

# ***THE OHIO HUB***



A PROJECT OF THE **OHIO** RAIL DEVELOPMENT COMMISSION

## The Ohio & Lake Erie Regional Rail Ohio Hub Study

### Executive Summary

July 2007

# **The Ohio & Lake Erie Regional Rail Ohio Hub Study**

## **TECHNICAL MEMORANDUM & BUSINESS PLAN**

**July 2007**

**Prepared for**

**The Ohio Rail Development Commission**

**Indiana Department of Transportation**

**Michigan Department of Transportation**

**New York Department of Transportation**

**Pennsylvania Department of Transportation**

**Prepared by:**

**Transportation Economics & Management Systems, Inc.**

**In association with**

**HNTB, Inc.**

## Foreword

The Ohio Hub Plan is a bold vision to invest in a network of fast, frequent and reliable passenger trains while increasing transportation capacity for moving more freight by rail. At a time when Ohio faces critical challenges to our mobility and economy, the Ohio Hub will link passenger and freight trains to Ohio's highway, aviation, transit and port facilities to create a seamless, multimodal transportation system that will benefit our citizens and businesses.

By advancing a policy of investing in our rail system to achieve public benefits and generate economic development activity, the Ohio Hub breaks with the traditional models of how to create and operate passenger rail service. Such a new paradigm is necessary if Ohio and the nation are to effectively address such issues as creating new options for moving both people and freight, growing the economy, creating new jobs, conserving energy and improving air quality.

To do this, we must look upon our railroad network as "*an essential transportation investment,*" just as we have done historically for highways, aviation, transit, waterways, communications, water, sewers and electrical power grids. The time for such investment is now.

Based on criteria established by the Federal Railroad Administration, the system envisioned in the Ohio Hub Plan would generate sufficient ridership to produce revenues that would cover the overall operating costs.

Investing in Ohio's rail infrastructure will help strengthen our state's assets as a premiere gateway to international markets and a North American hub for the distribution and logistics industries. Clearly, transportation planning and economic development in Ohio must go hand-in-hand. The Ohio Hub Plan not only recognizes this, but actively promotes and advances these objectives. It is time to harness our state's strengths and partner with the private railroads to create a regional rail hub that effectively addresses our critical mobility needs now and into Ohio's future.

We invite you to read the Ohio Hub Plan and discover a vision and hope for Ohio's transportation future.

## **Acknowledgements**

The Ohio and Lake Erie Regional Rail - Ohio Hub Study is an ongoing, cooperative and collaborative effort. Transportation agencies from Ohio, Indiana, Michigan, Pennsylvania and New York, along with Amtrak and VIA Rail contributed to the feasibility planning for the Ohio Hub System. Norfolk Southern, CSX and Canadian National railroads also provided critical input into the planning process.

The Ohio Rail Development Commission (ORDC) led the planning effort and coordinated with the Ohio Department of Transportation (ODOT). Transportation Economics & Management Systems, Inc. (TEMS) and HNTB Corporation, Inc. provided consulting and engineering services. A technical committee was comprised of senior staff from the transportation agencies representing each participating state, as well as Amtrak, VIA Rail and the freight railroads. Project meetings included representatives from local governments, metropolitan planning organizations, transit and airport authorities and other interested parties. Engage Communications facilitated the Ohio Hub Citizen and Agency Participation Program. The Ohio Association of Regional Councils and the State's regional and metropolitan planning organizations hosted nearly 30 Ohio Hub public and agency meetings. Twenty-four Ohio municipalities have sent letters or passed resolutions in support of the Ohio Hub. In 2006, the Ohio Senate unanimously passed Concurrent Resolution No. 30 requesting Congressional support for funding an Ohio Hub Programmatic Environmental Impact Statement.

Funding for the Ohio Hub Study came from a variety of sources. The Ohio Department of Transportation and the Federal Government funded a majority of the study costs through the State Planning and Research Program. The ORDC, and the Indiana, Michigan, New York, and Pennsylvania Departments of Transportation, along with Amtrak and VIA Rail, contributed funds and/or in-kind services to the study.

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**For related Ohio Hub project information, reports and documents visit**

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# Ohio & Lake Erie Regional Rail - The Ohio Hub

## Executive Summary

*Improving the capacity and efficiency of the railroad system will help ensure that the regional economy continues to be served by an effective transportation system.*

Intercity transportation in the Ohio and Lake Erie region, as in many other parts of the United States, is challenged by a rapidly changing travel market, forecasts of a substantial growth in traffic, a disparity between demand and available capacity, mounting costs for construction and fuel, and limited funding available for investment. Over the last twenty years, increasing highway congestion and inefficiencies in air travel have reduced the availability and utility of the transportation system, and in many cases these changes have affected local and state economic development activity and interstate commerce. As a result, state Departments of Transportation have recognized the potential for improving the railroad system in the region's most densely populated intercity corridors.

This Ohio Hub Study is part of an ongoing effort by the State of Ohio, led by the Ohio Rail Development Commission (ORDC), an independent commission within the Ohio Department of Transportation, and ODOT to further develop the concept of expanding transportation capacity by improving the railroad system for both passenger and freight trains. The initial Ohio Hub Study was released in 2004; this 2007 update culminates a multi-year effort to develop a feasibility-level business plan for the construction and operation of an intercity/interstate passenger rail system with connections to cities and regional rail systems in neighboring states.



The goal of the study is to determine, at a conceptual level, the financial and economic feasibility of developing a passenger rail system serving seven intercity travel corridors:

- Cleveland-Columbus-Dayton-Cincinnati
- Cleveland-Toledo-Detroit
- Cleveland-Pittsburgh
- Cleveland-Buffalo-Niagara Falls-Toronto
- Columbus-Pittsburgh
- Columbus-Toledo-Detroit
- Columbus-Lima-Ft Wayne-Chicago

## System Concept and Service Goals

*The passenger rail system would be integrated into the region's air, highway and local transit networks and would connect directly to international airports.*

The envisioned rail system involves the construction and operation of a 1,244-mile intercity/interstate passenger rail service with 46 stations. It would serve over 22 million people in five states and southern Ontario, Canada. The seven rail corridors connect twelve major metropolitan areas and many smaller cities and towns. Stations would be located in downtown centers, in suburban areas near interstate highways, and adjacent to major international airports. Feeder bus service to smaller communities, universities and college towns would enhance the reach of the rail system.

The Ohio Hub passenger rail service would complement both automobile and air travel by offering a modern transportation alternative with competitive travel times, reliable and frequent service and new, comfortable passenger trains. In order to offer same-day, round-trip service throughout the region, the Ohio Hub System would reduce downtown-to-downtown travel times by increasing maximum train speeds on the lines from 79-mph to 110-mph.

## Network Synergies

*An interconnected national passenger rail network will create economies of scale that increase regional ridership and revenue and reduce overall system operating costs. Thirty percent of the estimated 9.3 million Ohio Hub rail trips (forecast in 2025) are connecting riders from other regional rail, air and feeder bus systems.*



The Ohio & Lake Erie Regional Rail system would play an important role as part of a national network of regional rail services. The study assesses the ridership, operating and capital cost synergies by interconnecting the Ohio Hub to other existing and planned rail corridors including: the proposed 3,000-mile Midwest Regional Rail System (MWRRS), New York’s Empire Service, Pennsylvania’s Keystone Service, the Northeast Corridor and Canada’s VIA Rail System. When linked together by the Ohio Hub, the regional rail corridors would serve over 140 million people or about half of the population of the United States. The study recommends that the Ohio Hub become part of the nation’s federally recognized passenger rail network.

## The Business Model and the Challenge for Management

*Once fully implemented under FRA criteria the system’s revenues should cover the operating costs.*

The economic and financial feasibility of the Ohio & Lake Erie Regional Rail – Ohio Hub System is related to the business planning objectives. Ultimately, the business approach, the management team and the administration of the system will determine the success of the operation. The Ohio Hub Study advances a new business model for the provision of passenger rail services. This model serves to challenge the managers of the system to adopt a new commercial approach that should focus on all aspects of potential revenue generation while working effectively to reduce costs. The feasibility analysis assumes that the system will be aggressively managed, that the operator will be capable and that private sector providers of ancillary services will profit and contribute revenues to the system operation.

The significant investment in the infrastructure will also serve to re-capitalize the railroad network and offers management the opportunity to run an efficient and reliable service to which the market will respond.



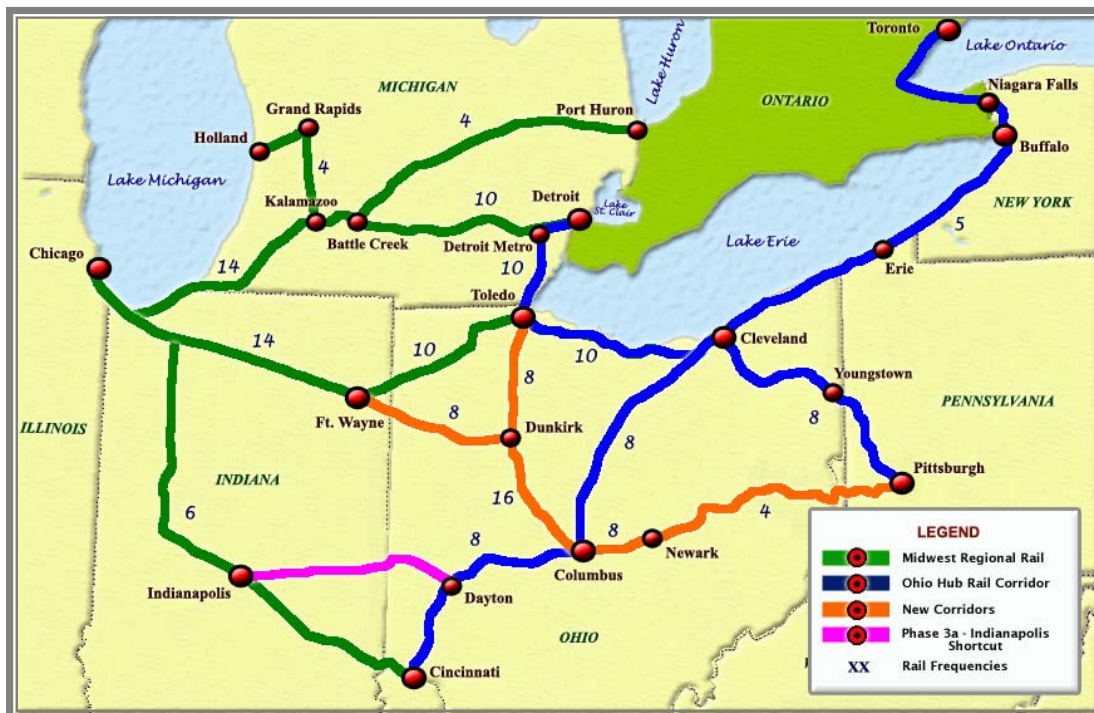
## The Operating Plan and Fleet Requirements

*The operating plan has been developed to accommodate the requirement for fast, frequent and reliable service with minimal delays for station stops or equipment servicing. The most important characteristic of the operating plan is the overall train travel time.*

The study evaluates alternative train operating speed improvements for the rail corridors. Initially, three speed options were considered, 79-mph, 90-mph and 110-mph. However, based on the study findings, the 90-mph speed option did not significantly improve ridership, revenue or travel time above the 79-mph improvements and was eliminated from further analysis. The study focused on a 79-mph Modern Scenario and a 110-mph High-Speed Scenario. Timetables were developed for both speed scenarios.

The number of daily passenger train frequencies on each corridor is based on the forecast volume of trips. Train frequencies are illustrated on the map below. The green lines represent the proposed MWRRS corridors running east from Chicago; the blue lines show the original four Ohio Hub corridors which were studied in the initial report released in 2004; the orange lines are the newly added Ohio Hub corridors; and the purple line is the Dayton to Indianapolis segment that was analyzed using a parametric approach that did not include an engineering assessment.

**Exhibit 3-10: Daily Train Frequencies on the Ohio Hub and MWRRS Corridors**



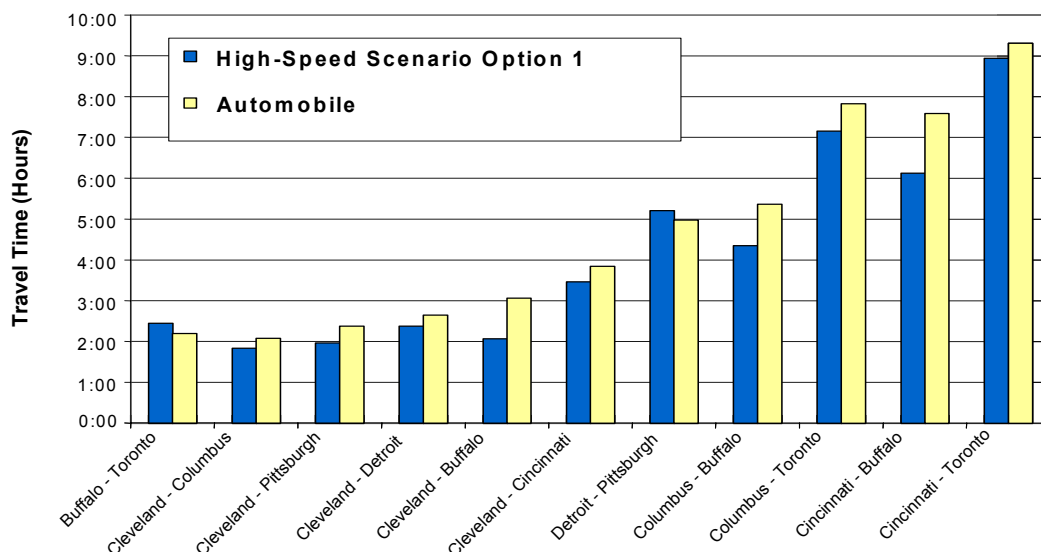
The fleet requirement for operating the MWRRS eastern corridors is 33 trains. The four original Ohio Hub corridors require 14 trains and the incremental corridors require an additional 11 trains, for a total fleet size of 58 trains. Each train will have 300 seats and will cost approximately \$18 million. The interior configuration will include galley space and roll-on/roll off carts for on-board, *at-your-seat* food service. Optionally, the trains may include a bistro area with a bar where over-the-counter food service can be provided.

## Travel Times and Passenger Fares

*With a top speed of 110-mph, the train travel times between the major city pairs will be competitive with the automobile.*

Auto-competitive travel times, increased train frequencies, improved service reliability and intermodal connectivity are key to instituting new passenger rail service in the region. The Ohio Hub will provide a level of service, comfort, convenience, and a wide range of fares that will attract a broad spectrum of travelers.

**Sample City-to-City Travel Times – Ohio Hub vs. Automobile**



Passenger train fares will also be competitive with air travel and have the potential to generate revenue in excess of the rail system’s operating costs. Ohio Hub tickets would cost 24 to 37 cents per mile - 50 percent higher than current fares on Amtrak’s long distance trains, but still less expensive than Amtrak’s Northeast corridor (NEC) fares. The fares would directly reflect the quality of the proposed rail service and the travel experience provided by modern, reliable and comfortable trains. Automobile costs and estimated rail fares are illustrated below.

**Sample Estimated Fares between Major Stations (in 2002\$)**

Major City-Pairs	Distance (miles)	One-Way Fare/Cost				Round-Trip Fare	
		Ohio Hub System	Auto per Car (Business)	Auto per Car (Other)	NEC Acela Rate	Air (3-week Advance Fare)	Air (Business Fare)
Cleveland – Detroit	175	\$43	\$57	\$18	\$105	\$157	\$544
Cleveland – Pittsburgh	140	\$45	\$46	\$14	\$84	\$232	\$621
Cleveland – Buffalo	182	\$68	\$59	\$18	\$109	\$174	\$808
Cleveland – Columbus	135	\$50	\$44	\$14	\$81	\$163	\$706
Cleveland – Cincinnati	258	\$95	\$84	\$26	\$155	\$186	\$755

**Notes:**

1. The one-way and round-trip fares are rounded to the nearest dollar.
2. Auto Business cost was calculated based on the Internal Revenue Service Standard Mileage Rate at \$0.325 per mile.
3. Auto Other cost was calculated based on the Internal Revenue Service Standard Mileage Rate at \$0.10 per mile.
4. The Acela Rate was calculated based on fare-per-mile between Washington, DC and New York City (\$0.60 per mile).
5. Round trip airfares were web-listed fares as of October 25, 2002.

## Ridership and Revenue Forecasts

*In 2025, with full implementation of the system, it is estimated that over 9.3 million riders will use a 110-mph passenger rail service. The annual operating revenue is estimated at \$311 million, while the annual operating cost is estimated at \$202 million.*

The Ohio Hub Study evaluated multiple scenarios with different levels of rail service, train speeds (or travel times), train frequencies and alternative routes and assessed the ridership and revenue synergies from interconnecting the Ohio Hub to other existing and planned regional rail services.

Building on the results of the earlier 2004 Ohio Hub study, a *preferred system configuration* was identified. This interstate system included the route serving Youngstown on the line to Pittsburgh and the route serving the Detroit Metro Airport on the line to Detroit (see the System Map at the end of this Executive Summary). The preferred system became the base network for the additional planning work that evaluated the impact of adding three more “incremental” corridors.

The results of the analysis forecast strong ridership for both the original four Ohio Hub corridors as well as the three added incremental corridors. Moving from a 79-mph to an 110-mph system increases ridership by 50%, but more than doubles revenues since a faster service becomes much more attractive to higher fare-paying business travelers.

**2025 Ridership Forecasts (In Millions)**

Ridership, Passenger-Mile and Revenue all in Millions; MWRRS always 110-mph	79-mph OHIO HUB				110-mph OHIO HUB			
	Ridership	Pass-Miles	Revenue	Yield	Ridership	Pass-Miles	Revenue	Yield
Chicago-Michigan 110-mph	3.87	606.43	\$136	\$0.22	3.87	614.22	\$136	\$0.22
Chicago-FTW-Toledo 110-mph	2.11	324.98	\$87	\$0.27	2.39	371.95	\$99	\$0.27
Chicago-Cincinnati 110-mph	1.36	200.65	\$59	\$0.29	1.39	204.74	\$60	\$0.29
<b>TOTAL MWRRS East Corridors</b>	<b>7.34</b>	<b>1132.05</b>	<b>\$282</b>	<b>\$0.25</b>	<b>7.66</b>	<b>1190.90</b>	<b>\$295</b>	<b>\$0.25</b>
Cleveland-Cincinnati	1.60	167.53	\$40	\$0.24	2.56	267.34	\$100	\$0.38
Cleveland-Detroit	1.52	136.88	\$28	\$0.21	2.23	199.98	\$51	\$0.25
Cleveland-Niagara Falls	0.59	75.73	\$18	\$0.23	0.91	116.47	\$45	\$0.39
Cleveland-Pittsburgh	0.60	64.31	\$17	\$0.26	0.86	92.94	\$30	\$0.32
<b>Subtotal OHIO Base</b>	<b>4.30</b>	<b>444.45</b>	<b>\$103</b>	<b>\$0.23</b>	<b>6.56</b>	<b>676.73</b>	<b>\$226</b>	<b>\$0.33</b>
Pittsburgh-Columbus	0.62	62.11	\$14	\$0.22	0.92	90.86	\$25	\$0.27
Columbus-Ft Wayne	0.79	93.54	\$20	\$0.22	1.12	142.20	\$36	\$0.25
Columbus-Toledo	0.53	62.36	\$14	\$0.22	0.75	94.80	\$24	\$0.25
<b>Subtotal OHIO Incremental</b>	<b>1.94</b>	<b>218.01</b>	<b>\$48</b>	<b>\$0.22</b>	<b>2.78</b>	<b>327.85</b>	<b>\$85</b>	<b>\$0.26</b>
<b>TOTAL OHIO HUB</b>	<b>6.24</b>	<b>662.46</b>	<b>150.59</b>	<b>\$0.23</b>	<b>9.34</b>	<b>1004.58</b>	<b>311.20</b>	<b>\$0.31</b>

## Operating Cost Recovery

*Once fully implemented, the system revenues are forecast to exceed the estimated costs for operating the system.*

Financial performance was evaluated by analyzing the annual operating cash flows for each Ohio Hub corridor. Two criteria have been identified by the Federal Railroad Administration (FRA) as critical to the evaluation of proposed passenger rail projects: 1) the operating ratio, and 2) the benefit/cost ratio (see Economic Benefits). The ratio of operating revenues to operating costs (i.e., operating ratio) provides a key indicator of the financial viability of the Ohio Hub System and is calculated as follows:

$$\text{Operating Ratio} = \frac{\text{Total Annual Revenue}}{\text{Total Annual Operating Cost}}$$

The table below lists the 2025 operating results for an interconnected network of corridors including three MWRRS lines along with the seven Ohio Hub corridors. For each corridor, the table identifies: 1) annual revenue, 2) annual operating cost, 3) revenue per train mile, 4) operating cost per train mile, 5) revenue surplus, 6) operating cost ratio, 7) annual ridership, 8) passenger miles, 9) train load factors, 10) average trip length, and 11) the yield (or fare) per passenger mile.

**2025 Operating Statistics and Operating Ratios for the 110-mph Ohio Hub System with MWRRS Connectivity**

Corridor	Revenue	Cost	Rev/TM	Cost/TM	Surplus	Op Ratio	Riders	Psgr Miles	Load Fctr	Trip Len	Yield
Chicago-Michigan	\$136	\$97	\$47.73	\$34.12	\$39	1.40	3.87	614.2	0.72	159	\$0.22
Chicago-FTW-Toledo	\$99	\$64	\$53.72	\$34.81	\$35	1.54	2.39	371.9	0.67	155	\$0.27
Chicago-Cincinnati	\$60	\$40	\$51.44	\$34.42	\$20	1.49	1.39	204.7	0.59	147	\$0.29
<b>Total MWRRS Eastern</b>	<b>\$295</b>	<b>\$202</b>	<b>\$50.36</b>	<b>\$34.40</b>	<b>\$94</b>	<b>1.46</b>	<b>7.66</b>	<b>1190.9</b>	<b>0.68</b>	<b>155</b>	<b>\$0.25</b>
Cleveland-Cincinnati	\$100	\$55	\$78.01	\$42.88	\$45	1.82	2.56	267.3	0.69	104	\$0.38
Cleveland-Detroit	\$51	\$36	\$46.44	\$32.82	\$15	1.41	2.23	200.0	0.61	90	\$0.25
Cleveland-Niagara Falls	\$45	\$25	\$69.49	\$38.32	\$20	1.81	0.91	116.5	0.60	128	\$0.39
Cleveland-Pittsburgh	\$30	\$22	\$43.17	\$31.24	\$8	1.38	0.86	92.9	0.44	108	\$0.32
<b>Subtotal OHIO Base</b>	<b>\$226</b>	<b>\$138</b>	<b>\$60.74</b>	<b>\$36.96</b>	<b>\$89</b>	<b>1.64</b>	<b>6.56</b>	<b>676.7</b>	<b>0.61</b>	<b>103</b>	<b>\$0.33</b>
Pittsburgh-Columbus	\$25	\$20	\$41.22	\$32.98	\$5	1.25	0.92	90.9	0.51	99	\$0.27
Columbus-Ft Wayne	\$36	\$26	\$45.40	\$33.04	\$10	1.37	1.12	142.20	0.59	127	\$0.25
Columbus-Toledo	\$24	\$18	\$42.85	\$31.83	\$6	1.35	0.75	94.80	0.56	127	\$0.25
<b>Subtotal OHIO Incremental</b>	<b>\$85</b>	<b>\$64</b>	<b>\$43.39</b>	<b>\$32.67</b>	<b>\$21</b>	<b>1.33</b>	<b>2.78</b>	<b>327.85</b>	<b>0.56</b>	<b>118</b>	<b>\$0.26</b>
<b>TOTAL OHIO HUB</b>	<b>\$311</b>	<b>\$202</b>	<b>\$54.76</b>	<b>\$35.48</b>	<b>\$110</b>	<b>1.54</b>	<b>9.34</b>	<b>1004.58</b>	<b>0.59</b>	<b>108</b>	<b>\$0.31</b>

## Network Feasibility Results

*On the basis of the Commercial Feasibility criteria that have been established by the FRA, all the proposed Ohio Hub and MWRRS corridors are viable.*

All of the corridor operating ratios are forecast to be positive in 2025. Financially, the three eastern MWRRS routes, along with the 3-C and Columbus-Chicago corridors are the strongest performers; after this, as more Ohio Hub routes are added, the network synergies and interconnectivity results in a multiplier effect on revenue and ridership. The connecting ridership effect helps maintain high operating and cost benefit ratios as the network is expanded. This study has found that a 110-mph Ohio Hub system could meet the FRA *Commercial Feasibility* criteria and could even be developed separately from the MWRRS system, although clearly the results would be better if the two systems were developed together.

## Cleveland–Columbus–Dayton–Cincinnati Results

*The forecasts for the Cleveland–Columbus–Dayton–Cincinnati (3-C) Corridor produce the best operating results and a strong positive operating ratio.*

The 3-C corridor is an attractive travel market because it has large end-point populations and many intermediate cities along the route. The population density along the line provides a balanced directional passenger flow and creates the potential to keep seats filled for the entire trip. The average trip length of 130 miles is much shorter than the length of the corridor, implying high passenger turnover in Columbus, with the ability to fill the seats twice between the corridor’s end-point cities. These factors along with a high percentage of business travel, a lack of competitive air service, and the potential to serve multiple commuter markets boosts the projected ridership as well as the corridor’s revenue yields. In all network options, the 3-C corridor has the highest projected load factors with the greatest revenue potential. The study concluded that this corridor should be implemented first and the results suggest that the 3-C may *stand-alone* only if it is interconnected with at least one additional corridor. This will ensure that the 3-C returns a positive operating ratio along with a positive cost benefit ratio.

## Capital Cost Estimates

*Project financing assumes a 20/80 state/federal funding split and implementation is contingent upon establishing a national program with federal funding for freight and passenger rail improvement projects.*

An engineering assessment provided an evaluation of the current condition of the railroad infrastructure and rights-of-way, and identified the improvements needed to support the *Modern Scenario*, a 79-mph train speed option, and the *High-Speed Scenario*, a 110-mph train speed option. The assessment and the resulting capital cost estimates were developed at a feasibility level of detail and accuracy (+/-30%). The infrastructure improvements are needed to increase capacity, upgrade the track, signaling and communication systems, enhance grade crossing warning devices, and improve the overall operational efficiency needed to accommodate both freight and passenger trains.

The overall capital cost projection for the Ohio Hub System is approximately \$4 billion or about \$3.1 million per mile for a 79-mph system, and \$4.9 billion or about \$3.8 million per mile for a 110-mph system. The total estimated cost for a fleet of 25 trains, over and above the fleet requirement for the MWRRS corridors, is \$448 million. The table below highlights the estimated capital cost for each corridor.

**Capital Investment Requirement by Corridor (in thousands of 2002\$)**

System Configuration	Modern Scenario	High-Speed Scenario
Cleveland-Pittsburgh via Youngstown	\$461,912	\$484,968
Cleveland-Detroit via Detroit Airport	\$540,490	\$593,769
Cleveland-Niagara Falls	\$603,915	\$801,149
Cleveland-Columbus-Cincinnati	\$660,977	\$1,104,600
Pittsburgh-Columbus via Panhandle	\$441,918	\$488,216
Columbus-Ft. Wayne via Dunkirk	\$426,006	\$494,712
Dunkirk-Toledo	\$178,544	\$205,180
<b>INFRASTRUCTURE SUB-TOTAL</b>	<b>\$3,313,762</b>	<b>\$3,975,360</b>
Land	\$320,447	\$320,447
Maintenance Base	\$18,973	\$18,973
Train Fleet	\$350,000	\$447,500
<b>GRAND TOTAL</b>	<b>\$4,003,182</b>	<b>\$4,762,280</b>

Note: Total infrastructure cost includes planning, engineering & design, and construction costs

The costs for the installation of the upgraded Positive Train Control, passing sidings, and improved grade crossing warning systems account for the majority of the additional costs for the High-Speed operation. The cost differential for upgrading the 3-C Cleveland-Columbus-Dayton-Cincinnati route from 79-mph to 110-mph is significant because of the large number of highway/railroad grade crossings over this route. For most routes, the difference in cost between the Modern and High-Speed Scenarios is generally small and is due to the assumption that additional tracks would be added under both speed scenarios.

It must be noted that all the Ohio Hub costs are expressed in \$2002, and some costs may have risen significantly due to increased prices for steel and concrete. The costs need to be brought up to current year basis in a future phase of work.

The capital plan for the three new Ohio Hub incremental corridors assumes co-mingling with existing freight at 110-mph; whereas the original four Ohio corridors were built alongside freight mainlines and mostly relied on construction of new dedicated track. However, the costs for adding the incremental corridors include significant investments for multiple rail/rail grade separations and the expansion of rail capacity in the congested endpoint yards and terminals, and bike trail relocation along some segments.

## Capital Cost Shares by State

A state by state breakdown of the capital costs for the fully built-out MWRRS and Ohio Hub corridors is provided in the table below. The costs account for only those portions of the interstate routes that fall within the boundaries of the five states and Ontario, Canada.

**Infrastructure Capital Costs by State:  
Ohio Incremental Corridors + Eastern MWRRS System  
(Thousands of \$ 2002)**

MWRRS CORRIDORS	Federal	Michigan	Indiana	Ohio	Pennsylv	New York	Canada	TOTAL
Michigan Lines	\$453,500	\$401,313	\$22,665					\$877,478
Chicago-Cincinnati <sup>1</sup>	\$101,250		\$354,400	\$153,067				\$608,717
Chicago-Toledo <sup>2</sup>	\$101,250		\$291,800	\$316,077				\$709,128
<b>SUB-TOTAL MWRRS</b>	<b>\$656,000</b>	<b>\$401,313</b>	<b>\$668,865</b>	<b>\$469,144</b>				<b>\$2,195,322</b>
<b>OHIO HUB CORRIDORS</b>								
3-C <sup>3</sup>				\$1,166,488				\$1,166,488
Pittsburgh (Youngstown)				\$406,342	\$78,625			\$484,967
Detroit (Metro Airport) <sup>4</sup>		\$121,509		\$367,205				\$488,714
Niagara Falls <sup>5,6</sup>				\$269,550	\$164,014	\$309,041	\$58,544	\$801,149
Panhandle				\$305,637	\$182,579			\$488,216
Columbus-Ft Wayne <sup>7</sup>			\$63,156	\$431,555				\$494,711
Dunkirk-Toledo				\$205,180				\$205,180
<b>SUB-TOTAL OHIO HUB</b>			<b>\$63,156</b>	<b>\$3,151,957</b>	<b>\$425,218</b>	<b>\$309,041</b>	<b>\$58,544</b>	<b>\$4,129,425</b>
<b>STATE GRAND TOTALS</b>	<b>\$656,000</b>	<b>\$401,313</b>	<b>\$732,021</b>	<b>\$3,621,102</b>	<b>\$425,218</b>	<b>\$309,041</b>	<b>\$58,544</b>	<b>\$6,324,747</b>

1- MWRRS assumed Ohio's share 50% of Cincinnati-Indianapolis segment. Nothing for Indianapolis-Louisville.

2- MWRRS Assumed a mileage-based proration on cost of Fort Wayne-Toledo segment

3- This 3-C cost includes 100% of the cost of Cleveland-Berea, which is later shared by the Detroit and MWRRS lines

4- Excludes costs for Wayne Jct-Detroit that have already been charged to MWRRS, but includes Toledo-Berea costs

5- Ohio Share 78% of Cleveland-Erie segment, based on 71 out of 91 miles

6- Pennsylvania Share 24% of Erie-Buffalo segment, based on 22 out of 91 miles

Ohio's share of the Ohio Hub capital cost would be \$3.15 billion, or 76% of the total capital cost. The only intercity corridors that Ohio can develop independently are the Cleveland-Columbus-Dayton-Cincinnati corridor and Columbus-Toledo corridor. A segment of the state-owned Panhandle line from Columbus to Newark may also be advanced separately. All of the other Ohio Hub corridors will operate as interstate services and will require the cooperation of the other states as well as the federal government.

Ohio's share of the cost for the MWRRS rail lines is \$470 million bringing the total cost for Ohio's intercity/interstate rail program to \$3.62 billion. Adding the cost for land, trains and a maintenance facility would bring Ohio's total cost to \$4.31 billion.

It should be noted that all of the Ohio Hub costs are expressed in \$2002. Since 2002 costs have risen significantly due to increased prices for steel, concrete, and fuel. In the near future, the ORDC will need to bring the capital costs up to a current year basis.

## Benefit/Cost Analysis

*The ratio of benefits to costs is a substantial 2.0 reflecting the fact that the Ohio Hub region is one of the best candidates in the U.S. for developing a regional rail system.*

The Ohio Hub economic forecasts were carried out to meet Federal Railroad Administration (FRA) criteria. For the purposes of the Ohio Hub Study the U.S. Department of Transportation Federal Railroad Administration (US DOT FRA) Cost Benefit Methodology was adopted. This methodology as set out in the FRA report “*High Speed Ground Transportation for America*” provides the most authoritative guide to the economic evaluation requirements for an intercity rail project to attract federal funds. Benefits are quantified in terms of passenger rail user benefits, other-mode user benefits, and resource savings benefits.

Transportation improvements provide user benefits in terms of time and costs savings, as well as convenience, comfort and reliability. User benefits include: a reduction in both travel times and costs that users receive; benefits that users of other modes receive as a result of lower congestion levels; and resource benefits such as savings in airline fares and reductions in emissions as a result of travelers being diverted from air, bus and auto to the regional rail system. At the feasibility level of study, when a benefit/cost ratio is above 1.2, the ratio validates the proposed system’s economic feasibility.

Under the High-Speed Scenario the Ohio Hub system will obtain a benefit/cost ratio of 1.56 if only Ohio’s direct costs and benefits are taken into account. If the impacts on the connecting MWRRS corridors are also included, the benefit/cost ratio rises well above 2.0.

In 2005, the Ohio Rail Development Commission initiated a comprehensive analysis of the economic impact of the Ohio Hub. The resulting *Ohio Hub Economic Impact Study*, completed in June 2007, is based on the original 860-mile Ohio Hub system with the four corridors.

**The Ohio Hub Economic Impact Study was Based on the Four Corridor 860-Mile Ohio Hub System**



## **The Economic Impact of the Ohio Hub**

*An improvement in the efficiency of moving people, goods and labor among markets and communities has the potential to improve the investment and business climate of the state which, in turn, can lead to a higher rate of economic growth.*

A detailed benefit/cost analysis is presented in the June 2007 *Ohio Hub Economic Impact Study*. This study concludes that over the project's 30-year life, the Ohio Hub will create nearly \$9 billion in user benefits with \$4.9 billion in costs including capital, maintenance, and operating expenses, producing a 1.8 benefit/cost ratio. Moreover, the Ohio Hub will:

- Create 16,700 permanent jobs which is equivalent to more than 500,000 person years of work;
- Raise the region's income by over \$1 billion over the life of the project;
- Increase the average annual household income in the region by at least \$90;
- Generate more than \$3 billion in development activity near stations;
- Increase land values and create the potential for communities to develop new retail, office and residential developments near the passenger rail stations;
- Create an annual \$80 million impact on state tourism by generating 320,000 overnight trips;
- Increase Cleveland Hopkins Airport traffic by 5% and create a \$500 million to \$1 billion economic benefit;
- Create a potential benefit for freight operations in the range of \$3 to \$6 billion; and
- Generate an annual fuel savings of approximately 9.4 million gallons of fuel.

During the nine-year construction phase of the Ohio Hub, the economic benefits will be diffused across the entire industrial structure of Ohio's economy. The project will create 7,100 construction jobs and will generate a \$1.84 billion increase in household earnings related to construction, manufacturing, health care, retail trade, and professional, financial and insurance services.

### **Key Study Findings**

*The Ohio & Lake Erie Regional Rail – Ohio Hub System is an appropriate extension of the nation's future intercity/interstate passenger rail system and should be federally designated as part of the national passenger rail network.*

The 3-C corridor lies entirely within Ohio's borders and is financially the strongest corridor. Therefore, 3-C development is Ohio's obvious first priority. Beyond this, financial modeling shows that there is a lot of flexibility for determining which corridors should be added next. It is suggested that the actual prioritization of corridor extensions beyond 3-C be based on partnership potential with adjoining states, and on the level of cooperation that can be developed with the host freight railroads. It is recommended that ORDC begin to engage the neighboring states as well as freight railroads with the results of this expanded study, to determine which corridor(s) will actually be developed next.

Consistent with previous studies, this Ohio Hub update has recognized the importance of access to Chicago and has assumed connectivity to the three proposed MWRRS eastern corridors. The financial modeling work has shown that these three corridors would be operationally viable on a stand alone basis, and that their implementation would develop a solid system of core interstate routes that could be extended by the Ohio Hub system. However, since MWRRS development requires the cooperation of a number of states the Ohio Hub Study findings suggest that a stand-alone Ohio Hub network would be economically and financially viable.

## Next Steps

Concurrent with continuing efforts to broaden and strengthen support for the Ohio Hub System from local, state and federal stakeholders, the business community and citizens, there is a need to advance the technical planning for the proposed system, refine the financing plan and strategies and develop institutional and interstate arrangements.

To summarize, the participating states need to take the following short-term actions:

- Continue coordination with the railroads;
- Obtain plan endorsement by the affected local governments;
- Obtain plan endorsement by the states;
- Seek federal recognition of the Ohio Hub;
- Build grassroots support for the project by holding citizen participation and outreach meetings; and,
- Secure federal/state/local funds for advanced project planning, development and engineering.

The immediate next step in development of the Ohio Hub project involves advancing a Programmatic Environmental Impact Statement (PEIS) or a Tier 1 environmental review of the Ohio Hub rail corridors. The goal of an Ohio Hub PEIS would be to advance the corridors through the required steps under the National Environmental Policy Act (NEPA). This will resolve decisions regarding project location, capital improvements, community priorities, and environmental impacts, and will result in a list of project decisions to be approved by the Federal Railroad Administration.

The Ohio Hub Programmatic Environmental Impact Statement will:

- Provide federal recognition of the Ohio Hub as “*a funding-ready program of capacity improvement projects*;”
- Strengthen Ohio’s partnership with the freight railroads by working to identify “*system wide*” improvements that will increase transportation capacity for growing volumes of freight while removing railroad bottlenecks, improving fluidity, and having a positive affect on highway capacity, shipping rates, and economic development;
- Identify critical railroad rights-of-way and facilities that must be preserved for Ohio’s future long-term railroad capacity needs;
- Evaluate the capital and operating needs for an Ohio Hub passenger rail “*start-up*” service;
- Propose a project funding framework that will capture public and private transportation funds currently being spent on Ohio highway and railroad improvements, which will be leveraged to attract additional federal funds for construction when a federal rail funding program is finally put in place; and
- Strengthen interstate and local partnerships as state and local agencies and transit authorities work to share technical information, coordinate planning, and interconnect projects that offer joint-development potential.

