Between 450 and 550 miles, the allowance is 25 minutes and for all routes traveling more than 550 miles, the allowance is 30 minutes. So if a train traveling 300 miles arrives into its final station 15 minutes late, Amtrak reports that particular train as on time.

accusations by pointing to physical rail network constraints that inhibit effective IPR handling. (McClellan, 2006) This combines with the industry's own complaints toward government with claims that IPR unduly burdens the fluidity of freight operations and therefore their bottom line. (Association of American Railroads, 2013) Each side seeks to advance their respective goals while lambasting the other with claims of malfeasance.

At this impasse, the relationship between public officials and freight rail carriers has reached new heights of contention. Rhetoric from key stakeholders depicts the vitriol:

There's no turning back. Do not be dissuaded by a few detractors... The last group of transportation officials left us an interstate system. What we will leave to the next generation is high-speed rail.

– Former US Secretary of Transportation Ray LaHood (Burgess, 2013)

I'm a corporation. I exist to make money, OK? You can't make money hauling passengers, so why would I want to do that? That wouldn't be fair to my shareholders.

– CEO Michael Ward of CSX Railroad (Caruso, 2011)

...if all we do is super-impose high speed passenger rail on existing freight networks, it will consume freight capacity needed for freight customers today and limit our ability to expand for the customer's growth in the future.

– Former CEO Jim Young of Union Pacific Railroad (King, 2009)

UP's concerns [over high speed rail] are the same old tired bull[omitted] they have spewed since at least 2008...

– Robert Cruickshank, passenger rail advocate and editor of California High Speed Rail Blog (Cruickshank, 2011)

If the federal government would increase oversight and enforcement of the penalties in existing law against host railroads for delaying Amtrak trains, then most trains' performance would improve significantly.

– Malcolm Kenton, Outreach & Engagement Director for the National Association of Railroad Passengers (Keaton, 2012)

[Amtrak is a] government-subsidized transportation system that nobody wants to use.

– Former Union Pacific CEO, Richard "Dick" Davidson (Jordan, 2003)

This animosity has only spawned stagnation. Deputy Secretary of Transportation John Porcari lamented the icy relationship at a congressional hearing:

Regrettably, the difficulty in achieving timely stakeholder agreements between the states and freight railroads has delayed putting Americans to work and building the rail system of the future. (Levitz, 2010)

The impacts of this contention are not only felt by IPR advocates. While freight rail carriers have been successful when measured by profitability and stock gains, their future remain stifled by immense capital needs. In relying upon privately sourced financing, risk aversion perpetuates across the industry. As a result, conservative capital and business planning has refocused railroad carriers toward cost cutting and consolidating revenue in niche, non-competitive rail dominated markets.

The flaws of this strategy are becoming clearer. Demand for coal – historically the industry's greatest revenue generator and main recipient of capital investments dollars which comprised 40% in total tonnage and 20%⁵ of total industry revenue in 2008 (Ferry, 2013) – is in steady decline amidst shifting market forces caused by hydraulic fracturing, a natural gas boom and more stringent environmental regulations on polluting coal power plants.

Years of consolidation and risk management has begat a modern railroad industry ill-prepared to weather this market shift. The Surface Transportation Board (STB) found that only two major freight railroads in 2012 were revenue adequate – the measure of the industry's ability to finance their own cost of capital with existing and potential revenue (Surface Transportation Board, 2013). This report illuminates the industry's low return on investment (ROI) on capital projects. Some individual freight railroads have also begun to market the industry's immense capital financing issues. (Nowicki, 2012) Despite investing an average of 17% of total annual revenue back into rail infrastructure – an figure both proportionally and nominally higher than any other domestic industry – returns languish around 10%. (American Association of State Highway and Transportation Officials, 2004) Ongoing poor ROI statistics have alarmed railroad professionals alongside their private investors and further fed the industry's risk aversion toward investment. (Grimes, 2004)

⁵ For some individual large railroads, this figure increases to 30%.

In light of this, the railroad industry is facing a contraction of not only market share and market reach, but also revenue in the coming decades. Thus, the industry is slowly coming to embrace more innovative capital and business planning into untapped revenue sources. However, these ambitions are hampered by an ongoing reliance upon private financing. (Staplin, 2003) Freight rail carriers has responded by cautiously considering leveraging public dollars to bolster their capital budgets, an emerging strategy best embodied by Norfolk Southern Railroad's Heartland Corridor Initiative to redevelop a coal shipping lane for intermodal service. (Carter, 2011)

These shifts in markets and industry attitudes have opened up the possibility for greater cooperation between government and freight rail carriers in recent years. In light of the industry's woes, both stakeholders have come to harbor the same goal: the expansion and health of railroading. (Freight and Passenger Rail Panel, 2007) But with government possessing a IPR development goal not shared by freight railroad carriers combined with the ongoing animosity between both stakeholders, long term partnership cannot occur without identifying areas of symbiosis and erasing this rancor.

1.4 Research Scope: Seeding Public Private Partnership

Policymakers choosing to adhere to existing IPR policy and planning methods will face great difficulty in negotiations with the freight railroad industry. Thus, public officials should consider alternate approaches aimed at combating resentment, instilling trust and generating mutual utility. A very promising strategy option is public private partnership (PPP). Within the framework of PPP, the public sector will partner with a private entity – utilizing their resources and expertise – to share the costs and risks of an infrastructure project for the public good. In this framework, the burden is upon the public sector to solicit private sector interest with the opportunity to profit. If a private firm determines public partnership does not produce adequate returns or is too high a risk, they will opt not to partner. Now consider the existing interactions between government and the freight railroad industry on IPR:

- Freight carriers are not a voluntary partner – Amtrak possess the legislated authority to access the infrastructure owned by any freight railroad
- Freight carriers do not receive any monetary gain – Amtrak compensates on a subsidized avoidable cost formula rather than a negotiated market based rate for the utility used
- The utility of infrastructure is lessened, not enhanced – Amtrak operates under much different metrics than freight railroads and is intended by policymakers to have priority over all freight traffic, thereby impeding the hosting railroads ability to conduct freight operations

In light of this breakdown, the source of freight railroad combativeness becomes much clearer.

To freight railroads, IPR is a “free rider.” Meaningful and long term partnership cannot occur if one party feels they are being unduly taken advantage of. Even when coerced into compliance, dissatisfied partners will often employ passive aggressive methods such as lessened diligence on project planning and implementation, public critiques and insular attitudes.

In light of this information, this paper seeks to empower policymakers with crucial technical railroad knowledge alongside potential policy and strategy options to counter this animosity and foster long lasting and symbiotic partnership. Within the scope of this paper, this can be defined into three categories: (1) the degree of trust between freight rail carriers and government; (2) increased IPR market share, performance and viability and; (3) increased freight rail revenue and market share.

Prior research on freight rail and government partnership on IPR development does exist. A 2003 Mineta Transportation Institute study compiled a number of best practices informed by shared use railroad case studies in Europe. While possessing a strong analysis and overview, this report’s findings are difficult to transcribe domestically in light of America’s unique dynamic of public utilization of private infrastructure. Well aware of this aspect, the study explicitly states that analysis in determining the availability of competitive advantage gains to be gained by the freight railroad industry through government partnership in IPR development should be conducted. (Nash, 2003)

Other research in IPR development encourages what can be labeled as a “zero-sum” approach – where public officials negotiate and plan with freight railroad carriers to implement IPR service that

neither positively nor negatively impact freight activity. The Transportation Research Board's *Guidebook to Implementing Passenger Rail Service on Shared Use Corridors* is a very impressive work and mandatory reading for any agency or official interested or invested in rail policy and development. The report underscores the immense difficulty in reaching an agreement where the public interest is served and freight carriers receive reasonable incentive for their partnership. (Transportation Research Board, 2010) In spite of this, this report opts to place its focus in working within existing rail policy and strategies.

Converse to the Transportation Research Board's approach and to further expand on the scope of this paper, it is the author's opinion that a continued adherence to the *status quo* concerning IPR development strategies is untenable. They have undergone little reform in the 42 years since Amtrak's creation while making minimal progress in addressing the freight railroad industry's attitude toward government partnership or developing IPR. Passive, zero-sum strategies fail to illicit any large scale action. Truly, why would a freight railroad subject itself to years of intense negotiations and planning alongside headaches from construction, service implementation and ongoing IPR service where the stated end goal is they will receive no added utility?

Policymakers must be introspective on existing policy to discern areas that would benefit from reform. They must be innovative in identifying ways to tie compensation, funding and financing and freight modal expansion with IPR projects to encourage freight railroad collaboration while also advancing desire for serving the public good with enhanced and expanded IPR. A willing and voluntary partner is always more effective than one who is forced. If policymakers do not develop methods that counter resentment and generate mutual benefits, IPR and rail as a whole will continue to stagnate.

1.4.1 The Role of Insider Knowledge

Without firsthand experience in the esoteric world of railroading, simple academic research unfortunately often only amounts to mere sophistries and thus is an inapplicable tool for public officials. This disconnect cannot continue. With the author's own professional experiences in both the passenger and freight rail sectors, firsthand technical information and options typically absent from public dialog can be used to bolster academic research.

Relationship building between multivariate stakeholders is not something that can be easily reduced to defined guidelines or data driven processes. Nor can the deeply held convictions and passions of human actors be ignored in any discussion on IPR development. Policy creation often amounts to an abstract social science rooted in the complex and often contradictory nature of human interaction. Considering this, the best course of action for public officials makers is to prepare, build trust through dialog and anticipate areas of conflict and agreement in which to found partnership upon.

1.5 Research Methodology: Rethinking Roles, Interactions and Policy

Analysis, evaluation and synthesis within these pages are delimited toward a broader qualitative policy discussion. It is limited by a lack of access to some proprietary Amtrak, government and freight railroad information alongside the general abstract nature of relationship building and human interaction.

Initial research and trends have resulted in this paper adhering to five assumptions: (1) Amtrak will remain the sole provider of America's national IPR service; (2) Amtrak will continue to enjoy unthreatened legal right to access to freight railroad infrastructure; (3) public officials will continue to prefer to develop IPR utilizing the existing rail network over building new publically owned infrastructure; (4) the freight railroad industry will continue to wield great political strength and; (5)

Public Private Partnership is the best method to support long term commitment between two stakeholders in an infrastructure development project.

Keeping these factors in mind, this paper aims to first provide public officials with a base understanding of freight railroad characteristics, viewpoints and goals to compare against their own. In light of the freight railroad industry's general disconnect from the public eye, the disparity of knowledge and power between freight railroads and government is great. With command of the nation's railroad network and possession of sustainable political, financial and human capital, the freight railroad industry wields great influence. In light of this, policymakers must seek to avoid building resentment while attempting to advance their own goals.

From this base, deeper analysis and evaluation of policy and interaction can occur. From foundational knowledge and analysis, recommendations can be synthesized. Despite the freight railroad industry's power, these recommendations realize government's stewardship over the public's welfare. Public officials cannot simply "write a blank check" as preclusion to any partnership with a private entity. The freight railroad industry must also fulfill any obligations to the public sector in partnership.

Both passenger and freight rail have successfully coexisted in the past and can do so again if interactions better conform to the dynamics of PPP. To seed development of PPP between government and the freight railroad industry, analysis, evaluation and synthesize in this paper is focused upon four relevant categories: railroad history; freight railroad operations, economics and planning; shared use planning, policy and operation; and funding and financing.

1.5.1 Research Categories and Goals

A. Railroad History

If one seeks to alter a paradigm, one must determine how it first manifested. This section will provide an overview and analysis of the historical interactions between government and

rail with attention focused upon the years following World War II. This section will explain the origin of existing animosity, provide insight of stakeholder perspectives and foster introspection into contemporary policy.

B. Freight Railroad Operations, Economics & Planning

Since being largely deregulated in 1980, the freight railroad industry has reorganized to become an economic juggernaut and a darling of Wall Street. But with such a lack of transparency, exactly how freight carriers approach capital and business planning is foreign to many industry outsiders. This section will shed light on the business and operational side of railroading to introduce non-industry professionals and policymakers alike to the industry's characteristics and motivations.

C. Shared Use Planning, Policy and Operations

Coalescing multivariate stakeholder perspectives and needs is a highly complex process. Shared use rail development contains distinct limitations, issues and opportunities. This section will analyze and evaluate existing IPR policy and interactions from the perspectives of both policymaker and the freight railroad industry. From this, policy options aimed at combating resentment, instilling trust and encouraging collaboration through symbiosis are synthesized.

D. Railroad Funding & Financing

Unique with its reliance on privately sourced financing, the potential for greater fiscal partnership between the freight rail industry and the public is immense. This section analyzes and evaluates existing financing interactions. From this foundation, IPR partnership and new railroad infrastructure development policy options are developed.

1.6 Summary

Altogether, the freight rail industry cannot expect to realize its potential as both a business and a component of the nation's transportation network by distancing itself from the public sector's immense resources. Nor can the public sector effectively advance IPR and the public's welfare by embittering the freight railroad industry to public partnership. New policy options can better equip policymakers to understand, negotiate, cooperate, partner and collaborate with the nation's freight rail carriers in a true long lasting PPP.

2. THE HISTORY OF AMERICAN RAILROADING

2.1 Introduction

History has played a key role in developing the existing animosity between government and the freight railroad industry. An analysis of historical interactions helps contemporary stakeholders to understand:

- What issues, factors and events helped manifest the poor relationship
- Why progress toward addressing this bad blood has been minimal
- How future negotiations can avoid the pitfalls that befell past interactions to nurture greater trust and dialogue

The admittedly cliché mantra of “those who do not learn from the past are doomed to repeat it,” is nonetheless an important principal to work by in multi-stakeholder interactions. An analysis of past interactions and policy allows introspection, clarifies the viewpoints of others and generally supports more fruitful cooperation and partnership.

2.2 Early History and Growth

Historically, rail has been a defining driver of America’s economic, social and political development. Initially introduced to the United States in the 1830s, rail transport quickly proved its superiority over the then dominant mode of waterborne transport. Railroads continued to grow throughout the 1800s to the point of complete dominance, playing a crucial role in both the Civil War and the strong economic growth that characterized post war years and the Gilded Age. (Goddard, 1996, Pg. 7)

Well aware of their hegemony over competing modes of transportation and devoid of any government regulation, rail carriers were quick to maximize their profits through aggressive route development and monopolistic behavior. While government offered its unequivocal support to rail

carriers through tax breaks and land grants⁶, discontent toward railroad industry was growing amongst the general population. (ibid, Pg. 37)

An emerging Populist movement, angered over the behavior of “robber baron” railroaders, forced policymakers to re-evaluate their *laissez-faire* relationship with rail carriers. Foreshadowing the future relationship between both entities, the Interstate Commerce Commission (ICC) was created in 1887 to regulate rail industry rate, safety and service standards. (Interstate Commerce Act, 1887) Despite this shift toward regulation to address the industry’s monopolistic behavior, the lack of viable competition from other transportation modes left rail’s hegemonic control over freight and passenger markets remained unthreatened. However, this would soon change.

2.3 Regulation, Stagnation and Decline

The advent and popularization of the automobile in the early 20th century garnered intense public interest and investment. Conversely, the railroad industry found itself under increasing scrutiny from government regulators, coming to a head with America’s entrance into World War I. Frustrated by the inability of private railroad carriers to supply and provide for the tremendous war effort, the industry was nationalized in 1917. (Goddard, 1996, Pg. 41) While this was reversed after the cessation of hostilities in 1920⁷, the relationship had been set. Government and the railroad industry had entered into outright conflict.

⁶ Despite occurring over 150 years ago, this issue continues to reverberate today. Policymakers often claim that the railroad industry’s success was only the result of these government aid policies and that the industry has neglected to return the favor by serving the public good. Railroads have countered these assertions by sourcing multiple mid-20th century federal government reports which concluded that land grant aid to the industry had been fully returned in the form of favorable shipping rates for military and mail goods as well as the rail’s role in spurring economic development – and thereby tax revenue – in previously uninhabitable areas. Nonetheless, contention in this area remains.

⁷ World War I officially ended on November 18th, 1917. However, the demands of demobilization and complexity of returning railroads to private ownership lagged privatization. The railroad industry was officially transferred to private ownership in March 1920 with the Esch-Cummings Act.

In the decades following the war, rail's market share continued to erode against emerging road based competitors. Save for a brief boom coinciding with mobilization for World War II, revenues were in decline. While railroads were still funding their declining business through private financing, competing automobiles, trucks and airlines all enjoyed access to publically funded and financed infrastructure. David Morgan, editor at *Trains Magazine*, complained of preferential subsidies to rail's competitors:

[The New York Central Railroad] spent \$5 million of its own money to erect a brand-new train station in Toledo in 1950... Fourteen miles from Downtown is the Toledo Express Airport... built entirely with city funds. (Wilner, 1994, Pg. 30)

The burgeoning, publically supported highway and aviation system was taking an immense toll on the railroad industry. Intercity passenger trains possessed only a 30% market share in 1960, down from 75% in 1930. (ibid, Pg. 20) Freight – always a comparatively much more lucrative revenue source for rail carriers than passenger – faltered from intense competition from trucking. Even more alarming, these declining freight revenues were simply being devoured by increasingly unprofitable IPR business lines. Despite reinvesting in their passenger services after World War II, the industry had been unable to recapture market share from road and air based intercity travel modes. Many carriers admitted defeat in the war for passengers and sought to abandon the IPR business. However, ICC regulations hamstrung this desire. Constrained by a legal mandate to provide IPR service, rail companies could only cancel passenger routes through lengthy public hearings that proved the service was unnecessary to public's need. (Esch-Cummins Act, 1920)

With revenues deteriorating and capital budgets tightening, rail carriers began to pare back infrastructure investments. This new norm of deferred maintenance snowballed to adversely impact rail's ability to grow and serve its freight customers; all while passenger ridership continued to decrease. A Southern Pacific Railroad executive harshly exemplified the railroad industry's increasing financial woes and discontent:

We're still listed as running passenger service, but we try to not do it. God damn all passengers on a short haul anyway. If I have to carry passengers I'll make it so uncomfortable, inconvenient and disagreeable for them that they'd wish they never bought a two-bit ticket! (Mixed Train Daily, 1961, Pg. 59)

In 1968 the mail service which offered the last financial boost for IPR operations ended as the United States Postal Service closed its remaining contracts with the nation's rail carriers; now collectively operating a paltry 366 intercity passenger trains a day. (Sanders, 2006, Pg. 5) Annual passenger train losses, already at \$200 million, ballooned to \$250 million. (Nice, 1998, Pg. 4) Subsequently Penn Central, the nation's largest rail carrier, pleaded for ICC approval to discontinue all passenger train service west of Harrisburg, PA for the sole intention keeping its freight business financially solvent. (Sanders, 2006, Pg. 29) The railroad industry was in its death throes.

2.4 Saving American Passenger Rail

This dilemma would not go unheeded by government. Faced with the prospect of the passenger train's extinction, deferred maintenance and insolvency of the nation's private rail carriers, the federal government set out to save the ailing industry. Beginning in 1968 and continuing into 1970, fiery debate and intense negotiations pervaded amongst rail carriers, the Department of Transportation (DOT), labor unions and various public stakeholders.

Differing strategy options arose; direct subsidies and nationalization included. Throughout negotiations, vitriol spewed from both parties. Public officials accused rail executives of poor management and purposely divesting in their passenger rail services to artificially manufacture a crisis. The rail industry rebutted with claims that undue regulation had effectively destroyed the ability to compete in both freight and passenger markets. Rail carriers were adamant that subsidies – like those provided to the road and aviation industries – were the only viable way to support a turnaround for rail. Policymakers were hesitant to support an industry they believed was institutionally flawed by poor

leadership and lack of vision. With pressure from then President Richard Nixon and the now Office of Management and Budget (OMB), Congress proposed its own solution.

To save America's passenger trains and support the financial health of the nation's beleaguered rail carriers, the government would incorporate a quasi-public entity – the National Railroad Passenger Corporation (NRPC) – to operate, manage and reform the nation's ailing passenger rail network. Initially deemed "Railpax" in DOT planning conversations, the company provided the opportunity for rail carriers to absolve themselves of mandated passenger routes by "buying in" to the company. However, they would not be fully rid of intercity passenger rail. In an effort to manage capital costs, DOT planners deemed that Railpax's trains would continue to utilize the rail industry's privately owned and operated tracks through a guaranteed access agreement.

DOT envisioned that consolidated passenger operations under Railpax would support streamlined service, operations and business practices. Throughout Railpax conversations, government officials continued to chastise rail carriers; scolding them for what they perceived to be a wanton deterioration of the nation's rail network. (Loving, 1998, Pg. 117) So low was the opinion of rail carriers in government that the authors of Railpax scheme promised that intercity passenger rail – when not hampered by the railroad industry's poor management – would be operationally profitable and subsequently not require public financing outside of an initial startup grant and loan package. Anthony Haswell, founder of the National Association of Railroad Passengers (NARP) summed up these views in a congressional hearing:

[Railpax] with unified management will facilitate elimination of duplicate functions, particularly in administration, sales, marketing, promotion and research and development. Most important of all, the operation of trains will be moved from the control of those who want to get rid of them and put them into the hands of management dedicated to giving the best possible service at the lowest possible cost. (Committee on Interstate and Foreign Commerce, 1970)

In a tacit admittance of the impact of overregulation, policymakers provided Railpax freedom from the regulatory powers of the ICC. Despite this privilege extended to Railpax, all other rail carriers would continue to operate under ICC regulations. (Jones, 1970) The National Railroad Passenger Corporation, later adopting the official corporate service mark “Amtrak,”⁸ was signed into law on October 30th, 1970 (Rail Passenger Service Act, 1970) and began operation on May 1st, 1971 – absolving the vast majority of freight rail carriers from providing IPR service.

2.5 Defining Contemporary Relationships: Setting Roles

The creation of Amtrak is a watershed moment in the relationship between government and freight rail carriers. For the first time, the management and funding of freight and passenger rail were segregated. Even more impactful was the role of the public sector in this split. The federal government became a financier and operator of passenger trains – still its only foray into the business of intercity passenger service. Policymakers now felt they held the future development of IPR in their own hands.

The nation’s now mostly freight only rail carriers emerged from this battle with mixed results. While they had finally rid themselves of the draining operational expenses of IPR, the costs for this victory had been high. The industry’s reputation was obliterated by government’s vehement condemnations of their management, financing and operational practices. Public perception of the railroad industry, having both experienced deteriorated IPR service and witnessed the great political battle over Amtrak’s creation, was also low.

Despite Amtrak’s intended goal of assisting financially beleaguered railroad carriers, the benefits were subdued. The publicly owned and operated Amtrak would continue to utilize the infrastructure of the nation’s still privately held rail industry through a brokered right of access agreement. This entailed direct costs and opportunity costs arising from capacity utilization, factored insurance risks for accidents

⁸ “Amtrak” is an amalgamation of the words “America,” “Travel” and “Track”

and infrastructure wear and tear – all of which would be borne by the hosting freight railroad. Even more irksome to carriers was the compensation method for access rights; a formula avoidable cost rather than negotiated market cost. This effectively forced hosting railroad subsidization of IPR.⁹

Altogether, these factors fostered great disdain amongst rail professionals toward government. They believed that their concerns were ignored and their compliance coerced. To rail carriers, Amtrak was not a partnership borne from the spirit of collaboration, but rather a deal forced upon them; their compliance guaranteed only for the sake of self-preservation in the face of mounting debts and intense government pressure.

The industry's discontent would play a prominent role in their behavior regarding their remaining obligations to intercity passenger rail. This became clear in planning sessions for Amtrak. Democratic Representative John Dingell of Michigan asked Thomas Goodfellow, then president of the rail industry trade and lobbying group the Association of American Railroads (AAR):

What assurances are there that the roadbed and trackage on which [Amtrak] will be run will be maintained so that they can safely provide high speed service?

Goodfellow responded matter-of-factly:

If [Amtrak] so decides the trains will run at 150 miles an hour, the roadbed will be maintained for that operation at [Amtrak's] expense. (Committee on Interstate and Foreign Commerce, 1970)

Surprisingly, government and passenger rail supporters were willing to concede on this issue. Anthony Haswell of the NARP, normally a staunch critic of the rail industry's practices and management styles, laid clear his viewed role of government in supporting the revitalization of passenger rail and railroading as a whole:

⁹ The specifics of this arrangement, alternatives and its implications on relationship building efforts between the freight railroad industry and policymakers is expanded upon later in this paper. For further information, see Section 5.2.

The roadbed problem is big enough so that you cannot just order the railroads to provide for high speed roadbeds. I think that question has to be faced at the Government level and dealt with at that level. (ibid, 1970)

A disconnect between passenger rail and freight rail – and thereby government and private rail carriers – was unequivocally set with the creation of Amtrak. The government ceded all infrastructure obligations of freight railroad carriers to support passenger rail operating metrics. In light of this, rail carriers would refocus their capital planning, operational structure and business lines solely toward the profitable and efficient movement of freight, not IPR. However, in mandating access to the infrastructure of private freight carriers, policymakers had nonetheless necessitated partnership with freight rail carriers. The bad blood spawned from the fight over Amtrak would hamper cooperation while money woes would further exacerbate the contention.

Pressure from then President Richard Nixon's key policy initiative "New Federalism" – which envisioned a diminished role for the federal government and elevated role for state and local governments for funding – kept the national passenger railroad's initial and subsequent infusions of grant and loan money low. (Porter, 1970) Many protested this lack of investment, but to no avail. Powerful Senate majority leader Mike Mansfield of Montana lamented:

If [Amtrak] isn't interested in starting off on the right foot, perhaps it would be best to withdraw all funds already appropriated so that it will not be able to operate after May 1st. (New York Times, 1971)

This diminished level of funding would set the tone for Amtrak's vitality. Minimal capital and operational funding, a dependence on obsolete and deteriorated equipment inherited from the nation's ailing rail carriers and the utilization of trackage suffering from deferred maintenance and owned by angry freight carriers all took their toll on the company. (Nice, 1998, Pg. 10) In 1974 – the year the corporation was envisioned by its creators to be self-sustaining – Amtrak posted a loss of \$241 million. (ibid, Pg. 27) Large operating deficits and a starved capital budget continue to characterize Amtrak in the present day.

Halfhearted funding of Amtrak only intensified the freight railroad industry's negative opinion of government. After fighting tooth and nail to preserve passenger rail service – all along the way admonishing the nation's railroads for incompetence – the public sector was now rescinding its promise to revitalize IPR, all while dilapidated passenger trains continued to burden freight operations.

Despite government's lackluster efforts to resuscitate IPR, the railroad industry's precarious position continued unabated. In fact, America's railroads had not yet hit rock bottom. Decades of extensive losses, diminished capital budgets, high labor costs and ongoing regulation could not be reversed simply with the creation of Amtrak. The coming years would see the industry face its nadir. The interactions between freight carriers and government that would characterize these years would fully entrench the freight railroad industry's venom toward government still felt today.

2.6 Saving American Freight Rail

Battered by decades of extensive losses and deferred maintenance, the catalyst for Amtrak's creation, Penn Central Railroad, entered into bankruptcy proceedings in 1970. By 1973, regulators had determined the corporation to be unsalvageable without direct government intervention. Faced with the prospect of a shutdown of Northeast's entire freight railroad network, the loss of hundreds of thousands of jobs and seeking to again address the overall grim future facing the nation's railroad industry, government decided to intervene in the railroad industry in a powerful way: direct subsidies and oversight.

The Regional Railroad Reorganization (3R) Act of 1973 set up what was to be the successor to Penn Central and intended savior to the Northeast's failed freight rail network: the Consolidated Rail Corporation, or Conrail. (Regional Rail Reorganization Act, 1973) Beginning operations in 1976, Conrail

did business under the auspices of the federal government.¹⁰ Congress appropriated large influxes of cash to Conrail in an effort to modernize its infrastructure, their logic being that intense capital investment and better public management would improve the railroad's bottom line and ability to compete. However, it soon became clear that money alone could not save the ailing railroad.

The impact of the ICC's regulations on freight rail carriers was becoming clearer as government auditors analyzed Conrail's extensive and ongoing operating losses. With a large underutilized rail network and inflexible rate setting mandated by the ICC, policymakers were becoming increasingly aware of their role in the railroad industry's issues. (Goddard, 1996, Pg. 233) Attitudes began to shift. In a marked departure from decades of admonishing rail carriers for poor management, the federal government refocused the debate on the merits of its own role in the industry. This introspection culminated with passage of the Staggers Act in 1980 which significantly curtailed regulations impacting the freight railroad industry.

2.7 The Staggers Act

The impact of the Staggers Act cannot be overstated. It remains *the* defining event in modern railroading. For the first time since 1887, the Staggers Act granted freight rail carriers the ability to set their own freight rates and plan their own networks without public oversight. (Staggers Rail Act, 1980) In great irony, the government's near-nationalization of the industry had begat the establishment of a more *laissez-faire* approach.

No longer feeling threatened by government regulation or burdened by unprofitable passenger routes, the nation's rail carriers went to work: contracts with employees were reorganized to allow for smaller crew sizes; thousands of miles of underutilized track were abandoned; freight rates were

¹⁰ Conrail was never, by strict definition of the word, nationalized. However, with the company's stock held by government and the railroad dependent on massive infusions of public money, and thereby subjected to strong oversight by the Department of Transportation, the government did wield near complete power over the corporation.

altered; routes were consolidated; capital planning strategies were retailored to support bulk commodity business lines; operational and capital costs were cut and a frenzy of mergers ensued. (Kelly et al., 2010) Conrail, while still under government ownership, posted its first operating profit just one year after the passage of the Staggers Act. Other carriers followed suit with their own burgeoning revenues. The railroad industry had arisen from its death bed.

In the decades following the passage of the Staggers Act, the rebirth of the freight railroad industry has been breathtaking as carriers clawed their way back to become darlings of Wall Street investors. (Morris, 2013) In this time, rail carriers invested heavily into their “bread and butter” revenue sources in coal and agriculture. Emerging revenue sources, such as intermodal freight, also garnered attention and investment. (Association of American Railroads, 2007) The industry’s reversal was exemplified with Conrail, now posting a consistent annual profit and no longer dependent on public support to operations. DOT privatized the railroad by selling off its stock in 1987. (Conrail Privatization Act, 1986)

Throughout this time, freight rail carriers paid little attention to IPR development. Motivated by profit and empowered with newfound autonomy granted by the Staggers Act, rail carriers realigned their business and capital planning approaches to only support efficient bulk freight activity. Thus, the culture shift set with the Rail Passenger Service Act in segregating IPR and freight railroad planning and management solidified. As Amtrak remained mired in politics, its value questioned and its money appropriations low, Amtrak’s trains continued to lumber along at suboptimal levels of service on freight optimized infrastructure.

2.8 Defining the Modern Relationship: Distrust

Most remarkable during this renaissance was the rail industry’s affirmation of privately sourced financing. This was no accident. Informed by a tumultuous history and interactions with government,

freight rail still harbored great resentment toward the public sector. Thus, a fierce anti-government attitude set in across the upper echelons of the industry. Rail carriers would spare no expense to ensure that government would never again play a role in their affairs, even going so far as to reject opportunities for public financing for fear of “strings attached” that they perceived as a threat to their autonomy. Transparency between both sectors disappeared. The only public outreach efforts emerged from the lobbying arm of the industry’s trade group, which began to market the benefits of deregulation and “hands-off government.” (Association of American Railroads, 2013) Industry paradigms settled, coming to view government not as a partner for growth, but rather an anathema that ensures stagnation and failure. (Davidson, 2000)

Surprisingly, policymakers have largely come to view deregulation of the freight railroad industry as beneficial. (Government Accountability Office, 2006) However, some qualms remain. Captive shippers – those whose depend on rail’s unique competitive advantage in hauling bulk freight and are unable to utilize competing modes – have complained of undue rate setting. Furthermore, some aspects of the industry’s renaissance are puzzling, as total route miles, employment and market share have all decreased since 1980 while dividends paid to railroad shareholders have doubled. (Committee on Commerce, Science and Transportation, 2010). Finally, there is the ongoing issue of Amtrak. Still plagued by poor OTP and having undergone minimal expansion in its 42 year history, policymakers have come to place many blames on the freight railroad industry. (Office of Inspector General, 2012).

2.9 Summary

A deep ongoing division on perceptions of America’s railroad system pervades between freight rail carriers and government. At this impasse, both parties have simply hunkered down into their respective camps, thereby letting ongoing issues – a lack of transparency between stakeholders, freight railroad concerns and animosity, IPR performance issues – continue unaddressed. The need for a

paradigm shift becomes clearer. The freight railroad industry's behavior can be traced to their perceptions of government, all informed by historical interactions. In light of this, public officials must seek ways to counter the industry's distrust and reopen the chance for dialog, cooperation and partnership.

Existing contention is not unavoidable. Policymakers can advance their own visions for IPR development and the public welfare without embittering or threatening the freight railroad industry. However, success in this area is dependent upon a strong relationship that combats existing resentment, instills trust and developments partnerships that increase utility for all involved. In order to discern opportunities for symbiosis – as well as better understand freight railroad perspectives and behavior – policymakers should possess a more in depth understanding of freight railroad business and operational characteristics.

3. FREIGHT RAILROAD OPERATIONS, ECONOMICS & PLANNING

3.1 Introduction

Understanding the impact of past interactions is just one part in the formula necessary to enable better dialog, relationship building and collaboration. As the industry has pulled away from the public eye in reaction to perceived negative government behavior, public officials have subsequently lost any understanding into how freight railroads plan, operate and do business. Without this crucial foundation, it is difficult for policymakers to effectively address the industry's concerns as well as identify better avenues for partnership.

In an attempt to support transparency, this section will unmask the business side of freight railroading in two intertwined areas: (1) railroad infrastructure, how freight carriers approach capital planning and; (2) railroad economics, how freight carriers develop, sustain and grow their revenue sources. This information can better enlighten policymakers on freight rail motivations and the sources of their behavior, discern potential areas for conflict and symbiosis and assist in policy synthesis aimed at implementing a PPP.

3.2 The Hierarchy of Freight Railroads

The freight railroad industry is by no means homogenous, though the industry's national trade association and national policy is generally dominated by the largest carriers. Business and capital planning, viewpoints and physical attributes differentiate between freight carriers which are formally classified by the Surface Transportation Board (STB) by a railroad's level of market reach and revenue generating ability.

A. Class I

Class I carriers are the juggernauts of the industry, generating annual operating revenues of at least \$430 million a year¹¹ and possessing a market reach that spans multiple regions. Due to their size, Class I railroads enjoy business across diverse commodity markets and maintain the largest physical rail networks; all made possible through multi-billion dollar annual capital budgets. With so much resources at this disposal, Class I carriers play a leadership role in the industry's government affairs. Furthermore, the majority of Amtrak's passenger trains operate on infrastructure owned and operated by Class I carriers.

B. Class II

Class II carriers are modestly sized railroads enjoying a regional market reach and annual operating revenues between \$20 million and \$430 million dollars. With less revenue sources and smaller capital budgets, Class II owned infrastructure is typically maintained at much lower standards compared to Class I owned infrastructure. As a testament to the interconnectedness of the railroad industry, freight activity on Class II railroads is rarely self-contained. Rather, these carriers interchange with other railroads, both larger and smaller, as feeders.

C. Class III

Class III carriers are the "mom and pop" wing of the railroad industry. These carriers – most of which possess routes amounting to less than 200 miles – post annual operating revenues of less than \$20 million and rely on interchanging traffic with other railroads. Class III carriers are unique in their penchant for providing direct business-to-business service wholly utilizing rail. Conversely, Class I and Class II carriers typically ship higher volumes on an intermodal structure; trans-loading cargo to and from trains, warehouses, distribution centers, trucks, barges and ships.

¹¹ These numbers are adjusted annually for inflation per the Association of American Railroads (AAR) published statistics. The Surface Transportation Board (STB) determines the class of freight carriers utilizing a formula for the base year of 1991. The exact revenue numbers to classify a railroad often vary, but due to the relative stability in revenues across carriers, classifications in recent years have rarely changed outside merger situations.

With a small pool of revenue sources and the industry's high cost of capital, Class III carriers own and operate on the poorest maintained infrastructure and are often saddled by debt. With such small profit margins, the business model of Class IIIs dictates they make do with deteriorated infrastructure and instead focus on relationship building with customers and maintaining cheap shipping rates compared to trucking.

3.3 Understanding Railroad Physical Infrastructure & Capital Planning

What binds these differing classes of railroads together is their approach to capital planning. As all railroads utilize privately sourced financing to support their physical networks, freight carriers opt to build and maintain their infrastructure to correspond to revenue generating ability. Set by the network consolidation and cost cutting that marked the years after the Staggers Act, freight rail planners have come to view excess and underutilized capacity as undesirable; an opportunity cost that drains their capital budgets while providing no added utility to their existing business lines.

Rail infrastructure, like all transportation infrastructure, is highly susceptible to the Law of Diminishing Returns: the point where investments into a system fail to provide a proportional monetary return. With railroading being such a capital intensive industry, this concept is all the more pertinent. As a result, rail carriers have amended their capital planning strategies to only meet existing and pent up demand, not to generate new demand. (Staplin, 2002) The axiom "build it and they will come" espoused in the 1989 classic Field of Dreams is absent in the mind of freight rail planners. Thus, America's modern railroad network is a highly streamlined system specifically tailored to move existing freight revenue sources.

Physical rail infrastructure can be categorized into four types: (1) Yard Track – allowing high volume, low speed and flexible operations in performance of a support role to allow switching, marshaling, storage and classification of trains and railcars; (2) Business/Industrial Spur – allowing low

volume, low speed and inflexible operations in performance of a support role allowing direct rail service to individual businesses and trans-loading facilities; (3) Branch Line – allowing low volume, low speed and flexible operations in performance of a feeder service to and from businesses, facilities and localities off mainline track and; (4) Mainline – allowing high speed, high volume and inflexible operations to enable delivery on a regional and national scale. Mainlines are the highways of railroading that all other rail infrastructure feeds into. Each of these track categorizations can be further classified into two components: track and roadbed and signaling.

3.4 Track & Roadbed

Track, the steel rails trains directly run on, and roadbed, the manufactured right-of-way on which track lies upon, are the most conspicuous indicators of railroading. While all track and roadbed might look similar, there is a hidden diversity in track infrastructure in terms of build quality. The Federal Railroad Administration (FRA) regulates a tiered system of track and roadbed classifications that determines its uses in railroad operations and capital planning. (Federal Railroad Administration, 2012)

3.4.1 Track & Roadbed Classifications

A. Excepted

→ MAXIMUM SPEEDS: Freight – 10mph | Passenger – Disallowed

Excepted track is a special category allowed by the FRA. Typically found on low trafficked small industrial spurs characterized by very low business activity where track investment is considered cost ineffective by freight railroad planners. Occasionally, even the mainline track of capital strained Class III carries is excepted. While capital costs for excepted track are virtually non-existent, there is a much greater risk of derailments. The poor roadbed and trackage that characterizes excepted track forces a very low maximum speed for freight service and a complete disallowance of any

passenger service or the presence of more than 5 railcars containing hazardous materials on a train. Despite its low capital costs, excepted track is generally rare due to the regulatory overhead and the safety conscious rail industry's desire to avoid the increased liabilities of derailments.

B. Class 1

→ MAXIMUM SPEEDS: Freight – 10mph | Passenger – 15mph

Class 1 track is common across all sizes of freight rail carriers and is typically found in rail yards, industrial spurs, branch lines and the mainlines of smaller Class III railroads. Class 1 trackage enjoys both low capital costs and a smaller exposure to the operational, legal and safety havoc of derailments. However, with low permitted top speeds, freight rail planners at larger carriers typically employ Class 1 build quality only on supporting yard infrastructure, spurs or very low trafficked branch lines.

C. Class 2

→ MAXIMUM SPEEDS: Freight – 25mph | Passenger – 30mph

Class 2 track is heavily utilized across all sizes of freight rail carriers for use on both branch and mainline track. Naturally, Class 2 trackage is more costly to build and maintain than Class 1 track, but also offers a much higher return on investment by allowing faster train speeds and thereby better utilization of capacity and more optimal fuel consumption. This class of track is common on coal and agriculture shipping lanes.

D. Class 3

→ MAXIMUM SPEEDS: Freight – 40mph | Passenger – 60mph

Class 3 track is very effective at handling higher frequency freight movements in need of more stringent timekeeping. However, the amount of capital investment required to build and maintain Class 3 trackage is significant. Thus, it is only typically found on Class I or major Class II owned infrastructure where planners are confident in existing and potential revenue generating ability. For

passenger trains, this standard of track allows top speeds comparable to highways. As such, this build quality lies on the lower end of track quality spectrum desired by Amtrak's route planners.

E. Class 4

→ MAXIMUM SPEEDS: Freight – 60mph | Passenger – 79mph

Class 4 track is the standard for high volume and/or high speed shipping lanes found on Class I railroad owned infrastructure. Time sensitive freight commodities, such as intermodal, are dependent on this track standard to ensure competitive levels of service to trucking with high capital costs that is difficult to muster for all but the largest freight carriers. Even so, Class I freight planners employ Class 4 trackage only when necessary to support revenue generation and fluidity. 40% of the 95,000 Class I network is maintained to class 4 standards. (American Association of Railroads, 2013) With allowed passenger rail top speeds peaking above highway speeds, this track standard is highly desired by Amtrak's route planners.

F. Class 5

→ MAXIMUM SPEEDS: Freight – 80mph | Passenger – 90mph

Class 5 is the apex of track build quality to freight rail planners. This level of investment is rarely performed and is found only in very heavily trafficked and high speed corridors. High priority intermodal shipping, such as UPS package deliveries, is the only revenue source freight rail carriers consider worthwhile to support this trackage standard. Interestingly, the top speed differential between freight and passenger trains narrows to 10mph at this classification, there demonstrating a potential for more homogeneous operations.

G. Class 6

→ MAXIMUM SPEEDS: Freight – 110mph | Passenger – 110mph

Class 6 is the minimum standard of track needed to meet the FRA's definition of high speed rail (HSR). Requiring massive capital outlays determined to be well above the revenue

generating ability of any existing freight business lines, investments to this standard have yet to be voluntarily undertaken by any freight rail carrier. The benefits of Class 6 trackage and above¹² are reaped solely by passenger operations.

3.5 Single vs. Double Tracking

A remarkable feature of America's freight railroad network is the prevalence of single tracking; where trains operate bi-directionally on a single "lane" of rail. This proliferation of single tracked rail is the direct result of the industry focus on cost cutting. Eager to maximize revenue generation and cut capital costs, freight carriers have shed capacity and physical track miles while attempting to promote efficiency in other areas. (Eakin et al., 2010) As a result, double tracks have become an increasingly rare sight on America's network; thus impacting the ability to operate different train service types effectively on a corridor.

3.6 Signaling & Dispatching

Signaling is the second component of freight rail capital planning. Like track and roadbed, signaling determines the overall capacity and speed of a rail corridor. And akin to traffic control devices on roads, railroad signaling systems are tailored to correspond with the level of activity occurring on a particular stretch of track.

3.6.1 Common Signal Systems

A. Track Warrant and Direct Traffic Control

Even in 2013, approximately one third of the nation's freight railroad network – 47,000 route miles – still operates without any sort of electronic signaling. (Lindsey, 2013) The freight

¹² The FRA designates track classes up to 9. However, because of their rarity and general incompatibility in sharing infrastructure with freight trains, track classifications above 6 will not be covered in this paper.

railroad industry, even Class I carriers, still view a significant part of their infrastructure as lacking the business need for electronic signal installation. In these areas – colloquially known as “dark territory” – all train movements are controlled via explicit radio direction by personnel in a centralized dispatching office. These signaling methods are the least capital intensive, but the least efficient on track hosting heterogeneous traffic. (Solomon, 2010, Pg. 73) While a few Amtrak routes in the past and in the present utilize routes that lack electronic signaling, operations within these areas is highly undesirable due to greater potential for congestion while operating amongst slow freight trains. (National Railroad Passenger Corporation, 2009)

B. Automatic Block Signaling (ABS)

On medium to high trafficked lines, freight rail carriers opt to install an electronic traffic control system to ensure fluidity and safety. Automatic block signaling (ABS) demarcates sections of track, or blocks, that govern train movements. When a block ahead of a train is occupied and impassable, the train must stop and wait until the automatic signaling system determines the path ahead is clear. Though relatively simple in operation, ABS allows for much more efficient handling of traffic and a much better utilization of physical capacity. (Solomon, 2010, Pg. 101) A large portion of Amtrak’s routes operate over tracks governed by automatic block signaling. However, issues do arise on routes with heterogeneous traffic types and on single tracked corridors. ABS signaling is found on approximately 50% on the nation’s railroad network – about 70,000 route miles.

C. Centralized Traffic Control (CTC)

Centralized Traffic Control is the apex of American railroad signaling methods found on approximately 20% of the nation’s rail network. (Lindsay, 2013) Within a CTC system, all signals and switches within a territory are controlled remotely by a rail traffic controller. The controller is able to make greatest use of a line’s capacity by utilizing computer systems alongside their own expertise in the “art” of railroading to govern train movements. (Solomon, 2010, Pg. 128) Freight railroads install CTC

systems on busy mainlines where the high capital costs are justified. Concerning passenger trains, CTC dispatched track is most desired by Amtrak's route planners due to its strength in handling heterogeneous and differently prioritized trains.

D. Positive Train Control (PTC) & Advanced Signaling

In response to high profile accidents over the years, government regulators have mandated advanced signaling systems in certain situations. Positive Train Control (PTC) and Automatic Train Stop (ATS) are two common peripheral add-ons. PTC is a recent mandate and is currently being installed on all freight lines hosting passenger trains or toxic by inhalation commodities.¹³ PTC is similar to automatic train stop (ATS) systems which, as the name suggests, forces a train to come to a safe stop should it disobey a signal indication. However, PTC exerts even greater control by ensuring trains also adhere to speed restrictions. For passenger operations over 79mph, all infrastructure must be equipped with an ATS system and all signaling governing train movements must occur within the cab of a locomotive as traditional signal indicators alongside track are considered to be indiscernible and unsafe at these operating speeds. (ibid, Pg. 139) These add-ons, most of which are required for passenger operations, serve to increase the overall cost of IPR development on freight railroad owned infrastructure while providing no benefit to freight rail operations.

3.7 An Introduction to Railroad Economics

At this point, it should be clear that freight rail carriers invest in their infrastructure for one reason: to generate revenue. Modern freight railroads ship a mélange of commodities ranging from coal, agricultural goods, iron, lumber, automobiles, paper, consumer goods, rock aggregates and more. These commodities differ in their supply chain management needs, their operating and infrastructure

¹³ Positive Train Control remains a controversial subject. Carriers have raised issue with the mandate citing dubious safety benefits, a very low cost/benefit ratio relating to safety, negative impacts on productivity, lack of funding and an impossible implementation schedule. Policymakers have listened to these concerns and have promised to address them, but have also affirmed the need for safety improvements.

requirements as well as their revenue generating ability. Together, they are tied together by key operational and business planning concepts known as railroad economics.

Policymakers that understand the basics of freight rail operations and business planning are much better positioned to identify areas of conflict, compromise and collaboration with freight railroad carriers to support fruitful relationship building and enable partnership.

3.8 The Pursuit of Volume

Since the Staggers Act in 1980, the railroad industry has opted to refocus its marketing, business planning and operations departments toward developing service lines that yield the greatest revenues at lowest cost. With the pervading focus toward cost cutting and infrastructure consolidation, modern freight railroads have come to embrace markets of scale more than ever before.

The industry's attention toward volume is not surprising; the cost of operations diminishes as more cars are added onto a train. Thus, modern freight trains are much longer and travel greater distances than in the past; the average length of haul has increased from 461 miles in 1960 to 917 miles in 2011. In accordance to this new business plan, marketing departments have reoriented to focus on high volume customers tailored toward rail's unique competitive advantage, thus resulting in diminished complexity, increased inefficiency gains and easier supply chain management for freight carriers. (Laurits R. Christensen Associates, 2009) Conversely, this approach has also led the industry to underinvest in its support structure for smaller customers, leading many to switch to trucking for their freight needs.

3.8.1 The Relationship between Commodities and Speed

Despite a singular focus toward generating volume across all commodities, the operational needs of these differing goods being shipped are quite varied. This harkens back to capital planning as freight carriers invest in their infrastructure only to correlate to revenue generating ability.

First, consider goods such as corn or coal. Individual units are unfathomably cheap. Therefore, the revenue generating ability for freight rail carriers in shipping these commodities comes from sheer volume. And as these commodities command such a low per unit yield, customers shipping these goods will attempt to keep transportation costs as low as possible, naturally pushing them toward utilization of rail but also decreasing the shipping rate they are willing to pay. Thus, freight rail carriers will alter their operations to focus on increased volume (revenue) and decreased costs by running longer, slower freight trains. As a result, focus moves from speed and “just in time” shipping to slower bulk supply cycle management. On routes shipping large amounts of bulk, low per unit yield commodities, there is no impetus for freight rail carriers to invest in their infrastructure to promote speed or excess capacity.

Conversely, there are commodities groups such as consumer goods. These command a much higher per unit yield and thereby have a more adverse impact on a shipper as “sitting capital,” where a good’s utility is squandered through ineffective management. These shippers require these commodities be shipped with greater speed and reliability to generate maximum revenue and control costs. For railroads, this requires offering service comparable to trucking; requiring much greater capital outlays into railroad infrastructure. But as these shippers are willing to pay higher shipping rates to fully realize the utility of these high per unit yield goods, railroads are able to offset higher capital costs with greater revenues. However, only 9% of total carloads shipped in 2012 required this operational style. The remaining 91% of carloads shipped contained low per unit yield bulk commodities possessing no need for such speeds. (Association of American Railroads, 2013)

3.9 Freight Rail Service Types: Manifest vs. Unit

Delving deeper into railroad business planning brings up the aspect of service types. With so many differing commodities with differing revenue generating abilities, business planning dictates that freight rail carriers operate trains in a way that optimizes revenue and efficiency while controlling costs.

Freight service types are best categorized into two categories: manifest (also known as merchandise) and unit.

Manifest trains are mixed trains; hauling differing railcars carrying differing commodities to differing markets and customers. With such heterogeneity in commodities and destinations, manifest trains do not naturally lend themselves to density. With modern focus for volume, freight railroads have altered the handling of these trains to increase volume and thereby revenue generation by decreasing available trains and increasing distances traveled. In manifest service, a railcar will make multiple stops at intermediary rail yards to be classified – transferred to and from other manifest trains – in order to ultimately arrive at its destination. With so many stops requiring time and labor intensive switching, it is not uncommon for a single railcar traveling cross country to have a loaded velocity – the amount of time spent loaded and in-transit – of 30 days or more.

Despite this, manifest trains are one of the few types of freight trains that are actually scheduled rather than dispatched on an *ad hoc* basis, thus supporting reliability. Furthermore, these trains are most flexible in the commodities they can ship, supporting customer diversity. Finally, manifest service is the only freight train type that directly competes with trucks in door-to-door service, supporting both competition and revenue generation. For example, the average revenue per unit of a manifest carload carrying food and consumer goods on CSX Railroad in 2012 was \$2,730 – over 4 times the \$650 of average revenue generated from an intermodal container. (CSX Annual Report, 2012) However, with the efficiency drives that have characterized rail business planning since the Staggers Act, most freight rail carriers have opted to focus away from the complexity of just-in-time service in favor of unit trains. (Marshall, 2010)

Unit trains are freight trains consisting of railcars all bound for the same customer or destination, often carrying only one commodity. These can range from cheap bulk commodities like coal to higher yield intermodal consumer goods. As these trains already enjoy the volume modern freight rail

planners strive for and do not require reclassification at intermediary rail yards, unit trains entail less complex operational planning while generating substantial revenue. (Kenkel et al., 2004)

Unit trains intertwine with the industry's focus toward volume and business with customers whose shipping needs are more tailored to rail's competitive advantage in high volume, bulk shipping. Unlike manifest trains, unit trains generally do not haul commodities that are in competition with the trucking industry for market share and revenue. In fact, many trucking firms have partnered with freight rail carriers to reduce the number of long-haul truck trips in lieu of more lucrative short-haul trucking by embracing the use of intermodal containers and "piggy-backing" – loading a truck trailer on a rail flatcar – on cross country unit trains.

3.10 Summary

With their adherence to private financing, the behavior of freight rail carriers as informed by their capital and business planning is made clearer for policymakers. Whereas publically funded infrastructure projects seek to encourage demand and serve the public good, privately funded infrastructure projects seek only to meet existing demand and support revenue generation. This is the source of the contention between government and the railroad industry; freight carriers do not feel government partnership adds any utility. Public officials must combat this if they wish to develop a long term and functional partnership. A better understanding of freight railroad business practices and behavior allows policymakers to better determine paths to generate utility for both freight rail and the public good. The industry's retreat from the public eye, cost cutting and consolidation may offer the best opportunity.

The business and planning models and resulting stable revenue and growth the industry has enjoyed are beginning to show faults. With their networks tailored to only meet existing demand, investors are beginning to criticize the industry's ability to respond to new demand or enter new

markets. (Hatch, 2009) This conclusion coincides with those of government. (Congressional Budget Office, 2006) With the implosion of the building materials market with the 2008 “Housing Bubble,” the emerging and seemingly irreversible decline of coal, uncertain ethanol markets and the recent explosion of the hydraulic fracturing market, freight rail carriers are finding their past passive approach of relying on existing and supposedly captured revenue is fleeting. And as the industry has focused on developing these niche markets in lieu of competition, a reported 80% of total freight revenue is now captured by the trucking industry. (American Trucking Association, 2012)

These market shifts are causing introspection in the rail industry itself (Sussman, 2009), exemplified by the muted approaches by some freight carriers – especially large Eastern railroads most hurt by declining coal revenues – to bolster their limited capital budgets, share risk and invest into new and emerging revenue sources. However, these actions are hampered by the industry’s still pervading distrust of government and uncertainty that the risks that will come with increased partnership, such as lost autonomy, will be beneficial to their bottom line. (Davidson, 2000) Thus, policymakers must further understand the source of freight railroad hesitance, especially in the realm of shared use IPR, to ameliorate these concerns and determine ways to generate mutual utility to enable greater public private partnership.

4. SHARED USE POLICY, PLANNING & OPERATIONS

4.1 Introduction

Freight rail operations, capital and business planning are complex issues in their own right. Introducing IPR creates a whole new unique set of ramifications. Existing shared use agreements are quite controversial to hosting freight carriers in that they (1) are not a voluntary partner; (2) do not receive any monetary gain and; (3) lose utility of their infrastructure when hosting IPR. The resulting resentment from the freight railroad industry has impacted the development of any productive, long lasting partnership with government on IPR development.

Any future collaboration must be predicated on the alteration of this paradigm, thus tasking policymakers to devise approaches to better understand and compare the railroad industry's desires against their own as well as generate a measureable benefit for the hosting freight carrier that would arise from partnership. To initiate this, policymakers should possess the answers to a set of crucial questions:

1. How are passenger trains different than freight trains? How are they similar?
2. What types of passenger trains are freight rail carriers more willing to support?
3. What do freight rail carriers expect of the public sector?
4. How can freight railroads be enticed to partner with government on rail development projects?
5. How can public officials combine their goals with those of the freight railroad industry?

To answer these questions, this section will analyze and evaluate existing shared use IPR development interactions, planning, policy and strategies to synthesize new approaches aimed at addressing the concerns of both stakeholders, rebuilding relationships and instituting a long lasting public private partnership.

4.2 Intercity Passenger Rail Service Types

Like freight rail, American IPR is diverse in its service types. These types can be organized into three categories, each with their own operating metrics determine interactions with the hosting freight railroad alongside the traveling public.

A. Conventional Long Distance

Conventional long distance IPR service is those whose routes extend over 750 miles. In the Amtrak network, long distance routes are the skeletal connectors linking far flung corners of the nation by rail; the aspect that makes Amtrak a truly national passenger railroad and an essential connector for many rural communities. Traversing thousands of miles over varied terrain, long distance trains are most exposed to the harsh realities of railroading. Breakdowns are common on overworked rolling stock and a reliance on aged legacy track in remote locations forces lower operating speeds and reliability issues in tandem operation with freight trains.

These factors have made long distance service the weakest business line operated by Amtrak; in 2009 only 15% of 27.2 total riders – 4.2 million – were generated from long distance service (National Railroad Passenger Corporation, 2009). Long term prospects for growth in the long distance sector are dim as these trains remained mired in debate over poor cost recovery rates and their value in Amtrak's network. (Bussanich, 2013) Examples of conventional long distance service include Amtrak's Chicago to New York/Boston *Lake Shore Limited* and the *Coast Starlight* between Los Angeles and Seattle.

B. Conventional Short-Haul Corridor Service

Conventional short-haul corridors are sub-750 mile routes linking two or more major regional urban areas. With fewer miles traveled between terminals, passenger service on short-haul corridors is much more predictable. However, some short-haul IPR routes suffer from ongoing issues – OTP and trip frequency expansion bulwarks – resulting in their utilization of privately funded, freight optimized rail infrastructure.

Despite these challenges, the outlook for conventional corridor development is bright. Over the past decades this business line has seen the greatest growth; coming to generate 48% of total Amtrak ridership in 2009. These figures have garnered great attention from Amtrak's management and planning staff, resulting in a reorientation toward developing short-haul corridor service. (National Railroad Passenger Corporation, 2012) Examples of conventional intercity corridor include the *Pacific Surfliner*, offering frequent service between Los Angeles and San Diego, CA, the twice daily *Missouri River Runner* between St. Louis, MO and Kansas City, KS and the once daily *Heartland Flyer* between Ft. Worth, TX and Oklahoma City, OK.

C. High Speed Corridor

High speed IPR is characterized by trains operating at top speeds of 110mph or more. With impressive top speeds and a sleeker appearance than conventional passenger trains, high speed IPR is highly sought after by policymakers and passenger rail advocates. Existing high speed corridor service such as Amtrak's *Acela* and *Northwest Regional* in New England have been very successful in growing ridership, revenue and market share – Amtrak claimed to possess 69% of the rail/air market share between Washington D.C. and New York, NY and 51% between Boston, MA and New York, NY in 2010. (National Railroad Passenger Corporation, 2010) However, this unique high speed style of operation is instable in its demand for capital. In fact, existing high speed service occurs on infrastructure owned and operated directly by Amtrak and other passenger railroads, thereby avoiding the complexity of combining such a unique operational method with freight activity. As of 2013, only one high speed passenger rail route utilizes freight railroad owned trackage.¹⁴

¹⁴ The Chicago, IL – St. Louis, MO Corridor. This case study is discussed at length in Section 4.4.2.

4.3 Shared Use Operations: Understanding Capacity

Referring back to earlier sections on freight railroad capital and business planning, policymakers should understand the industry's invests in its infrastructure to one end: moving bulk freight. (McCellan, 2006) Considering that the vast majority of America's rail network has been optimized for freight activity, what impact do intercity passenger trains – a style of railroading with little comparisons to freight trains – have when introduced?

Railroad dispatchers relegate all trains to “slots” that determine their priority on a stretch of track. As a general rule in transportation, heterogeneity in speed and operational practices drains capacity and begets congestion. To ensure fluidity, rail dispatchers conduct a complex ballet managing a diverse portfolio of trains to meet, pass, wait and overtake each other on strategically placed sidings and switches. Quicker trains demand extra slots as buffers to ensure the track ahead is clear, pushing slower trains onto sidings as they wait for priority trains to pass by. Thus, increased speeds diminish available capacity on a stretch of track.

With Class 4 track allowing 79mph top speeds, conventional passenger trains move at velocities unmatched by most bulk freight trains, which typically lumber along at top speeds of 40mph. This speed differential between passenger and freight trains therefore decreases the total number of available slots for trains. (Dingler et al., 2009) For freight railroad carriers, this is a distinct opportunity cost and decreases the utility they derive from their infrastructure. Expanding capacity to simply recapture the utility lost from IPR operation runs against the industry's capital planning methods while additionally being both a direct and opportunity cost.

Beyond their demand for additional slots and capacity, passenger trains add additional layers of complexity. Unlike the majority of freight trains, passenger trains are scheduled. In embracing bulk unit train operations, freight carriers have altered their operations to be much more flexible to match the market conditions of their existing customers. If a shipper's business is slow, there might be no impetus

to run a train. And if a shipper's business is booming, a freight carrier will attempt to capture extra revenue by running additional trains. Altogether, this creates a situation of scheduled trains running amongst unscheduled trains; an unpredictable system that is difficult for dispatchers to effectively manage.

There are also issues of liability. While all accidents on rail infrastructure are undesirable, the chance of human casualties is greatly expanded with IPR. This creates yet another cost to hosting freight rail carriers. To combat this, Amtrak has adopted a uniformed no fault liability agreement with its host railroads. Despite placating some freight railroad concerns, this agreement has nonetheless drawn the ire of some policymakers for being too favorable to freight railroads. (Bogdanich, 2004)

Clearly, shared use IPR creates numerous negative impacts on a hosting freight railroad. In light of this however, policymakers should not consider shared use IPR an exercise in futility. Rather, this analysis simply traces source of freight railroad animosity toward IPR development while underscoring the necessity for better relationship building, planning and partnership with the freight railroad industry. Public officials must fully consider their vision for IPR on shared use track, comparing their own public service desires to those of the freight railroad industry. Ideally, policymakers would seek to implement IPR service that could entice ridership at low capital costs while minimizing any impacts on the hosting freight railroad carrier. With so much attention toward high speed rail (HSR) in recent years, it is best to evaluate its viability under the shared use operational model first.

4.4 Shared Use Policy: The Case Against High Speed Rail

Why is high speed rail – the most harkened IPR service type of passenger rail advocates – such a rarity on freight railroad infrastructure? Simply put, this style of super high speed operation is incompatible with slower freight trains and generates too undue a burden on freight operations.

Nonetheless, many policymakers and passenger rail advocates continue to espouse the merits of HSR development while attempting to goad freight rail cooperation. (Hilkevitch, 2010)

Such an approach has only strained the relationship between both stakeholders. In reaction to backlash from the freight railroad industry, some more astute policymakers have attempted to reach compromise in the form of a “higher speed rail” movement – an operational style characterized by 110mph passenger train top speeds. Advocates of higher speed rail argue that such service is more effective at luring ridership when compared to conventional IPR trains while having the added benefit of a lessened burden upon freight rail operations. But are these claims true?

110mph running requires the installation of Class 6 trackage, a positive train control system and cab based signaling. All of these investments are well above the requirements for even most time sensitive freight shipments. CEO of BNSF Railway Matt Rose best captures freight rail perspectives on higher speed rail:

Speaking as a freight railroad CEO, it is possible to increase speeds from 79 mph to 90 mph on tracks that both freight and passenger trains use... At sustained speeds in excess of 90 mph, passenger train operations will need to be segregated from freight operations on separate track. The level of maintenance work required, the very different impacts passenger and freight rolling stock have on the surface of the rail and managing the flow of train traffic with such differences in speeds would make the joint use of track uneconomic and impracticable. (Rose, 2009)¹⁵

Clearly, freight railroad carriers are unlikely to support even “higher speed rail” on their tracks which should add pause to public officials working toward IPR development. Policymaker’s evaluations of their approaches with the freight rail industry have been limited to their IPR and public service goals, thus avoiding any discussion in encouraging freight railroad cooperation with the opportunity of added utility. In light of this, the chance for long lasting and fruitful partnership between both stakeholders continues to be unattainable. Case studies demonstrate the impasse in action.

¹⁵ Matt Rose’s testimony is purely focused on the operational and engineering impact of intercity passenger rail on freight railroad trackage. These factors are not considered in the FRA’s definition for high speed rail.

4.4.1 Case Study: Amtrak *Wolverine*

Michigan's Department of Transportation (MDOT) had long sought enhancements to intercity passenger rail service on three lines emanating from Chicago. The Chicago to suburban Detroit train – doing business under the service mark *Wolverine* – posted both the highest ridership and the poorest OTP of the three lines. (Brush, 2011) Seeking to address *Wolverine's* service issues, MDOT approached hosting freight rail carrier Norfolk Southern (NS) in 2011 with a plan to upgrade track to allow 110mph running speeds. Speaking to a local paper, NS spokesman Rudy Husband clearly voiced the railroad's opinion:

If [MDOT] want to make the Michigan line a passenger route with higher speeds than what freight trains run, then someone other than Norfolk Southern is going to have to pay for the increased maintenance costs. (Borney, 2011)

In a cost cutting measure, NS had spent prior years consolidating its freight traffic away from the line utilized by the *Wolverine*. While obligated to maintain the line to minimum standards through an agreement with Amtrak, NS nonetheless expressed its desire to continue cutting costs by downgrading the trackage utilized by the *Wolverine's* to match the utility generated from the line. Shortly following MDOT's pitch, NS' agreement with Amtrak expired. Subsequently, NS ceased all maintenance beyond that needed for existing freight activity. The *Wolverine's* top speed plunged to a lethargic 25mph on NS owned track. In great irony, 110mph upgrades on Amtrak owned track to the west had been completed merely weeks before.¹⁶

With MDOT providing no benefits to NS' own operations, the railroad had become defensive and opted to protect their own interests and avoid entanglement with MDOT in a project it determined netted no added benefit. MDOT's response to this behavior was firm, but also made clear the agency's inability to illicit NS' cooperation:

¹⁶ With the Northeast Corridor spanning Boston, MA to Washington D.C., Amtrak also inherited a small 97 mile stretch of track in western Michigan from Conrail in 1976. This is the only section of mainline track outside New England owned and operated by Amtrak.

The decision by Norfolk Southern to reduce train speeds on the track shared with the Amtrak *Wolverine* and *Blue Water* services will have a serious impact on passenger service, and could cause delays for freight shippers, too. Last year, MDOT invested millions of dollars to upgrade this line at the state's expense, and we hope Norfolk Southern will bear that in mind and work to minimize slow-downs that inconvenience businesses and travelers. (Patch, 2011)

An impasse had been reached. NS refused to collaborate on what amounted to passenger only focused investments and higher maintenance costs. MDOT failed to garner NS' cooperation by offering the carrier benefits in any public partnership. In this stalemate, MDOT was first to act. Bolstered with federal money from President Obama's Stimulus Act, MDOT approached Norfolk Southern with an offer to directly purchase the route. NS agreed and brokered a deal that absolved them of all maintenance costs, netted them one-time payment of \$140 million and guaranteed access for their freight trains to serve remaining online customers. (Bowden, 2012)

The *Wolverine* saga is a lesson in the current relationship between policymakers and the freight railroad industry in shared use IPR development. MDOT failed to generate any added utility for NS through partnership, spawning a public relations battle that resulted in government having to outright purchase rail infrastructure; thereby increasing capital costs and risks endured by the public. If this case study is measured simply in its advancement of IPR, it is a resounding success. The *Wolverine* has enjoyed greater ridership, revenue and reliability on MDOT and Amtrak owned infrastructure. However, as this paper seeks to develop ways to combat the animosity between both parties and foster public private partnership between the freight railroad industry and government, it must be classified a failure.

4.4.2 Case Studies: The Lincoln Service & PRIIA Section 207

Other case studies into the interactions between government and freight carriers allow further analysis. In October 2012, Union Pacific (UP) track crews finished the installation of Class 6 track and a positive train control signaling system between Dwight and Pontiac, IL; the first leg in a project

ultimately aimed at enabling 110mph IPR speeds across most of the UP owned corridor between Chicago, IL and St. Louis, MO. Passenger rail advocates and policymakers – including then Secretary of Transportation Ray LaHood – came out in droves to celebrate this first step toward enhanced service.

Illinois Secretary of Transportation (IDOT) Ann Schneider spoke to reporters:

This remarkable 110-mph segment demonstration serves as a testament to exceptional teamwork among all levels of government and the private sector, and exemplifies the dedication to enhancing viable, cost-effective and essential transportation improvements needed to compete effectively in the decades ahead. (National Railroad Passenger Corporation, 2012)

Among these high level politicians, planners and IPR advocates in attendance stood one UP executive. Although offering limited self-congratulatory remarks to his field engineering team in the official press release, the overall event seemed to be commanded by the giddiness of politicians and passenger rail supporters. Just how did UP, the most powerful and necessary stakeholder in this landmark project, view its partnership?

At the beginning of the construction, Bloomberg Corporate News conducted an interview with then UP CEO Jim Young. As conversation turned to *Lincoln Service* enhancements, Young was blunt:

If I had a choice, I wouldn't be doing this investment. We need to focus on freight for our good and for the good of the country. (Keith, 2010)

What did Young mean in saying he had no choice? Truly, UP's role was by no means voluntary. In 1996, the struggling Southern Pacific Railroad (SP) was enveloped in a hostile takeover by UP; an event that solidified UP's position as the nation's largest and most powerful freight rail carrier. Accordingly, SP's brand name, customers, obligations and infrastructure – including the Chicago and St. Louis route – fell under the auspices of UP. SP's difficulties were not short term. The railroad had limped along for decades with a shrinking customer base and capital budget. In an effort to counteract deferred maintenance and bolster their limited capital budget, SP quietly brokered an agreement with the State of Illinois to ceding their capital planning autonomy over the Chicago to St. Louis route. IDOT planned to

upgrade the corridor to enable 110mph IPR service once funding became available. UP, eager to complete the takeover and distracted by the logistical nightmare of merging two massive freight railroads, either ignored or was unaware of this obligation. However, when Illinois finally received the necessary funds to embark on the project through the American Recovery and Reinvestment Act in 2009, UP suddenly found itself bound to cooperate.

While UP's cooperation was not voluntary, investments into the *Lincoln Service* have resulted in marked gains in ridership, revenue, reliability and marketability. The service has even spurred economic development around stations on the line. In light of this, an interesting prospect arises for policymakers. Would it simply be easier to better enforce already existing freight rail obligations laid out with Amtrak's creation?

Of course, this hardline strategy erases any pretension of a public private partnership between government and the freight railroad industry. Furthermore, such an approach would likely do more harm than good. Realize that SP and later UP both retained autonomy over day-to-day operations on the corridor. Aggressive posturing toward a hosting freight railroad carrier will naturally beget animosity; clearly evidenced by existing feelings. Even when their compliance is enforced, as in the *Lincoln Service* case, a hosting freight railroad can nonetheless employ passive aggressive behavior ranging from indifference to infrastructure issues plaguing IPR as well as "dragging their feet" in negotiations and project management and planning. Furthermore, policymakers must also consider IPR's impact in decreasing a host railroad's utility to conduct freight operations.

In its work with UP, IDOT has seemingly come to these same conclusions. Despite possessing legal leverage to enforce UP's cooperation, IDOT has opted to avoid inciting resentment by seeking to understand, respect and placate the railroad's concerns while advancing their own cause for the public welfare. Resulting from a foundation of trust and relationship building, IDOT has been comfortable enough to take on many risks in this partnership such as (1) ensuring UP's autonomy by forgoing public

oversight into daily operations; (2) covering all construction costs and; (3) absolving UP of any penalties should freight traffic interfere with IPR operations. (Rushton, 2011) While not a PPP, IDOT has nonetheless sought to instill some aspects in sharing risk.

On-time performance remains an important issue for policymakers seeking to serve the public good. IDOT's choice to forgo any OTP penalties should naturally draw hesitance from IPR advocates. In light of ongoing reliability problems for many of Amtrak's trains, this approach does seem to be too concessionary and counter to the public's interest. In light of this, public officials should consider the results of more heavy handed interaction with hosting freight railroad carriers to ensure OTP through oversight and penalties.

Passed in 2008, the Passenger Rail Investment and Improvement Act (PRIIA) contained a clause – Section 207 – that empowered Amtrak, the FRA and the STB to develop a set of performance measures and standards for IPR. In the event that service on a particular Amtrak route fell below an 80% on-time performance rate for two consecutive fiscal quarters, PRIIA granted the STB the authority to levy fines upon the hosting freight railroad – payable to Amtrak – and force mitigation efforts to ensure the 80% metric was met. (Passenger Rail Improvement and Investment Act, 2008).

The Association of American Railroads was livid and responded with a lawsuit challenging Section 207's constitutionality with the assertion that the STB could not mandate that the private freight railroad industry could not be beholden to Amtrak, having been chartered as a private corporation. After losing their first case, the AAR appealed to the Federal District Court which ruled in favor of the freight railroad industry. (Association of American Railroads v. United States Department of Transportation, 2013) Policymakers were stripped of any authority of regulating IPR performance while the rift between government and the freight railroad industry deepened. In light of this defeat, policymakers need to evaluate their attempts at forcing freight railroad behavior to determine other options to respect freight

railroad autonomy and better adhere to the principles of PPP while simultaneously serving the public good, such as IDOT's approach.

Also consider 110mph IPR service. While IDOT's innovative planning and relationship building approach with UP is commendable, 110mph service is nonetheless a dubious metric on which to base future IPR development. The *Lincoln Service* is an anomaly predicated on a unique deal inked years earlier that policymakers cannot hope to achieve in other situations. The burden of 110mph operations on a hosting freight railroad is simply too great and will always illicit resistance from the hosting freight railroad. With this conclusion, is the cause of IPR development mortally hurt? Are high speeds paramount to ensure the success of intercity passenger rail? Are policymakers doomed to be at the mercy of the freight railroad industry concerning OTP? Other case studies can help answer these questions.

4.4.3 Case Study: Amtrak Cascades

Starting service in 1994, Amtrak *Cascades* operates 16 daily trains between Eugene, OR and Vancouver, BC under the joint authority of the Washington Department of Transportation (WSDOT) and the Oregon Department of Transportation (ODOT). Most ridership and trains occur on the 187 miles between the region's two largest cities – Portland, OR and Seattle, WA, – utilizing infrastructure owned and operated by BNSF Railway and failing under the authority of WSDOT. Typical of many shared use IPR routes, reliability on Amtrak *Cascades* is an ongoing issue. On-time performance on the corridor continues to fall short of WSDOT's modest goal of 80%. (Agnew, 2011) Average speeds languish at approximately 50mph – well below the average vehicle speed of 65mph on the adjacent I-5 Interstate. (Washington Department of Transportation, 2012) In light this information, one might be quick to dismiss Amtrak *Cascades*' viability as a transportation service and agent for the public welfare. However, consider the route's statistics:

- Annual ridership on Amtrak *Cascades* has ballooned from 94,000 to 836,000 in 2012, an increase of nearly 900% over 18 years, or an average of 50% a year
- The number of daily trains rose from 4 to 16
- Farebox recovery – the measure of the ability of ticket revenues to offset operating costs – has skyrocketed to 66% in 2011 from 48% in 2006

With these impressive achievements, capital and operation expenditures for Amtrak *Cascades* have collectively only cost ODOT and WSDOT \$475 million between 1994 and 2008 – an average of just \$33 million a year to build, operate and maintain the entire 467 mile corridor or \$70,000 per route mile. (ibid, 2012) Considering these impressive achievements, it is worthwhile to determine the strategies employed by WSDOT in their development of Amtrak *Cascades*.

Adept relationship building with BNSF Railway has been the defining factor. From the service's inception, WSDOT understood their lack of access to capital. This constraint in mind, WSDOT approached BNSF for assistance in supporting passenger rail modal development; presenting to the freight carrier set of IPR performance metrics aimed at increasing ridership, trip frequencies and reliability without placing any burden upon BNSF's own operations. (Washington Department of Transportation, 2006) Dialog was initiated between both stakeholders where roles, expectations and desires shared. Through this, WSDOT guaranteed BNSF complete retention of operational autonomy, protection from penalties and a promise of minimal impact on freight operations.

Despite continuing OTP issues, WSDOT has avoided accusing BNSF of poor dispatching practices. As a testament to their intensely close relationship, BNSF collects and shares data with WSDOT to identify key infrastructure and policy issues hampering both passenger and freight service reliability. This information has been crucial to WSDOT's planning efforts and undeniably played a major role in WSDOT's successful \$780 million stimulus grant application for capital improvements to the corridor. (Washington Department of Transportation, 2012) This approach demonstrates WSDOT's understanding of the limitations of shared use IPR on freight optimized infrastructure, the need for greater investment

capital into IPR as well as the crucial role trust and dialog plays in partnership with the hosting freight railroad carrier.

This approach has led WSDOT past the pitfalls that can befall shared use IPR projects – infeasible 110mph running that unduly impacts freight operations, overpromising on IPR service levels and inciting hosting freight railroad animosity – all while enjoying tremendous success in IPR modal development and advancing the public good. By working within the confines of shared use and BNSF’s valid concerns, WSDOT has achieved great success that only looks to grow. (Transportation Research Board, 2010)

4.4.4 Case Study: The Capitol Corridor

As part of a concerted effort by California transportation agency “Caltrans” to grow the state’s IPR network, the Capitol Corridor was created in 1991 to provide service between the San Francisco Bay Area and metropolitan Sacramento, CA. Now under administration of the Capitol Corridor Joint Powers Authority (CCJPA), the Capitol Corridor is a 168 mile corridor running trains at conventional top speeds of 79mph on heavily utilized Union Pacific (UP) owned infrastructure around its sprawling J.R. Davis Railyard. Despite such modest characteristics, the route’s performance is anything but:

- Annual ridership has exploded from 436,000 in 1998 to 1.75 million in 2012, an increase of 400% over 14 years or an average of 28% annually
- Farebox recovery has risen from 30% in 1998 to 50% in 2012
- Daily train frequency has increased from 8 to 32
- Corridor on-time performance is 94% – the highest of all American IPR routes, including even Amtrak’s own Northeast Corridor (Capitol Corridor Joint Powers Authority, 2012)

Again, these achievements were made possible through extensive relationship building with hosting freight railroad UP. Arming themselves with an acute understanding of the nuances of shared use operations, a grounded service plan and relatively strong and regular cash infusions from the state government, Caltrans officials approached UP in the spirit of partnership to support IPR modal development with respect to existing and future freight operations. A dialog was established that begat

a strong level of trust that respected and protected UP's interests while also supporting Caltran's own goals. (ibid, 2012)

In an innovative approach to net greater benefits to Union Pacific as well as ensure service reliability, CCJPA administers an incentive payment program that levies additional payments to UP should passenger train performance meet certain metrics. (Sward, 2012) As an added benefit from stronger public capital sources, CCJPA has also assisted UP in covering the costs of maintaining track to higher standards than required for freight operations to enable fluid IPR; reliability that further protects freight operations from the risks of combined IPR operations. (Transportation Research Board, 2010) In avoiding a complete reliance on Amtrak's subsidized right of access to the nation's freight rail network, CCJPA has avoided provoking UP's resentment, earned greater trust and improved the overall relationship to further future partnership.

In any partnership, issues do arise. In 2004, Capitol Corridor trains became plagued with ongoing OTP issues caused by freight train interference. Frustrated, CCJPA publicly aired their grievances. With an already strong relationship between both parties backed by incentive payments and strong public investment, Union Pacific's response – unlike Norfolk Southern's in Michigan – was much more subdued and effective. The railroad apologized, explained the source of operational issues and publically detailed the company's plan to address CCJPA's complaints. UP followed through and within a month, OTP on the Capitol Corridor had returned to previous levels. (Thomson, 2004) This event underscores the power of proper relationship building between government and freight rail in IPR development and operation.

4.5 What Makes Intercity Passenger Rail Successful?

These two case studies challenge the perception that the only way to grow viable IPR is to develop flashy HSR corridors and employ heavy handed tactics in working with freight railroad carriers.

Other IPR utilizing these approaches display similar success in their performance metrics¹⁷: (National Railroad Passenger Corporation, 2013)

A. Amtrak *Hiawatha* – Chicago, IL to Milwaukee, WI (86 miles)

Annual Ridership: 832,500

Top Speed: 79mph

Daily Trains: 14

Farebox Recovery Ratio: 59%

On Time Performance: 90%

Hosting Freight Railroad: Canadian Pacific

B. Empire Corridor – New York, NY to Toronto, ON (460 miles)

Annual Ridership: 1,470,444

Top Speed: 79mph

Daily Trains: 13 (with 26 non-daily trains)

Farebox Recovery Ratio: 66%

On Time Performance: 85%

Hosting Freight Railroad: CSX

C. Amtrak *Downeaster* – Portland, ME to Boston, MA (141 miles)

Annual Ridership: 542,000

Top Speed: 79mph

Daily Trains: 10

Farebox Recovery Ratio: 51%

On Time Performance: 86%

Hosting Freight Railroad: Pan Am Railways

On each of these routes, ridership gains were enticed not by high speeds, but rather frequency, reliability, convenience and comfort. Nor are any hosting freight railroads on these routes beholden to OTP penalties or requirements. In each case, policymakers approached each hosting freight carrier in the spirit of partnership to understand their perspectives and ameliorate their concerns. As a result, their operational autonomy was protected and the costs of purely passenger focused investments were paid by public entities and Amtrak while the public good was served through enhanced IPR service. More in line with the principles of PPP, risk was shared. These examples stand in stark contrast to others

¹⁷ All data is from FY 2012

such as in Michigan; where MDOT was burdened with all costs for IPR development to avoid the risks that would arise in partnering with Norfolk Southern.

Furthermore, public officials assuming a more hands-off role did not impact the success of IPR. In situations where public capital was available, such as the Capitol Corridor, OTP has been impressive. Conversely, in instances lacking capital dollars, such as Amtrak *Cascades*, the hosting freight railroad has proven itself to be effective at managing IPR operations to the best of the existing infrastructure's ability while assisting policymakers to identify capital needs to address ongoing issues. From these case studies, an approach rooted in relationship building seems to be an effective option for public officials.

4.6 Building Public Private Partnerships

So far, information and strategy options in this paper have sought to assist policymakers in understanding freight carrier perspectives and behavior toward IPR development. But is this all public officials can do; simply navigate a veritable minefield of esoteric freight railroad characteristics to avoid drawing their ire and earn their reluctant cooperation? No, nor should they be expected to.

Policymakers possess their own desires and must receive some sort of guarantee of long term commitment of partnership from the freight railroad industry to advance those goals, share risks and serve the public good. Considering existing approaches aimed at forcing the rail industry's compliance toward these goals have returned minimal dividends while strategies rooted in relationship building have netted greater success in IPR development, policymakers would be wise to continue to combat the industry's perception of a "heavy-handed" government. Thus, government should seek to beguile freight railroad interest by determining ways the industry can increase the utility of their capital intensive infrastructure. If tangible gains were attached to public partnership, the chance for long term partnership could be greatly expanded. However, public officials must be innovative in discerning ways to attract the railroad industry's interest.

While IPR has become the cornerstone of government endeavors in railroading, this is not a viewpoint shared by the freight railroad industry. With demanding capital needs and low or non-existent operational profit margins, freight railroads are generally uninterested in adding passenger rail to their business portfolio. This sentiment is best captured by CEO Michael Ward of CSX Railroad:

I'm a corporation. I exist to make money, OK? You can't make money hauling passengers, so why would I want to do that? That wouldn't be fair to my shareholders.
(Caruso, 2011)

As policymakers have been unable to market any utility gains to freight carriers in partnering on IPR development, they have opted to focus their strategies on obtaining a net-zero impact with the hosting freight railroad; to lessen the negative operational impacts of IPR on freight activity. This strategy is a weak one and fails to achieve the characteristics of a public private partnership. With IPR requiring years of planning and negotiating to implement and an ongoing effort to effectively operate, why would a freight railroad expend so much time and effort to receive no added utility? The source of the industry's hesitance toward public partnership is made clearer. To address this deficiency, policymakers must determine areas of symbiosis outside out IPR, produce efficacy for the hosting freight railroad while also advancing their own public service goals. To do this this, they need to comprehend the circumstances impacting the industry.

4.7 Understanding the Plight of the Freight Railroad Industry

Despite claims to the contrary, the freight railroad industry's performance since the Staggers Act has been unimpressive. A dependence on privately sourced financing, a business plan founded upon cost cutting and risk adverse capital planning has shaped an industry that – in good times – is successful at generating stable revenues but woefully fails to reach its potential as both a for-profit business and a transportation mode.

In 2012, Union Pacific announced a capital expenditure budget of \$3.1 billion generated from the company's own cash reserves and private financing sources. Only \$600 million – 20% – of this budget was earmarked for capacity expansion and business development; the vast majority of funds were simply allocated toward maintenance of the company's 31,000 route mile network. (Union Pacific, 2012) In 2013, BNSF posted a record breaking "capex" budget of \$4.1 billion, but only \$550 – 13% – was appropriated for capacity and business expansion across their 32,000 mile route network. (BNSF Railway, 2013) Moving east, Norfolk Southern's \$2 billion capex budget for 2013 contained just \$83 million for capacity expansion and business development across their 21,000 mile network – a paltry 4%. (Norfolk Southern, 2013)

These capital needs alongside the demand of reasonable dividends from shareholders has made the industry hard pressed to consider enhancing shipping services or investing in new capacity and revenue sources. CEO of Class III conglomerate Genesee & Wyoming, Jack Hellmann, spoke to the industry's business approach:

RailAmerica [another railroad conglomerate] did a good job of maintaining track to the level required for the service. If 10 mph would do, that's what they did. We're the same way. (Blanchard, 2013)

Even with their limited expansion efforts, shareholder enforced risk management has led freight carriers to only invest in bulk commodity business lines where rail enjoys a competitive advantage.

Eschewing growth is a questionable and unsustainable business strategy. Instead of being growth focused and controlling costs, the dual stressors of capital and shareholder needs has led the industry to shed thousands of miles of track, reduce market reach and capacity to focus on maximizing revenues in remaining markets. (Erickson, 2013) Despite such careful planning and management of funds, the rate of the industry's return on investment remains grim. In 2012, the STB found that only two major US freight railroads generated enough revenue to finance their existing cost of capital. (Surface Transportation Board, 2013).

In this focus upon niche market development, the railroad industry has ceded much of the freight business's market share and revenue to the trucking industry. Measured by freight waybills, freight rail carriers commanded just a 7% share in truck competitive markets in 2000; a figure that has only declined in recent years considering the industry's focus toward unit train operation (Blaszak, 2008). In already rail dominated sectors, market share in 2000 had already reached a saturation point of 70%. (American Association of State and Highway Transportation Officials, 2004). The following tables further dissect the results of rail's focus toward bulk commodity shipping:

Table 1. TOTAL TON MILES SHIPPED BETWEEN TRUCK AND CLASS I FREIGHT RAIL

MODE	2004	2005	2006	2007	2008	2009	2010
Intercity Freight Trucking*	1,302,840,769,817	1,342,875,056,565	1,384,139,535,177	1,426,672,007,551	1,470,511,437,179	1,515,697,984,842	1,562,273,045,397
Freight Rail	1,662,598,000,000	1,696,425,000,000	1,771,897,000,000	1,770,545,000,000	1,777,236,000,000	1,532,214,000,000	1,691,004,000,000
TOTAL (Between Rail and Freight)	2,965,438,769,817	3,039,300,056,565	3,156,036,535,177	3,197,217,007,551	3,247,747,437,179	3,047,911,984,842	3,253,277,045,397
Rail Share of Ton Miles Shipped	56.07%	55.82%	56.14%	55.38%	54.72%	50.27%	51.98%

Source: Bureau of Transportation Statistics

*No actual revenue data for trucking exists for 2004 through 2010, developed annual growth assumption using real data from 1990 - 2003

Table 2. TOTAL CLASS I FREIGHT REVENUE

CLASS 1 FREIGHT RAIL CARRIER	2004	2005	2006	2007	2008	2009	2010
CN*	\$6,548,000,000	\$7,446,000,000	\$7,929,000,000	\$7,897,000,000	\$6,930,000,000	\$7,042,000,000	\$8,290,000,000
CP*	\$6,548,000,000	\$7,240,000,000	\$7,929,000,000	\$7,897,000,000	\$5,048,500,000	\$4,402,200,000	\$4,981,500,000
NS	\$7,059,945,000	\$8,526,827,000	\$9,407,242,000	\$9,432,399,000	\$10,661,340,000	\$7,968,657,000	\$9,516,435,000
CSX	\$6,880,244,000	\$7,688,738,000	\$8,601,641,000	\$9,039,079,000	\$10,219,153,000	\$8,170,380,000	\$10,181,605,000
UP	\$11,574,984,000	\$13,545,349,000	\$15,546,373,000	\$16,249,053,000	\$17,934,844,000	\$14,116,528,000	\$16,934,844,000
BNSF	\$10,737,325,000	\$12,845,580,000	\$15,115,119,000	\$15,909,200,000	\$18,132,404,000	\$14,123,528,000	\$16,929,321,000
KCS	\$599,247,000	\$799,604,000	\$876,095,000	\$925,926,000	\$1,029,503,000	\$859,718,000	\$1,015,887,000
Total Class I Revenue	\$49,947,745,000	\$58,092,098,000	\$65,404,470,000	\$67,349,657,000	\$69,955,744,000	\$56,683,011,000	\$67,849,592,000

Sources: STB R1 Railroad Reports, Annual Financial Reports from Railroads

*Total revenue, including both American and Canadian operations

Table 3. TOTAL TRUCKING REVENUE

TRUCKING TYPE	2004	2005	2006	2007	2008	2009	2010
For Hire Private	\$218,725,000,000	\$242,466,000,000	\$258,523,000,000	\$264,284,000,000	\$268,523,000,000	\$217,704,000,000	\$237,101,000,000
Trucking Firm	\$182,513,000,000	\$200,512,000,000	\$213,316,000,000	\$217,833,000,000	\$222,109,000,000	\$180,460,000,000	\$194,616,000,000
Total Trucking Revenue	\$401,238,000,000	\$442,978,000,000	\$471,839,000,000	\$482,117,000,000	\$490,632,000,000	\$398,164,000,000	\$431,717,000,000

Source: Census Bureau - Annual Services Survey

Table 4. REVENUE TO TON MILE SHARE

Rail Share of Ton Miles Shipped	56.07%	55.82%	56.14%	55.38%	54.72%	50.27%	51.98%
Rail Share of Total Revenue	12.45%	13.11%	13.86%	13.97%	14.26%	14.24%	15.72%

Despite shipping over 50% of total freight ton-miles between truck and rail in 2010, the railroad industry netted only 15% of the total revenue between both modes – a testament to the low per unit yield of bulk commodities. The industry has forfeited higher potential revenues and growth that would come from competing with trucking to instead wallow in limited niche markets. (Erickson, 2013)

In good times, the consolidation and efficiency gains in their captured business lines put freight carriers on stable ground from which to derive steady profits and appease their shareholders. Recent market forces have called into question the longevity of this approach. Revenue from shipping coal – historically the single greatest revenue source for freight carriers – is alarmingly trending downward in light of readily available cheap natural gas. For example, whereas CSX railroad used to generate 30% of total operating revenue from coal, analysts predict this figure to drop to just 18% – from \$3 billion to \$1.8 billion – in the coming years. (Funk, 2013)

Diminished revenue and the fixed costs generated from the industry's now underutilized railcars combined with an already very low return on investment rate have raised eyebrows on Wall Street and emboldened freight rail carriers to reevaluate their business strategies. Interestingly enough, rail carriers have attempted to offset some of their declining revenues by shipping goods for the very industry that is stifling coal shipments: hydraulic fracturing drilling and services companies. Of course, these commodities do not deviate from the industry's business planning focus toward of high volume, trucking non-competitive goods. Nor do they possess the potential to completely offset revenue losses. (Phillips, 2013)

America's modern freight railroad industry is paralyzed by capital and shareholder demands. Tottering in once dependable niche markets in lieu of aggressively expanding market reach and diversifying revenue sources has begat an embattled industry painfully underperforming as both a business and a transportation mode. Facing a contraction of revenue, some freight railroads have cautiously approached government to determine if utility could be gained through partnership.

Policymakers would be wise to take advantage of this opportunity. If IPR development plans could be expanded or implemented in tandem with policies aimed at increasing freight railroad revenues and market share, government could actually illicit freight railroad interest and generate added utility for all stakeholders in a true PPP. Furthermore, gains for the public sector could surpass simple IPR development. Increased utilization of rail for freight movements could; (1) reduce congestion and wear and tear on public roads caused by trucking; (2) lower total emissions from greater usage of more efficient railroad locomotives and; (3) offer respite for the labor and capacity constrained trucking industry.

In fact, increased rail utilization is already a cornerstone strategy the House Transportation and Infrastructure Committee's recently convened national freight panel. (Miller, 2013) Finally, government has the opportunity to provided added utility to the freight railroad industry necessary to encourage long term and sustainable partnership. But what specific strategies can policymakers utilize? And how can these also advance government's own goals for IPR development and public service?

4.7.1 Identifying Areas of Symbiosis: Passenger Rail and Short-Haul Freight

As the industry has refocused investment toward high volume bulk commodities since the passage of the Staggers Act, one new service line has garnered attention from freight carriers and public officials alike: intermodal. The number of trailers and intermodal containers shipped annually by rail has doubled to over 12 million since 1990 and continues to increase. (Association of American Railroads, 2013) Explosion in this once non-existent market has only been possible through massive infrastructure investments – funded by freight rail carriers themselves – to develop high capacity, high speed freight rail corridors to ensure the speedy service metrics demanded by intermodal customers. (Government Accountability Office, 2006)

While freight rail carriers have been quick to invest in their intermodal business lines, all revenue growth and capital expenditures are connected to long-haul movements in adherence to the industry's pervading focus toward volume and risk management. While long distance intermodal markets reach the point of maturation, short haul intermodal markets – characterized by shipments traversing less than 500 miles – remains largely untapped. (Solomon, 2012) However, its revenue generating potential is by no means secondary.

Consider Florida East Coast Railway (FEC), a Class II carrier spanning the 350 miles between Jacksonville to Miami, FL. This railroad generates 80% of its revenue from intermodal movements. Robust investments in FEC's physical infrastructure allow speedy and reliable operations across the corridor with operational metrics approaching that of trucks – all at a much lower cost to shippers. (Gale, 2011) Other examples include Norfolk Southern's *Triple Crown Service* and Canadian Pacific's *Expressway*; each providing additional real world success stories to the viability of short-haul intermodal service. (Triple Crown Service, 2007) Even Amtrak's ill-fated foray into freight shipping as part of its late 1990s Network Growth Strategy enjoyed reasonable patronage; a testament to the pent up demand from shippers to access rail on shorter hauls.

Now consider the operational nature of conventional intercity passenger rail. As exemplified earlier case studies into successful IPR corridors, service must be reliable, frequent and reasonably competitive with road based transportation to entice ridership – the exact same metrics necessary for intermodal freight service. (Cairns, 2010) Suddenly, the stringent capital requirements for IPR do not seem so detached from that of freight. As short-haul intermodal service is more operationally comparable to passenger trains, public investments into shared use corridors are no longer just IPR focused, but can support short-haul intermodal development as well. This offers the opportunity for freight carriers to capture new revenue sources while requiring them to expend much less initial capital.

In negotiations with freight rail carriers on IPR development and enhancement projects, public officials should also discuss short-haul intermodal market potential with the hosting freight railroad and possible public assistance in the construction of integral drayage and terminal facilities. (Resor, 2006) This approach is a marked departure from existing zero-sum strategies and instead represents a PPP where both benefits and risks are shared between stakeholders. With such an approach, policymakers have a much greater chance of eliciting freight railroad interests.

Equally as promising are perishable shipments characterized by human consumables such as meat, vegetables and fruit. Historically a high yield revenue source for freight rail carriers, command over this business line eroded during the industry's painful decline as financially exhausted carriers were unable to perform investments necessary to maintain competitive service to trucking.

Like intermodal service, perishable demands reliable, speedy and frequent service supported by robust infrastructure. Freight rail carriers have already undertaken some investments to recapture market share in the perishable market, most notably with Union Pacific's line of high capacity ARVN refrigerated boxcars, CSX's *Tropicana Express* and BNSF's *Cold Train* service. And like intermodal, perishable shipments offer distinct public benefits. In one study, perishables shipped cross country by rail rather than truck cut emissions by 50%. (McKinstry, 2013) However, the industry's ability and drive to invest in short-haul service is still subdued. Thus, investments in perishable markets have only been focused toward long-haul, high volume service in adherence to the industry's risk management. (Blanchard, 2010)

For speculative purposes, consider a past real world foray into short-haul intermodal service. In the 1970s, Illinois Central (IC) Railroad operated a short-haul intermodal service between Chicago, IL and St. Louis, MO under the service mark *Slingshot*. Plagued by labor issues, poor infrastructure and a lack of intermodal culture amongst shippers, IC ended the service just a few years later citing low profit margins. (Burton, 2011) In 2013, railroads enjoy labor tranquility, greater efficiency and an underlying

desire across shippers to find alternatives to increasing truck costs. Between Chicago and St. Louis, Union Pacific (UP) also enjoys a brand new, high capacity, high speed, publicly funded rail corridor developed to enhance *Lincoln Service* intercity passenger trains. There is no reason why Union Pacific should not be able to reap the benefits of this investment as well. A new *Slingshot* style service can be implemented to capture new revenues all while requiring UP to expend no capital dollars into infrastructure to support speedy freight service. While this conjecture speaks to the possibilities of freight rail benefits wrought by seemingly IPR focused investments, real world case studies truly demonstrate its viability.

4.7.2 Case Study: Florida East Coast Railway

The operational symbiosis between short-haul, high revenue freight business and passenger rail is exemplified in Florida. Through inventive planning, management and operational practices alongside aggressive infrastructure and capacity investments, Florida East Coast Railway (FEC) possesses a remarkable high capacity, high speed 350 mile corridor overwhelmingly hosting short-haul intermodal and perishable service along Florida's eastern seaboard. (Progressive Railroading, 2011)

In 2011, FEC announced plans to institute a new IPR service on its route: "All Aboard Florida." With plans to operate frequent service between Miami and Orlando, FL on track currently utilized by the company's freight trains, "All Aboard Florida" is the first major private IPR project in decades. Owing to the relative operating homogeneity between short-haul intermodal and conventional IPR, passenger service is expected to have little adverse impact on freight operations. In fact, FEC managers expect IPR capacity investments will also net benefits for their intermodal and perishable business lines through service dependability and increased market reach. (Business Wire, 2012) While "All Aboard Florida" is unique in being a purely private venture whose information is still proprietary, it nonetheless

demonstrates the viability of combining freight and passenger development for a truly comprehensive rail modal development approach.

4.8 An Ode to the Boxcar: Supporting Comprehensive Rail Modal Development

While intermodal and perishables have been exciting new components of freight rail development, there are other areas where policymakers can more effectively collaborate with freight rail carriers generate added utility for both stakeholders.

...companies should look for opportunities in hard times, strive to be agile and innovative, cultivate a culture that's comfortable with change and draw on past successes while avoiding an urge to 'hunker down.' (Stagl, 2013)

These words from current Union Pacific CEO Jack Koraleski should reverberate amongst America's railroads. Yet, many Class I carriers – including Union Pacific itself – have failed to follow this advice. In fact, they already have “hunkered down” by focusing investments into already rail dominated bulk commodity lines, cutting costs and distancing themselves from potential public assistance.

From 1980 to 2010, the total number of Class I railroad route miles has fell from 165,000 to 95,000. As a result of this network consolidation, long gone are numerous multi-tracked rail corridors, intermediary rail yards and spurs offering direct rail service to a diverse portfolio of businesses. Freight railroads have eschewed the complexity of a far flung and diverse customer network to focus upon streamlined operations in limited niche markets. To understand how much modern railroading has changed, consider the industry's most enduring symbol: the boxcar.

Like a trailer on a truck, boxcars are the most versatile type of freight conveyance on a railroad. They can carry a multitude of commodities while offering direct door-to-door rail service to a customer. Yet despite these strengths, the boxcar is rapidly becoming extinct. Director of Strategic Operations Glen Courtwright of Georgia-Pacific, a major paper producer, lamented the rail industry's shift away from individualized carload shipments:

Over the past one-and-a-half years, there have been shortages of box cars for the paper industry. How can you run out of cars in a down market? There have been more retirements than new builds. Builders are producing tank cars and frac sand hoppers for crude oil and are not building a lot of box cars. Our role as a shipper is to provide good forecasts. The railroads are running well, but I'm not sure it makes up for the shortages of cars. (Stagl, 2013)

Whereas boxcars made up 25.2% of the nation's total railcar fleet in 1980 – the year the Staggers Act was passed – they made up only 8.2% in 2008. Conversely, car types tailored to carry bulk commodities and operate in unit train configuration, such as covered hopper cars carrying sand and agricultural goods and tank cars carrying energy and agricultural goods, have ballooned in 2008 to 29.8% and 20.2% respectively. In 1980, these car types combined made up only 18.4% of the total fleet. (Martland et al., 2011) All of these percentages are relation to the generally static number of 1.3 million in service railcars. (Association of American Railroads)

Altogether, America's freight railroads have decided to cut costs, decrease capacity and move away from complex, labor intensive and competitive manifest shipments in favor of markets tailored to unit train operation. Amongst freight rail executives and planners, these actions are viewed as the most effective revenue generators and the greatest pathway to support the overall health of the railroad industry. But is this true?

Consider the one Class I railroad that has balked this trend. Former Canadian National (CN) vice president of Sales and Marketing Jim Foote exclaimed in 2007, "We're re-entering certain lines of business that railroads, including CN, had gotten out of..." (Foran, 2007) Subsequently, CN embarked on an aggressive effort expand its share and revenue generating capability within the overall freight market – not just sectors where rail enjoys a competitive advantage. Thus, CN becomes an interesting case study to determine rail's viability to compete in the modern freight marketplace.

Now generating 70% of its revenue from manifest train shipments, CN has refocused its business on individual carloads directly delivered to retail and industrial customers. (Blanchard, 2013) This

strategy of volume in customers, not commodities, naturally depends on wide market reach. As a result, CN has invested heavily in the expansion of its 20,000 mile rail network (consisting of trackage in both the United States and Canada). In 2013, the carrier allocated an astounding \$700 million, or 36%, of its \$1.9 billion total capex budget just toward capacity expansion – a number both proportionally and nominally higher than any other Class I rail carrier. (Progressive Railroading, 2013) Despite the greater complexity and costs of managing such a diverse and far-flung customer base, CN has enjoyed only resounding success.

As of 2013 Q2, CN's operating ratio – a measure of operating costs to revenue generated¹⁸ – is an astounding 60%; the best in the industry. (Oliver Wyman, 2013) This achievement has been the result of two major company policy drives: (1) controlling costs rather than cutting costs and; (2) a customer focused operational model known as Precision Railroading that focuses not on the performance of whole trains, but rather individual cars. (Harrison, 2005, Pg. 57) This aggressive and innovative growth focused capital and business planning approach has increased CN's value as both a business as well as a component of the continent's comprehensive freight transportation network.

In response to CN's success and deteriorating coal revenues, other Class I carriers have begun to reevaluate their approach toward manifest shipments and smaller customers; indicating a wider shift in how railroads conduct business. CSX has rolled out their own model of Precision Railroading deemed the "ONE Plan," and invested in developing customer service tools long absent from the railroad industry such as quick rate quotes and transit time estimators. CSX's direct competitor, Norfolk Southern, has followed suit with its own manifest carload initiative: The Thoroughbred Operating Plan.

¹⁸ Operating ratios are the bellwether used by railroads and their investors to determine efficiency. Railroads will typically aim for an operating ratio of at least 80% to appease investors. Using this example, this signifies that 80% of a carrier's revenues must be utilized to simply ensure trains are operated. In another example, an operating ratio of 110% signifies that it costs a railroad 10% more than total revenues to operate its trains. Obviously, a lower number is most desirable.

To public officials, a conversation on expanding manifest freight railroad service might seem irrelevant given their general attention toward IPR development. An industry paradigm shift toward manifest service would demand more aggressive expansion of rail infrastructure and capacity, countering thirty years of cost cutting and consolidation and allowing greater flexibility for diverse rail operations. By the very definition of shared use, any expansion of railroad physical capacity benefits both freight and passenger components. (Erickson, 2011, Pg. 79)

An expansion of manifest service begets operational benefits for IPR as well. Like high priority intermodal trains, manifest trains are one of the few freight train types that are actually scheduled in an attempt to ensure reliable service to customers. While manifest train schedules are by no means as detailed as passenger trains – measured typically in hours rather than minutes – they nonetheless create a more predictable system of train movements for dispatchers to better manage and plan for fluidity and reliability for both passenger and freight rail operations.

Considering the potential for harmonious interaction, policymakers would be wise to develop a comprehensive approach that ties freight rail modal development with IPR enhancement and expansion. Public officials should consult with potential commercial and industrial customers on a corridor to determine the potential for increased utilization of rail. New or upgraded spurs and industrial sidings to existing and potential customers should become a part of comprehensive corridor planning. If enough added utility for the freight railroad industry can be generated through government partnership and planning efforts, policymakers can even determine opportunities for cost sharing, thus instilling a true public private partnership between two stakeholders that have been combative for so long.

However, comprehensive rail corridor development is only a start. For example, despite CN's remarkable success as a manifest railroad, there are other outstanding issues impacting the railroad's perception government's role and partnership. In 2012, Amtrak filed a landmark complaint accusing CN of being actively malicious in its handling of IPR. Amtrak cited CN's Precision Railroad model as

evidence that the carrier cared more for its own freight business than the well-being of Amtrak's passengers. (Hilkevitch, 2013) While this complaint has been rendered mute with elimination of PRIIA's Section 207, this event underscores the ongoing contention between both stakeholders riding above underlying opportunities for change and demonstrates the importance of relationship building and the need for further analysis and evaluation of interactions between policymakers and the freight railroad industry.¹⁹

4.9 Strategies for Negotiating and Partnering with Freight Rail Carriers

As the preceding pages have attempted to arm policymakers with a better understanding of freight rail behavior and perspectives, they should understand that freight rail carriers are not a bulwark to IPR development in principal. Rather, freight carriers have determined that existing policies employed by policymakers generate too high a risk and too low a utility to actively pursue partnership. With this paper's aim at combating animosity, fostering trust and instituting a public private partnership between the railroad industry and government, policies employed by government should generate benefits and share risks between all involved parties. Keeping these factors in mind, a few key strategies can assist in advancing this goal.

A. The Cost of Passenger Focused Capital Projects Must Be Paid By Government

With privately financed capital budgets stretched across capital and shareholder demands, the freight railroad industry has adopted capital and business planning strategies characterized by cost cutting and risk management. The result is a national railroad network streamlined to perform the function intended by its builders: to move bulk freight cheaply and efficiently. In light of this, policymakers must understand the limitations this infrastructure places on IPR speed, reliability and

¹⁹ Claims of hosting freight railroads actively extending preference to their own trains rather than passenger trains have proliferated since Amtrak's first day of operation. Alongside assertions of unavailable capacity, freight rail carriers have also complained of Amtrak's right of access fees as being a poor incentive to wreak operational havoc on their freight operations. This topic is discussed at length in Section 5.2.

frequency and be willing to undertake necessary passenger focused investments. Considering IPR focused investments do not offer any benefits for bulk freight operational metrics, policymakers much be willing to cover all costs on a passenger rail capital project. However, in situations where IPR improvements or comprehensive rail corridor planning can be determined generate added utility for the hosting freight railroad public officials should negotiate cost sharing.

B. Freight Rail Operational Autonomy Must Be Guaranteed

Spawning from a tumultuous history marked by intense government oversight, the freight railroad industry's greatest fear is a return to pre-Staggers Act regulation. Policymakers must understand the industry's ongoing perceptions of government partnership and combat this resentment by conceding direct oversight and ensuring operational autonomy to the hosting freight railroad. Policymakers should instead embrace constructive relationship building. Case studies of Amtrak *Cascades* and the Capitol Corridor highlight the effectiveness of this approach to advance public interests while ameliorating freight railroad concerns while PRIIA's Section 207 demonstrate the ineffectiveness of more heavy handed measures.

C. Avoid Overselling Passenger Service and Placing Blame for Poor Reliability

This strategy is most vexing for passenger rail advocates. Poor on-time performance is a major determinate of the viability of an IPR line to entice ridership. If IPR reliability remains a continual issue in operation, it is only natural for policymakers to assume questionable dispatching by the hosting freight railroad. Indeed, analysis does confirm that freight railroad dispatching and "slow orders" – speed restrictions placed upon deferred maintenance track that does not correspond to published Amtrak schedules – as the main culprit for ongoing OTP issues. (Federal Railroad Administration, 2012) The railroad industry has countered these accusations by pointing to strained capacity, the incompatibility of current IPR performance expectations on freight optimized infrastructure and burden on freight operations as well as a lack of fair compensation and investment

for hosting passenger trains. (Wilner, 2013) Heated exchanges between both stakeholders proliferate as public perception of both freight and passenger rail suffers. For each side to remain in perpetual “blame game” achieves nothing.

In the face of OTP issues, public officials should collaborate with the hosting freight railroad to better identify IPR’s impacts on the hosting railroad – how freight activity is burdened and how existing infrastructure impedes IPR operations – and address these issues through dialog, compromise and capital investment instead of public condemnation. Failure to do this places the hosting freight carrier into a “Catch-22” situation possessing two options:

1. Voluntarily perform needed infrastructure investments to support more effective handling of passenger trains at a high monetary cost
2. Remain committed their freight focused capital planning strategies and continually operate unreliable passenger trains at a high public relations cost

Neither of these options is desirable, but as privately financed companies focused on providing a respectable return for their investors, a hosting freight railroad will cope with a tarnished public image over the scorn of shareholders citing poor utilization of resources.

Over 40 years of chronic underfunding of Amtrak have placed the railroad industry’s perception of government partnership at an all-time low. In the face of continuing public capital constraints, policymakers should not counteract lackluster public investment in IPR by belittling hosting freight railroads to the role of scapegoat. Utilizing existing railroad infrastructure for IPR development is indeed cheaper than constructing new right-of-way, but this approach still requires ample investments in time and money to generate meaningful returns and ensure partnerships are fruitful. However, freight railroads must also alter their practices to enable greater interaction with government.

D. Freight Railroad Transparency

As the railroad industry retreated from the public sector after the passage of the Staggers Act, the various nuances of freight railroading as well as the motivation for the industry’s

behavior has been lost to policymakers. Carriers have failed to market their viewpoints to government in an effective way, thus coming off as arrogant and intransigent. Like policymakers have failed to gain the trust of the freight railroad industry, the freight railroad industry has failed to gain the trust of policymakers. If the railroad industry is serious in their attempts to counteract revenue contraction through expanded public partnership, they must behave as partners.

Freight carriers must be more willing to share proprietary information to back their claims that existing IPR planning, implementation and operational generates too undue a burden and offer strategy options that advance the goals of policymakers for the public welfare alongside their own. However, policymakers must also respect the industry's competitive environment in ensuring relevant sensitive information is kept confidential from competing entities. Altogether, this shift toward transparency would be a marked paradigm shift for freight railroad carriers and difficult for public officials to encourage unless they could offer the railroad industry some gain in return.

E. Identify Benefits and Opportunities for Symbiosis with Freight Rail Carriers

As evidenced by Amtrak's now 42 year long struggle, IPR development strategies that focus on obtaining a zero-sum impact are faulty. Freight railroad cooperation and collaboration must be attracted, not forced, if public private partnership between government and the freight railroad industry is to be long term and sustainable. As passenger rail offers no direct operational benefits to a hosting freight railroad, policymakers should consider a comprehensive approach that nets utility for freight rail carriers alongside the public.

Considering the industry's risk adverse approach to capital and business planning, public officials should seek to develop inroads into revenue sources not yet actualized by freight carriers. Policymakers have already provided ample support to rail's competitors and the public benefits of expanded rail utilization are well documented. Short-haul intermodal, perishables and expanded manifest service are great starting points with which to approach freight rail carriers to elicit interest, share risk and generate

added utility for all involved parties. Shared use railroading is incredibly unique; a rare situation where the public sector seeks to utilize private infrastructure for its own benefit. Policymakers and freight railroad carriers must better seek to understand one another's desires, confront their own assumptions and realize that both ultimately seek the same goal: the health and expansion of railroading.

5. RAILROAD FUNDING & FINANCING

5.1 Introduction

The defining component in any PPP is money. However, funding and financing remains a woefully underdeveloped component in the interaction between government and freight rail carriers. The industry continues to harbor a hesitance toward funding partnerships for fears of “strings attached” and perceptions of government as a cumbersome bureaucracy. Ironically, these attitudes coincide with the industry’s ongoing complaints of lacking public support for rail in comparison to other transportation modes.

Government policies aimed at confronting the rail industry’s distrust of government, bolstering its privately sourced financing and leveraging gains for the public welfare are crucial to enable long term public private partnership. This section seeks provide answers to policymakers on questions:

1. What are the current funding agreements between government and the freight rail industry? How effective are they? Do they need to be altered?
2. How can policymakers financially support rail projects without making freight rail carriers feel their autonomy is being threatened?
3. How can rail projects be funded in an age of tight budgets and fiscal conservatism?

Railroad infrastructure is undeniably an expensive drain on the nation’s freight railroad carriers. Thus, their cost cutting and risk adverse capital planning is rational, albeit shortsighted. Empowered with government’s immense resources, public officials possess the ability to enhance the industry’s existing financing mechanisms to counter this behavior. However, their approach must be innovative. Wide scale public assistance toward the freight railroad industry is unlikely to come in the form of outright ownership of infrastructure or direct subsidies; these run the risk of alienating both the public and freight railroads. Policymakers must instead discern ways to diminish risk, increase the utility freight rail carriers derive from their infrastructure and encourage more aggressive private capital development.

5.2 Understanding and Evaluating Amtrak's Right of Access Agreements

The most basic contemporary financial interaction between the freight railroad industry and policymakers is Amtrak's right of access payments – the fee Amtrak pays rail carriers that host its passenger trains. Utilization infrastructure owned by another railroad is common practice in the industry with compensation based on a negotiated access agreement termed by numerous market forces such as the volume and level of service desired, calculated insurance risks, capital costs, purchasing power, etc.

In departure from this norm, Amtrak's compensates hosting railroads only for differential costs – the change in cost that that comes from the introduction of one more or less unit. Within railroading this is defined as the direct cost – or avoidable costs – incurred by a hosting freight railroad that arise from Amtrak's utilization of right-of-way, namely infrastructure wear and tear and labor costs for dispatching.

Policymakers intuited this compensation structure during Amtrak's initial creation as a way to lower the railroad's operating costs. While understanding this method would effectively force freight carriers to subsidize IPR operations, Amtrak's framers argued that the direct and indirect costs would be at a much lesser rate than if a rail carrier directly operated IPR. As the industry in the early 1970s was hamstrung by deteriorating finances and commanded a precarious negotiating position, they begrudgingly accepted this method.

Originally set to expire after 25 years – a deadline that passed in 1996 – compensation agreements with hosting railroads have not been reformed. This is in spite of the great operational, business and physical changes to railroading since 1971; railroad route miles has decreased from 225,000 to a lean 139,000 since 1980. (Railway Tie Association, 2011) This modern streamlined rail network has made capacity a premium, thereby also increasing the opportunity costs borne by freight rail carriers when hosting passenger trains. Thus, the industry's resentment toward this agreement continues to simmer.

Amtrak's right of access to the nation's railroad network provides government substantial leverage in IPR development. In spite of this, the freight railroad industry has come to accept Amtrak's special privilege, thus making any discussion on Amtrak's right of access on principle tangential. However, Amtrak's compensation arrangements to hosting freight railroads remains mired in spirited debate and the source of great animosity. The railroad industry holds the claim that Amtrak does not adequately compensate its hosting railroads for the utility they provide. (Association of American Railroads, 2013) With this, it is worthwhile to determine the validity of the industry's claims. Specifics of Amtrak's compensation arrangements with its hosting railroads are proprietary to protect negotiating power. (Department of Transportation, 2010). However, some aggregate data does permit the ability to generate a rough estimate of Amtrak's compensation rates.

In 2010, Amtrak paid a combined total of \$115.4 million to all hosting railroads. Dividing this number by annual scheduled train miles over non-Amtrak owned trackage – approximately 26 million²⁰ (National Railroad Passenger Corporation, 2011) – amounts to average estimate of \$4.44 a mile. As the \$115.4 million figure represents the total compensation to Amtrak's hosting railroads, it also includes incentive fees – additional payments Amtrak provides on top of its avoidable cost formula when negotiated performance measures of a particular route are reached.

To determine the revenue earned by a freight carrier hosting IPR, consider one of Amtrak's long distance routes: the *Empire Builder*. Running daily service between Chicago, IL and major cities in the Pacific Northwest, the Seattle, WA section of this train traverses approximately 2,200 miles on track predominately owned by Canadian Pacific (CP) and BNSF Railway. Using this rough \$4.44 calculation (which again, includes incentive payments) against the train's published route miles, it can be speculated Amtrak pays all railroads hosting the *Empire Builder* a cumulative total of approximately

²⁰ This figure includes train miles on both freight rail and publicly commuter rail infrastructure. Amtrak's right of access agreement does extend to non-freight railroads as well. However, only Metro-North Railroad in New York and Connecticut accounts for any meaningful amount: 1.3 million train miles in 2011. The overwhelming majority of Amtrak train miles still occur on freight railroad owned trackage.

\$9,800 for the movement of one train from terminal to terminal. Like all passenger trains, the *Empire Builder* – which typically consists of two locomotives, a baggage car and ten revenue coach, sleeper and food service cars – is a high priority train and therefore demands diligent dispatching by the route’s rail traffic controllers in order to meet its published 46 hour schedule.

Of course, this \$9,800 figure has little context alone when not compared to revenue generated from freight service. In one example, the revenue generated in moving a single railroad freight car carrying a common commodity between the Pacific Northwest and the Plain States – a distance of approximately 1,000 miles on predominately BNSF owned right-of-way – is around \$5,000.²¹ Further consider that this single freight car runs on low priority manifest trains with a loaded velocity of well over a week, it can be speculated even a lumbering, relatively short 50 car mixed freight train nets the operating freight carrier revenues approaching \$250,000 – all with considerably less operational headaches than managing a high priority passenger train. In another instance, the revenue generated by a Class III railroad in handling an agricultural unit train was over \$25,000 – this coming from a freight movement totaling less than 50 miles.²²

Moving from specific examples to an aggregate perspective, the combined revenue total for Class I carriers in 2010 was \$67.8 billion. Comparing this figure to the \$115.4 million total Amtrak paid to all hosting carriers (including commuter railroads), it would amount to just 0.17% of total Class I revenue. Compare this to overall volume. In 2010, 476 million total train miles were logged by Class I owned rail carriers. (Bureau of Transportation Statistics) Amtrak posted approximately 24 million train

²¹ This information comes from a real negotiated rate agreement between BNSF, a shipper and a 3rd party logistics management firm. The information surrounding freight rail rates are confidential, owing to the sensitive competitive environment pervading across the industry. Out of respect to this, specifics of the sourcing and specifics of the rate are kept intentionally vague.

²² This comes from the confidential negotiated rate between BNSF and a Class III railroad. Again, specifics are kept intentionally vague to protect proprietary business information.

miles on Class I owned infrastructure.²³ Of the 500 million total train miles collectively logged on the nation's Class I railroad network, 5% was generated by IPR.

Clearly, there is a disparity. The level of revenue a freight railroad carrier earns from hosting intercity passenger rail is woefully lacking when compared to total train miles. With this information, freight railroad hesitance toward increased shared use passenger rail development become clearer. The utility generated by a freight railroad from hosting IPR is simply too small to warrant interest.

5.2.1 Considering Right of Access Payment Alternatives

Adopting a more market based pricing scheme for IPR more in line with industry standards for would be a distinct policy shift, increasing the utility the hosting railroad derived from partnering with government. Under this system, complaints from policymakers over poor on-time performance could carry more weight, using public money as leverage to negotiating more stringent contracts for OTP and frequency, thus better sharing risk.

Furthermore, the increased revenue generated by the hosting railroads would not be simply absorbed as profit. With such intense capital needs, large portions of these increased revenues would be reinvested into infrastructure maintenance or expansion by the rail carrier, thereby implementing an ongoing cycle that would benefit both passenger and freight operations.

However, determining a "fair" compensation rate is difficult considering the industry's ongoing lack of transparency. With their stewardship over public money, policymakers must be ensured that any adjustment to Amtrak's compensation structure is not excessive. If public officials were to adopt this shift, freight rail carriers must be willing to share proprietary information to ensure the public welfare was protected. Of course, policymakers should also ensure all sensitive information is kept confidence to protect railroad interests. Case studies in right of access agreements between freight rail carriers are

²³ This number is approximated by subtracting Amtrak train miles over non-freight railroad owned infrastructure, i.e. commuter railroad infrastructure.

difficult to analyze because of this confidentiality. However, public officials can envision the role of some broader variables in developing more equitable compensation, including: (1) existing right of access rates between freight rail carriers; (2) the projected impact of IPR on a hosting railroad's infrastructure and; (3) the desired level of service for IPR.

Another option to help protect the public welfare is for policymakers to stipulate some portion of increased revenues from hosting IPR are earmarked toward capital maintenance and improvement projects into the tracks directly utilized by IPR. While some of the autonomy enjoyed by the hosting freight railroad carrier would be lost in this approach, they would nonetheless receive much greater equity in IPR operations while also ameliorating government concerns.

However, any amendments to Amtrak's right of access compensation agreements to institute a more amenable public private partnership comes with one major downside – the costs for IPR operation would dramatically increase. This conclusion lends itself toward further analysis of government's general approach to Amtrak funding.

5.3 Amtrak Funding

Like all forms of passenger transportation, Amtrak is dependent upon public subsidies. For roads and aviation, public support is provided indirectly through the construction, ownership and maintenance of physical infrastructure. Public support for Amtrak arrives in the form of direct cash to offset the railroad's operating losses and supply its capital budget. This more conspicuous way of funding is naturally more susceptible to criticism from fiscal watchdogs.

Before PRIIA in 2008 – when Amtrak finally received a multi-year authorization – Amtrak was generally forced to seek an annual appropriation from Congress. This process ran the railroad through a gauntlet of Congressional commitments who would make the final determination on the railroad's subsidy, or if it received one at all. This uncertainly overall impacted Amtrak's ability to conduct capital

and operations planning throughout its history, control costs and invest in its future. (Government Accountability Office, 2000) While Amtrak now enjoys dependable annual funding, these monies are still considered to be sub-optimal by Amtrak's management (Gallagher, 2013) and independent analysts (Puentes et al., 2013) to meet existing and future needs. As a result of this chronic funding shortage, Amtrak's ability to effectively partner with its hosting freight railroads is severely hampered.

5.3.1 An Unrealized Partnership: Amtrak and its Hosting Railroads

Considering the heated rhetoric of freight railroad CEOs toward IPR and Amtrak's ongoing on-time performance issues, policymakers typically assume the industry harbors little respect for the ailing passenger railroad. In actuality, the contemporary relationship between both parties is marked by mutual esteem and collaboration. The AAR's official press releases laud Amtrak's expertise, professionalism and commitment toward fair partnership. Anecdotal backroom opinions are even more complimentary, commending Amtrak for being "the little railroad that could;" maintaining and even growing the nation's intercity passenger rail network on a shoe-string budget. Amtrak's feelings toward the freight railroad industry are equally complimentary. (Vantuono, 2013) Despite these feelings, shared use IPR continues to be mired in difficulty.

This reality related back to infrastructure. Plagued with such a small capital budget, Amtrak's ability to share costs in rail infrastructure rehabilitation projects is minimal. Thus, it is forced to simply cope with utilizing infrastructure optimized to move bulk freight goods. As evidenced most recently in a stillborn bid with Union Pacific to increase service frequency and reliability on Amtrak's Los Angeles, CA to New Orleans, LA *Sunset Limited* route, Amtrak lacks the wherewithal to develop physical infrastructure to enable more efficient IPR operations (Frailey, 2010)

Occasionally, Amtrak's positive relationship with its host railroad partners offers a workaround to lacking capital. In a recent example, a deal brokered between the State of North Dakota, BNSF

Railway and Amtrak to share the costs of a flood mitigation project had BNSF finance Amtrak's share of the cost through a long term, low interest loan (Bonham, 2010) However, these situations are few and far between. If Amtrak is to be elevated as a true partner to its hosting freight railroads rather than the subject of pity and occasional charity, it must possess the resources to negotiate, plan, collaborate and implement on key projects that benefit IPR operations. If policymakers wish develop IPR on the shared use model, they must fund it. The potential results of increased funded for Amtrak to enable more fruitful partnership with the freight railroad industry and generate gains are demonstrated in a case study.

5.3.2 Case Study: CSX Empire Corridor Lease to Amtrak

In a landmark 2012 agreement, CSX signed a long term operating lease with Amtrak on trackage between New York City and Schenectady, NY ceding operational autonomy to Amtrak; a testament to the trusting relationship between both parties. In this agreement, Amtrak takes on the responsibility for all capital and operational obligations on the corridor – including dispatching CSX's own freight trains. With Amtrak's limited capital resources, this watershed agreement was made possible only through the support of on time grants and President Obama's stimulus program. (National Railroad Passenger Corporation, 2012)

The Empire Corridor lease displays many characteristics of PPP. Risks and benefits are shared between Amtrak, CSX and government. Dispatching on the corridor comes under the auspices of Amtrak, supporting IPR reliability while CSX's capital costs are diminished and its freight revenues protected. This demonstrates the great value in promoting shared use operations. The utility of both freight and passenger enhanced or protected while costs for both parties are significantly diminished. While the Empire Corridor is a passenger rail dominated line – meaning transposing a similar agreement on a freight dominated corridor would be more difficult – this case study nonetheless speaks to the

power of partnership, collaboration and greater Amtrak funding to generate benefits for all involved stakeholders.

5.4 Railroad Funding and Financing in an Age of Austerity

While it is easy to argue the benefits of increased public spending toward IPR, actually obtaining the necessary capital is not. 2013 and the years prior have been characterized by momentous legislative deadlock and a general lack of public financing for all transportation. While convincing legislators of the merits of increased and reliable transportation investment is an ongoing necessity, officials already well versed on the value of rail transportation cannot sit idly by waiting for federal and state governments to act. Instead, they must pragmatically move forward with existing resources.

With the railroad industry's already mature privately sourced financing system, public officials are imbued with much greater flexibility to enable rail modal development. By the very definition of shared use, railroad infrastructure expansion benefits both passenger and freight components. Furthermore, more effective collaboration with freight rail carriers in financing can combat the industry's negative perceptions of government, altogether laying the foundation for wider scale, long term public private partnerships.

5.4.1 Railroad Rehabilitation and Improvement Financing

Created in 1998, the Railroad Rehabilitation and Improvement Financing program (RRIF) empowered the Federal Railroad Administration (FRA) to provide up to \$35 billion in low interest, long term government backed loans to fund railroad infrastructure construction and enhancement projects. Undeniably, RRIF is a game changer. It offers a pool of money – larger than the annual “capex” budgets of the nation's 7 Class I railroads combined – that protects the industry's autonomy to plan and invest in infrastructure with loans at potentially no cost to taxpayers. RRIF loans offer low interest treasury rates

that can be innovatively backed by the physical assets of railroads – a component that private lenders often do not consider – with a maximum 35 year repayment option. RRIF provides freight railroads an innovative way to stretch their capital budgets and reduce risk. (Loftus, 2011)

Despite this immense potential, RRIF in practice has been much less revolutionary. In 2013, only \$1.7 billion of the potential \$35 billion has been utilized since 1998 – a paltry 4%. Broken down to reflect only privately owned freight railroad carriers – cutting out publically held commuter rail agencies and Amtrak – the total outlay is an even more dismal 2%. (Federal Railroad Administration, 2013) Considering RRIF's potential, it is worthwhile to determine the cause of this underwhelming performance.

Evidence points to a cumbersome application process. Each RRIF application is put through an extraneously difficult vetting process in which applicants complain of a lack of coaching and consultation. (Sussman, 2011) This has curtailed the speed in which loan approval decisions can be made. While the FRA is stipulated to adhere to a 90 day turnaround for each application, the average actual response time approaches 400 days. (Progressive Railroading, 2011) Such a long process and uncertain process requiring immense resources – contracting with a 3rd party financial consulting firm is considered mandatory among industry professionals in order to successfully submit an application – have all impacted RRIF's utilization rate.

The RRIF's shortcomings are clarified in its few successful applications. Alongside public commuter and passenger rail agencies, there is a pattern of financially stressed Class III freight railroads unable to muster financing from any other sources. With this, RRIF has succumbed to the undesirable position as a financing method of last resort. Freight carriers possessing healthier revenues and demanding flexibility in their capital planning, have no motivation to consider altering their existing private financing methods.

The RRIF program's failure to capture the attention of larger freight railroad carriers is frustrating. Low interest, long term treasury backed loans naturally compliment the freight railroad industry's method of self-financing. It greatly stretches the available capital for railroad infrastructure projects while acting as a low cost, low risk option for government to support rail modal development.

Reforms to RRIF's vetting process can encourage greater utilization and accessibility at a low risk to government. Despite being the program's current primary as an option of last resort for financially stressed railroads, there has yet to be any defaults. Other railroad financing options offered by the public sector demonstrate similar trends. Among 10 state and federal programs for railroad loan assistance – totaling 650 applications and \$380 million between the late 1990s and 2013 – only three defaults were indicated. (Sussman, 2013) Lessening the burden on FRA analysts to vet applications would also lend toward decisions being made more quickly – moving closer to a 90 day turnaround.

Since 1980, the railroad industry has proven its aptitude in risk management. However, as the limitations of private financing to enable market expansion and revenue generation become more evident, policymakers should render assistance in a way that limited risks and generates maximum benefits for all involved stakeholders. The potential for RRIF to rebuilding relationship and support comprehensive rail modal development is too great to allow a continuation of its current underutilized state.

5.4.2 Infrastructure Tax Credits

Infrastructure tax credits present another strategy option for policymakers to spur rail infrastructure development at a low cost to taxpayers. A formula based infrastructure tax credit would stretch the privately sourced capital budgets of rail carriers without any impact on their autonomy. Such a program is already in effect for certain sectors of the industry. The 45G Shortline Railroad Tax Credit provides a 50% return on all capital maintenance and expansion projects performed by Class III

railroads. Historically the most capital constrained of all classes of freight railroads, additional Class III capital spending spurred directly through 45G is estimated at \$300 million. (Wanek-Libman, 2013)

In June of 2011, federal legislation was introduced to provide a 25% formula tax return on rail capacity and expansion projects for all railroads – including the largest freight Class I carriers – in an attempt to incent the industry toward more aggressive physical growth. However, this bill was unable to garner any attention in Congress and subsequently died in committee. (Freight Rail Infrastructure Capacity Expansion Act, 2011) Considering the freight railroad industry’s penchant for consolidation and hesitance toward capital expansion, this was a great missed opportunity. With the industry already possessing firm self-financing sources, incenting private development through tax credits represents a very low monetary cost to the public against utility gained. (Keith, 2013) Government would be wise to enable fluid private investment whenever reasonable.

5.4.3 Loan Loss Reserve Funds

After decades of cost cutting and consolidation, any efforts by public officials to encourage railroads to expand capacity and develop manifest and short-haul freight markets will likely be met with hesitance from the conservative freight railroad industry. Policymakers should consider options to combat this attitude by identifying reasonable ways to minimize the risk railroads would take on in expansion efforts.

A loan loss reserve is a pool of public money set aside to offset the proportion of the costs of any unpaid loans in a portfolio. This serves to lower the risk private lenders take on when issuing loans to private entities and thereby encourage lower interest rates. A modest publicly funded loan loss reserve can leverage exponentially greater private financing. Considering the health of the railroad industry’s existing sources of financing – measured by a low rate of defaults – a public loan loss reserve of 5% total outlays for freight railroad industry expansion projects could be considered to be reasonable

a reasonable rate for both public officials and private lenders. This reserve thereby leverages a 20:1 ratio in public private financing, altogether encouraging lower borrowing rates, minimizing risk and incenting private development.

Policymakers can be even more innovative to spur the rail network expansion. For example, if new track was laid under the pretense to generate a certain level of manifest or short-haul traffic in a certain amount of time, a reserve loan loss fund could offset a proportion of already expended capital costs to be reinvested marketing efforts or fund further infrastructure expansion considered necessary to generate demand. This approach would place much greater risk on the public sector, but could potentially spur more aggressive rail expansion. Policymakers should consider if added risks and potential benefits of this potential strategy is worthwhile.

5.5 Summary

Public private partnership is predicated upon a strong relationship and shared risks and benefits. To better adhere to these principles, policymakers should consider amending Amtrak's right of access agreements to adequately compensate hosting freight carriers for the utility they provide. Furthermore, government should seek to leverage their tremendous resources to incent freight railroads to expand their networks and combat pervading risk adverse capital and business planning.

The potential benefits from an expanded railroad network are numerous and all-encompassing: (1) additional revenue for freight railroads can be generated through expansion into new manifest and short-haul markets; (2) an increase in modal competition between truck and rail can arise as rail carriers becomes comfortable functioning in markets where rail lacks a clear competitive advantage; (3) stronger relations between government and the freight railroad industry and; (4) a greater availability of capacity for IPR to support reliability.

6. CONCLUDING REMARKS

Policymakers have been clear in their desire to improve and enhance the nation's IPR network. To control capital costs, they have opted to develop Amtrak on a shared use model utilizing existing, privately owned rail infrastructure. However, simmering animosity between the freight railroad industry and government has curtailed success. Public officials have sought to force freight railroad compliance in meeting their narrow, IPR focused goals, thus failing to offer any meaningful utility to hosting railroads from public partnership. Meanwhile, the rail industry's aggressively defensive posturing in retreating from the public sector and eschewing transparency has only deepened the rift between both stakeholders and fosters government perceptions of unethical industry practices. At this impasse, both parties are stagnant, forsaking the benefits of greater collaboration needed to unlock the collective rail industry's market and revenue potential.

Nonetheless, the chance for partnership has never been greater. Policymakers are more emboldened than ever to advance IPR and freight rail alike, while the rail industry's hesitance toward innovation, expansion and public assistance have begun to fade in light of emerging negative market shifts. However, if any collaboration between government and the freight railroad industry is to be fruitful and overcome current animosity, alterations to the ways both stakeholders interact is necessary.

This paper has exemplified relationship building and PPP as the best tool to institute long term and comprehensive rail modal development. The preceding pages explain the origins of animosity between government and freight rail carriers; clarify the source and motivations of the freight railroad industry's seemingly intransigent behavior to public officials; analyze and evaluate existing planning, policy; operational and financial interactions between both stakeholders to altogether synthesize approaches that are believed to best combat resentment and enable the development of PPP. To advance this goal, specific recommendations have been synthesized.

A. Acknowledge Freight Railroad Expertise by Eschewing Stringent Oversight

Freight rail carriers are masters at the art and science of railroading; planning, operating and managing an incredibly complex business and transportation system. The intense pride and loyalty rail professionals possess is found in few other industries. In light of this, any attempts by government to more directly administer rail operations will generate extreme distrust. As case studies have demonstrated, trust and relationship building in lieu of stringent public oversight building has resulted in viable shared use IPR. As such, policymakers should recognize the industry's prowess in rail operations, avoid belittling hosting railroads with claims of unethical behavior and instead foster trusting strong relationships that to address any service, planning or implementation issues that arise.

B. Generate Utility for Hosting Freight Railroads in Partnership

IPR development strategies focused on obtaining a zero-sum impact on freight operations are weak. If policymakers are unable to generate any added utility to freight rail carriers in partnership, freight carriers will continue to be reluctant toward IPR partnership. Government has already provided ample support to other modes while the public benefits of increased rail utilization are well documented. Reorienting IPR planning and development methods toward a comprehensive approach that includes short-haul freight, intermodal, perishables and manifest service is likely to better pique freight railroad industry interest and thereby enable symbiotic, long term partnership.

C. Fund and Empower Amtrak

Shared use rail operations are highly complex, made all the more difficult on a national railroad network optimized for bulk freight movements. Amtrak has labored on to fulfill its mission of operating, enhancing and expanding the nation's IPR network. However, Amtrak's efforts have been made all the more difficult due to a lack investment from its government financiers. This, in turn, has hamstrung Amtrak's ability to collaborate with its hosting freight railroad partners to enhance their networks for more effective IPR operations – a role government willingly took on with Amtrak's

creation. Policymakers must realize Amtrak's funding woes and work with the railroad to identify a level of reliable investment that can empower the railroad to meet the public's expectations and need. Reliable and well utilized IPR cannot occur cannot occur "on the cheap." If public officials truly wish to grow the mode, increased investment is mandatory. Through this, Amtrak can finally possess the wherewithal to effectively collaborate with its freight railroad partners.

To this final part, policymakers should – for the simple sake of instilling long term positive relationships – institute reforms to Amtrak's right of access compensation agreements. Hosting railroads should not be forced to subsidize IPR operations and should be reasonably compensated for the utility they provide. The private contractors Amtrak uses for its equipment and commissary needs are not mandated to offer preferential pricing. Neither should the freight railroads hosting Amtrak's trains.

D. Facilitate Railroad Infrastructure Investment

America's railroad industry have built a truly remarkable system – the world's largest and most efficient freight railroad system in terms of revenue generation, ton-miles shipped and worker productivity. This has all occurred through private infrastructure financing. Nonetheless rail operations is immensely draining and has resulted in an industry paradigm of risk aversion, cost cutting and ongoing consolidation. Financing represents the single best way for the public sector to spur railroad development and instill a long lasting collaborative spirit. Unlike aviation and roadway infrastructure – where costs are overwhelmingly borne by government – the public sector can better leverage its resources along the rail industry's already robust private financing model to alleviate the strains of capital spending.

Public officials should improve and expand existing financing programs, such as RRIF, and recognize the industry's investment efforts by instituting infrastructure tax credit and loan reserve programs. This can also serve to increase government's negotiating power with the railroad industry by actually offering added utility to freight carriers that can only come from public partnership. By the

definition of shared use, capacity and network expansion benefits IPR alongside freight railroad operations.

E. Support Greater Freight Railroad Transparency

As stewards of the public welfare, policymakers cannot simply leverage government monies without any sort of evaluative process. If government was to step back to the role of facilitator of railroad development, they must be ensured that their investments yield measureable public benefits. Thus, the freight railroad industry must comply with the wishes of policymakers for greater industry transparency.

This would require railroads to greatly shift their behavior – a stipulation they will be naturally hesitant to due owing to the industry’s generate distrust of government. However, if rail carriers hope to leverage public funds to overcome mounting concerns over their inability to meet business and capital demands, greater transparency is a mandatory step. Policymakers should combat the industry’s hesitance through astute relationship building, ensure proprietary business information is kept confidential and demonstrate their commitment toward the industry and IPR with a strong vision and necessary funding. If public officials clearly demonstrate their willingness for IPR policy reform, railroad carriers should respond by offering relevant information – such as market based right of access agreements – to be vetted, analyzed and evaluated by public agencies to support public planning and policy endeavors.

Altogether, these recommendations seek to foster better relations and alter interactions comply to the framework of PPP. These recommended roles and duties are delineated on the following page:

GOVERNMENT “The Facilitator”	AMTRAK “The Intermediary”	FREIGHT RAILROADS “The Partner”
<ul style="list-style-type: none"> • Develops overall railroad policy and vision • Directly funds and finances intercity passenger rail operations (Amtrak) • Establishes and administers railroad infrastructure financing and tax programs 	<ul style="list-style-type: none"> • Directly operates intercity passenger trains • Plans for passenger rail service; identifies capital projects needed to ensure service reliability – shares data with government to clarify funding needs – shares data with freight railroads to discern project management and cost sharing strategies • Compensates hosting freight railroads based on the utility provided 	<ul style="list-style-type: none"> • Develops, maintains and manages physical national railroad network; collects revenue from users • Oversees and dispatches all railroad traffic • Collects data on all railroad operations, shares pertinent information with government to assist in railroad policy, vision and financing and tax program development

In all, a long lasting partnership between government and the freight railroad industry is crucial if the full potential and utility of America’s railroad network is to be realized. No transportation mode can thrive without both public and private support. It is time for both stakeholders to stop considering passenger and freight rail as mutually exclusive. Both can coexist and thrive together – just as they did prior to the railroad industry’s decline in the 1960s – while generating ample utility for both the public and private sector. At this crossroads, it remains unclear as to how the relationship and interaction between the freight railroad industry and government will look in the future. What is certain is that only through collaboration can the full potential of railroading – both passenger and freight components – be guaranteed.

7. WORKS CITED

- Agnew, Bruce. "On Track: The Future of Rail in Snohomish County." Lecture, Snohomish Rail Summit, Everett, WA, June 7, 2011.
- American Association of State and Highway Transportation Officials. *Freight Rail Bottom Line Report*. Chicago, IL: Cambridge Systematics, 2004.
- Association of American Railroads. "Railroad Performance Measures." Web. Accessed August 29, 2013. <http://www.railroadpm.org/home/rpm.aspx>
- Association of American Railroads. *Class I Railroad Statistics*. Washington, DC: Association of American Railroads, 2013.
- Association of American Railroads. *Differential Pricing in the Rail Industry*. Washington, DC: Association of American Railroads, 2013.
- Association of American Railroads. *Freight and Passenger Rail: Finding the Right Balance*. Washington, DC: Association of American Railroads, 2013.
- Association of American Railroads. *National Rail Freight Infrastructure Capacity and Investment Study*. Cambridge, MA: Cambridge Systematics, 2007.
- Association of American Railroads. *Rail Intermodal Keeps America Moving*. Washington, DC: Association of American Railroads, 2013.
- Association of American Railroads. *The Need for Reasonable Railroad Regulation*. Washington, DC: Association of American Railroads, 2013.
- Association of American Railroads v. United States Department of Transportation, No. 12 - 5204 (D.C. Cir. July 2, 2013).
- American Trucking Association. *American Trucking Trends*. (2012)
- Blair, Jim. "Passenger and Freight Rail: Together We Stand!" Contribution to the "Delaware Valley Goods Movement Task Force" symposium conducted at Delaware Valley Regional Planning Commission, July 2010.
- Blanchard, Roy. "A Fresh Approach: How Two Railroads And A Shipper Put Perishables Traffic Back On The Menu." *Trains*, February 2010.
- Blanchard, Roy. "Continental Powerhouse." *Railway Age*, April 8, 2013.
- Blanchard, Roy. *The Railroad Week in Review*, July 26, 2013.
- Blaszak, Michael. "Rail Carload Traffic." Lecture, The Sandhouse Gang, Chicago, IL, January 28, 2008.

BNSF Railway. "BNSF Announces \$4.1 Billion Capital Commitment Program." News release. January 18, 2013.

Bogdanich, Walt. "Amtrak Pays Millions for Others' Fatal Errors." *New York Times*, October 15, 2004.

Bonham, Kevin. "Railroad Raising Underway in Devils Lake Area." *Grand Forks Herald*. Last modified June 20, 2010. http://www.bakktoday.com/event/article/id/239112/publisher_ID/40/.

Borney, Nathan. "Freight Company Cuts Amtrak Trains' Speed To As Slow as 25 mph, Sparking Delays" *Ann Arbor News*, June 13, 2011.

Bowden, Douglas. "Michigan DOT Completes NS Rail Line Buy." *Railway Age*, December 2012.

Brush, Mark. "Michigan Radio." 10 Slow Amtrak Trains in Michigan. Last modified September 2, 2011. <http://www.michiganradio.org/post/10-slow-amtrak-trains-michigan>.

Bureau of Transportation Statistics. "Table 1-1 System Mileage Within the United States." Chart.

Bureau of Transportation Statistics. "Table 1-38 Average Length of Haul, Domestic Freight and Passenger Modes." Chart.

Bureau of Transportation Statistics. "Table 1-40 US Passenger Miles." Chart.

Bureau of Transportation Statistics. "Table 1-49 U.S. Ton-Miles of Freight." Chart.

Bureau of Transportation Statistics. "T-100 Domestic Market (US Carriers)." Chart.

Burton, Mark. *Evaluation of Freight Vehicles in Short-Haul Intermodal Lanes*: National Transportation Research Center, 2011.

Bussanich, Marc. "Rep. Mica: 'We Have a Soviet Style Train Operation!'" *Labor Press*, July 10, 2013.

Cairns, Malcolm. "Intermodalism: What Works and What Does Not." *The Asia Pacific Gateway and Corridor Initiative*, July 17, 2010.

"Capex in 2013: CN budgets \$1.9 billion; major roads to collectively spend \$13 billion." *Progressive Railroading*, February 6, 2013.

Capitol Corridor Joint Powers Authority. *2012 Capitol Corridor Performance Report*. Sacramento, CA: CCJPA, 2013.

Capitol Corridor Joint Powers Authority. *Capitol Corridor Business Plan Update FY 2012-13 - FY 2013-14*. 2012.

Carter, James. *Heartland Corridor Clearance Improvement Project*. Atlanta, GA: 2011.

Caruso, Lisa. "CSX Chief Says He 'Can't Be Part of' Obama's High-Speed Rail Plan." *Bloomberg Corporate News*, April 6, 2011.

- Committee on Commerce, Science and Transportation. *The Current Financial State of the Class I Freight Rail Industry*. Washington, DC: 2010.
- Congressional Budget Office. *Freight Rail Transportation: Long Term Issues*. Washington, DC: 2006.
- Conrail Privatization Act. Pub. L. 99–509 (1986)
- Cotey, Angela. "U.S. High-speed Rail Likely To Be Built Incrementally, Consultants Say At 8th World Congress." *Progressive Railroading*, July 2012.
- Cruickshank, Robert. "Union Pacific Continues War Against High Speed Rail." *California High Speed Rail Blog*, October 29, 2011.
- CSX Railroad. *Annual Report 2012*. (2012)
- Davidson, Dick. *Increased Government Intervention in the Railroad Industry: Salvation for Shippers or Requiem for Railroads?* St. Louis: Washington University Center for the Study of American Business, 2000.
- Department of Transportation. *Amtrak Access Fees*. 2010.
- Dingler, Mark, Yung-Cheng Lai, and Christopher Barkan. *Impact of Operating Heterogeneity on Railway Capacity*. Urbana, IL. (2009)
- Durbin, Richard J. Senator Richard J. Durbin to STB Chairman Daniel R. Elliot, July 13, 2012.
- Eakin, B. Kelly, A. Thomas Bozzo, Mark Meitzen, and Phillip Schoech. *Railroad Performance Under the Staggers Act*. 2010.
- Erickson, Thomas Jr. *A Railroad Manifesto: 50 Short Articles on Railroad Economics, Operations, and Management*. 2011.
- Erickson, Thomas Jr. Conversations with, September 11, 2013.
- Esch–Cummins Act, Pub.L. 66-152, (1920).
- Everett, Burgess. "Ray LaHood Defends President Obama's Passenger Rail Strategy." *Politico*, February 13, 2013.
- Federal Railroad Administration." Railroad Rehabilitation & Improvement Financing (RRIF)."Web. Accessed August 29, 2013. <http://www.fra.dot.gov/Page/P0128>.
- Federal Railroad Administration. *Analysis of the Causes of Amtrak Train Delays*. By Federal Railroad Administration. Report no. CR-2012-148. Washington, DC: 2012.
- Federal Railroad Administration. *High Speed Rail Strategic Plan*. 2009.
- Federal Railroad Administration. *Track and Rail and Infrastructure Integrity Compliance Manual*. 2012.

Ferry, Daniel. "Rail Stocks Battle Lower Coal Volumes." *The Motley Fool*, October 7, 2013.

"Florida East Coast Industries, Inc. Announces Plans for Private Passenger Rail Service in Florida." *Business Wire*, March 22, 2012.

"Florida East Coast's Hertwig is High on Intermodal." *Progressive Railroading*. Audio file. March 24, 2011. <http://www.progressiverailroading.com/audio/details/Florida-East-Coasts-Hertwig-is-high-on-intermodal--26134>.

Foran, Pat. "Canadian (Inter)National - The Making of One Transportation Company's Global Strategy." *Progressive Railroading*, October 2007.

Frailey, Fred. "Is a daily 'Sunset Limited' worth \$750 million?" *Trains*, September 2010.

Frank Porter. "Budget Gloomy on 'Initiatives' in the Next 5 Years." *The Washington Post*. February 3, 1970.

Freight and Passenger Rail Panel. "Conditions Critical to Ensuring Vibrant Freight and Passenger Rail Systems in the United States Over the Next 30-50 Years." Paper presented at Transportation Vision and Strategy for the 21st Century Summit, Washington, DC, April 2007.

Freight Rail Infrastructure Capacity Expansion Act, H.R. 2091 (2011).

Funk, Josh. "CSX hopes to expand profit despite coal slowdown." *ABC News*. October 16, 2013.

Gale, Kevin. "Florida East Coast Railway Pulls the Throttle on Intermodal Business." *South Florida Business Journal*, April 1, 2011.

Gallagher, Patrick. "Amtrak CEO Warns of Insufficient Funding." *Westfair Communications*, April 25, 2013.

Goddard, Stephen. Getting There: The Epic Struggle between Road and Rail in the American Century. Chicago, IL: 1996.

Government Accountability Office. *Freight Railroads: Industry Health Has Improved, but Concerns about Competition and Capacity Should Be Addressed*. 2006.

Grimes, George. *Recovering Capital Expenditures: The Railroad Industry Paradox*. Normal, IL: 2004.

Harrison, Hunter E. How We Work and Why. Montreal, QC: 2005.

Hatch, Tony. "Capacity Crisis Could Emerge as Top Recovery Issue for Freight Shippers." *Progressive Railroading*, February 2009.

Hilkevitch, Jon. "Legislators Urge 150+mph Bullet Trains, Not 110mph Trains." *Chicago Tribune*, August 29, 2010.

Hilkevitch, Jon. "Amtrak Files 'Long Overdue' Complaint Over CN Delays." *Chicago Tribune*. February 13, 2013.

Intercity Passenger Rail: Amtrak Will Continue to Have Difficulty Controlling Its Costs and Meeting Capital Needs. By Government Accountability Office. Report no. GAO-06-855T. Washington, DC: 2000.

Intercity Passenger Rail: Committee on Interstate and Foreign Commerce (Jun. 4th, 1970) (statement of Anthony Haswell)

Intercity Passenger Rail: Committee on Interstate and Foreign Commerce (Jun. 4th, 1970) (statement of Thomas Goodfellow)

Intermodal Transportation: Challenges to and Potential Strategies for Developing Improved Intermodal Capabilities. By Government Accountability Office. Report no. GAO-06-855T. Washington, DC: 2006.

Interstate Commerce Act, Pub.L. 49-41, (1887).

Jordan, Steve. "U.P. Executive Criticizes Subsidies For Amtrak." *Omaha World-Herald*. April 19, 2003.

Keaton, Malcolm. "Making the Trains Run On-Time." *National Association of Railroad Passengers Blog*, 2012.

Keith, Kendell. *Maintaining a Track Record of Success: Expanding Rail Infrastructure to Accommodate Growth in Agriculture and Other Sectors*. TRC Consulting, 2013.

Keith, Theo. "Union Pacific CEO Says Congress Derailing Investment." *Bloomberg Corporate News*, June 23, 2010.

Kenkel, Phil, Shida Henneberry, and Haerani Agustini. *An Economic Analysis of Unit-Train Facility Investment*. Stillwater, OK: 2004.

King, Leo. "Rails Prepare for Economic Uptick." *Jacksonville Transportation Examiner*, May 27, 2009.

Knowlton, Brian. "Obama Seeks High-Speed Rail System Across U.S." *New York Times* (New York City, NY), April 16, 2009.

Laurits R. Christensen Associates. *A Study of Competition in the US Freight Railroad Industry and Analysis of Proposals That Might Enhance Competition*. 2009.

Levitz, Jennifer. "High-Speed Rail Stalls." *Wall Street Journal*. September 21, 2010.

Lindsey, Ron. "Rethinking Railroad Safety and Efficiency." *Railway Age*, August 5, 2013.

Loftus, Thomas. *The Federal RRIF Loan Program: An Option for Rail Project Financing for Public Entities*. Washington, DC: Seneca Group, 2011.

- Loving, Rush. The Men Who Loved Trains: The Story of Men Who Battled Greed To Save An Ailing Industry. Bloomington, IN: 2008.
- Marshall, Charles. "The Carload Freight Challenge." Paper presented at Transportation Clubs International, Cherry Hill, NJ. September 15, 2006.
- Martland, Carl D., Paul Lewis, and Youssef Kreim. *Productivity Improvements in the US Rail Freight Industry 1980-2010*. MIT: Cambridge, MA, 2011.
- McClellan, James. "Railroad Capacity Issues." *Transportation Research Board Annual Conference*, 2006.
- McKinstry. *Port of Quincy Carbon Analysis: Intermodal Train vs. Other Freight Transportation Options*. 2013.
- Miller, Stephen. "Freight Panel Chair Says House Will "Balance Out" Transportation Modes." *Streetsblog: Capitol Hill*, July 31, 2013.
- Mixed Train Daily*, 4th ed. 1961, p. 59
- Morris, Betsy. "Boom Times on the Tracks: Rail capacity, Spending Soar." *The Wall Street Journal*. March 26, 2013.
- Nash, Andrew. *Best Practices in Shared-Use High Speed Rail Systems*. San Jose, CA: Mineta Transportation Institute, 2003.
- National Academy of Sciences Transportation Research Board. *Guidebook for Implementing Passenger Rail Service on Shared Passenger and Freight Corridors*. Compiled by National Cooperative Highway Research Program. Report no. 657. Washington, DC: Transportation Research Board, 2010.
- National Railroad Passenger Corporation. "Amtrak Posts Second-best Ridership in History." News release. October 12, 2009.
- National Railroad Passenger Corporation. "Amtrak's Northeast Corridor: FY 2010." News release.
- National Railroad Passenger Corporation. "Amtrak: State-Supported Corridor Trains: FY 2011-12." News release.
- National Railroad Passenger Corporation. "Governor Cuomo Announces Hudson Rail Line Lease." News release. December 4, 2012.
- National Railroad Passenger Corporation. "Governor Quinn, Secretary LaHood, Senator Durbin Preview 110-mph Rail Service in Illinois." News release. October 19, 2012.
- National Railroad Passenger Corporation. "Pioneer Route Passenger Rail Study." Washington, DC, 2009.

- National Railroad Passenger Corporation. *Monthly Performance Report for September 2012*. Washington, DC: Amtrak, 2013.
- Nice, David. Amtrak: The History and Politics of a National Railroad. 1998.
- "Norfolk Southern Breaks Down \$2 Billion Capex Budget for 2013." *Progressive Railroading*, January 2013.
- Nowicki, Paul. "BNSF and America's Railroads: Navigating Uncertain Times." Lecture, Chicago, IL, December 5, 2012.
- Office of Inspector General. *Analysis of the Cause of Amtrak Delays*. Washington DC: 2012.
- Oliver Wyman. *Rail Freight – 2013 Q2 Summary Class I Railroads*. August 16, 2013.
- Passenger Rail Investment and Improvement Act. Pub. L. 110-432 (2008)
- Patch, David. "Michigan to Buy Rail Line for High-speed Amtrak." *Toledo Blade*, July 21, 2011.
- Phillips, Don. "Listen Up, Skeptical Railroaders." *Trains*, September 2013.
- Prozzi, Jolanda, Abdul R. Pinjari, Chandra Bhat, and Randolph R. Resor. *Public Support of Passenger Rail Sharing Freight Infrastructure*. Austin, TX: ZETA-TECH Associates, 2006.
- Puentes, Robert, Adie Tomer, and Joseph Kane. *A New Alignment: Strengthening America's Commitment to Passenger Rail*. Washington, DC: Brookings, 2013.
- Rail Passenger Service Act. Pub.L. 91-518, (1970).
- Regional Rail Reorganization Act. Pub.L. 93-236 (1973)
- Resor, Randolph. "Short-Haul Intermodal Service: Can Rail Compete with Truck?" *Transportation Research Forum*, March 23, 2006.
- Rose, Matthew K. "Passenger Trains on Freight Railroads." Lecture, *Railway Age*. 16th Conference, Washington, DC, October 19, 2009.
- "RRIF Program Needs Reforms to Incent Private Rail Investments, Mica and Shuster Say." *Progressive Railroading*, February 2011.
- Rushton, Bruce. "IDOT-Union Pacific Deal Contains No Penalties for Railroad." *State Journal Register*, January 15, 2011.
- Sanders, Craig. Amtrak In the Heartland. Bloomington, IN: 2006.
- "Senators Assail Railpax System." *The New York Times*. April 7, 1971.

Sitting on Our Assets: Rehabilitating and Improving our Nation's Rail Infrastructure: Hearings Before the Subcommittee on Railroads, Pipelines and Hazardous Materials (2011) (statement of Michael Sussman).

Sogin, Samuel, C. Tyler Dick, Yung-Cheng Lai, and Christopher Barkan. *Analyzing the Progression from Single to Double Track Networks*. Urbana, IL, 2013.

Solomon, Brain. Railroad Signaling. 2010.

Solomon, Mark. "Intermodal Struggles to Crack Short-haul Market." *DC Velocity*, November 16, 2012.

Sperry, Benjamin and Morgan, Curtis. *Intercity Passenger Rail: Implications for Urban, Regional and National Mobility*. By University Transportation Center for Mobility. College Station, TX: 2011.

Staggers Rail Act. Pub. L. 96-448 (1980)

Stagl, Jeff. "Presentations at ASLRRA's Centennial Conference Centered on Such Hot Topics as Crude Consolidation." *Progressive Railroad*, May 2013.

Staplin, David E. *Freight Railroads Must Seek Public Funding*, 2003.

Staplin, David E. *Funding of Freight Rail Infrastructure*. 2002.

Surface Transportation Board. UP/SP Merger. Finance Docket No. 32760, 1996.

Surface Transportation Board. Railroad Revenue Adequacy - 2012 Determination. Docket no. EP 552 17, 2013.

Sussman, Michael. Michael Sussman to Warren Buffet, "An Open Letter to Warren Buffet," 2009.

Sussman, Michael. "Realizing Railroad's Promise." Lecture, ASSTHO Standing Committee on Rail Transportation, Cincinnati, OH, September 2013

Sward, Susan. "In The Spotlight: Capitol Corridor Hums Along." *Sacramento Bee*, June 19, 2012.

Timmons, Richard F. "45G Shortline Railroad Tax Credit." News release.

Thomson, Gus. "Union Pacific taking steps to remedy delays on Capitol Corridor rail route." *Auburn Journal*. March 7, 2004.

Travis, Merrill. "Running High Speed Passenger Trains on Freight Railroad Track or 'You Want to Do What?'" AREMA, September 2000.

Triple Crown Services. "Triple Crown Repeats as Top U.S. Intermodal Service Provider." News release. August 23, 2007.

Union Pacific. "Union Pacific Railroad." Contribution to the "J.P. Morgan Transportation Conference" symposium conducted at J.P. Morgan, New York, NY, March 12, 2012.

- Vantuono, William. "AAR to Congress: Freight Rail Strong and Flexible — And The Backbone of Passenger Rail." *Railway Age*, June 2013.
- Wanek-Libman, Mischa. "Questions and Answers: 45G Tax Credit." *Railway Track & Structures*. Web. Last modified March 20, 2013. <http://www.rtands.com/index.php/track-maintenance/off-track-maintenance/questions-and-answers-45g-tax-credit.html>.
- Washington Department of Transportation. *Washington State Speed Report*. Olympia, WA: 2012.
- Washington State Department of Transportation. "Amtrak Cascades Performance Reports." Web. Accessed October 27, 2012. <http://www.wsdot.wa.gov/Rail/PerformanceReports.htm>.
- Washington State Department of Transportation. "Passenger Rail in Washington." Web. Accessed October 27, 2012. <http://www.wsdot.wa.gov/rail/>
- Washington State Department of Transportation. *Long Range Plan for Amtrak Cascades*. Publication. Olympia, WA: Washington State Department of Transportation, 2006.
- Weikel, Dan, and Ralph Vartabedian. "Union Pacific Voices Major Objections to Bullet-Train Plans." *Los Angeles Times*, October 29, 2011.
- William Jones. "Comsat-Type Setup Sought to Rescue Passenger Trains." *The Washington Post*. January 19, 1970.
- Wilner, Frank. "Amtrak's Sisyphean struggle to run on time." *Railway Age*. July 5, 2013.
- Wilner, Frank. The Amtrak Story. Chicago, IL: 1994.

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