

A high-speed train, likely a Shinkansen, is shown in the foreground, moving from left to right on a set of tracks. The train is white with blue accents. In the background, a city skyline is visible, featuring several prominent skyscrapers, including the PNC Tower in Pittsburgh. The sky is a mix of blue and white, suggesting a clear day with some clouds. The overall scene is a composite image used for a report cover.

The Ohio & Lake Erie Regional Rail Ohio Hub Study

Executive Summary

**Prepared for:
The Ohio Rail Development Commission and the
Michigan, New York and Pennsylvania Departments of Transportation**

**Prepared by:
Transportation Economics & Management Systems, Inc. and HNTB, Inc.
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Foreword
By James E. Seney
Executive Director, Ohio Rail Development Commission

Ohioans have talked about high-speed passenger rail service for nearly 30 years, but the progress in developing such a system has been slow.

Why? In part it is a consequence of the high cost associated with the development of high-speed passenger rail systems, which has led many policy makers to conclude that this business can best be handled by the private sector. Other explanations can be found in public doubts about the ability of intercity rapid rail systems to attract choosy travelers. And for some, the notion of fast trains and improved railbeds is little more than choo-choo nostalgia.

Yet, there's a more powerful explanation for why high-speed rail hasn't attracted more attention during the past quarter century. Very simply, Ohio's initial vision of an intrastate passenger rail system that connected Cleveland, Columbus and Cincinnati – a 3-C corridor that would compete with the automobile for ridership and alleviate congestion by removing vehicles from I-71 – was seriously flawed.

The erroneous assumptions embedded in this vision were quickly confirmed. They ran counter to an Ohio economy that was tied to the steel, automobile assembly and supply industries. They ignored the reality that the automobile is the most convenient and economical mode of transportation for most citizens. And they fostered false expectations that passenger trains would somehow reduce the need for constructing new highways, improving airports and expanding air travel.

But understanding the limitations of Ohio's original passenger rail initiatives doesn't justify abandoning the effort. To the contrary, the state's economy is still dependent on an efficient and fluid multi-modal transportation system. And high-speed rail has a vital niche in any transportation network designed to accommodate the increasing movement of people and products at the local, regional, national and international levels. That niche concentrates on the medium-distance travel market – too far to drive and too short to fly.

Today, Ohio's passenger rail efforts have a new vision – one that is focused on a rapid rail system that increases the capacity and fluidity of our regional transportation corridors for movement of both people and freight. This new vision looks far beyond Ohio's borders to examine the corridors where our citizens travel and it sees intercity rapid rail passenger trains as a means of augmenting and complimenting the continued growth of existing highway and air systems.

Recognizing that in Continental Europe, a vast network of high-speed train systems has nearly eliminated air trips between cities less than 400 miles apart, Ohio's new vision of high-speed rail is aimed at the three to four hour total time frame – an intercity market where rail transportation can add capacity and be time-competitive with air and auto for travel in the approximate range of 200 to 400 miles.

This mileage and time frame is one of the most inadequately served markets in Ohio and our region by commuter airlines because of the lack of service and the inability to quickly access airports and board planes. An intercity rapid rail system could overcome this impediment by boarding passengers in both urban and suburban stops, which include Ohio's major airports.

This mileage and time frame also reflects that Ohio has no full-service international air hubs. The Ohio & Lake Erie Regional Rail - Ohio Hub System is designed to link the regional international air hubs of Detroit, Toronto, Pittsburgh, Cincinnati and Chicago with the urban areas of Ohio. Our linkage to the Chicago international air hub will be achieved through the combined Cleveland-Chicago corridor of the proposed Midwest Regional Rail system.

The development of these networks will keep automobile trips best suited for rail off the highways, expanding their capacity for truck trips that must move over the road. Critically, it also will make the reach, pricing and frequency of all nearby international hubs available to almost all Ohioans. This rail linkage provides the best chance for the expansion of direct international flights from airports such as Dayton, Columbus, Toledo and Cleveland by dramatically expanding their catchment areas. And if our vision is realized, this rail-driven linkage of international air hubs will improve Ohio's position as a global business location, just as it will enhance the competitive cost of regional intercity travel.

How are we going to pay the capital costs of this kind of passenger rail service? For starters, there is the existing public/private partnership that is already funding the grade separation program on Ohio's rail corridors. This partnership, which includes state and local governments as well as private railroads, can be leveraged with federal monies to begin Ohio's intercity rapid rail development programs and provide an additional return on our grade separation investment to the state's taxpayers.

Beyond capital and maintenance costs, the development of a high-speed passenger rail system will involve additional costs associated with securing access to private property for public purposes. These costs will be substantial, which is why the state of Ohio will have to work closely with the private railroads to develop appropriate and realistic benefits for gaining public access and use of their private property.

While the feasibility study reflected in this report shows that revenue can be expected to exceed operating costs, we would be less than forthright if we did not acknowledge that there are situational variables in each corridor – particularly with those that involve any start-up ventures – that must be studied in greater detail. In addition, there are substantial “unknowns” in emerging federal passenger rail development programs, some of which center around Amtrak's ultimate role and funding structures, at the publication of this document.

Our view, however, is that this study provides enough positive operating information to warrant moving forward to the next steps in the process. It also is important to note that our proposed corridors are shared corridors with private railroad companies. It is anticipated that there will be further mergers and rationalization of the system in the near future. Therefore, it is imperative that we move quickly to identify and preserve the necessary corridors and specific rights-of-way needed to build a high-speed passenger rail system in the near future when demand, capacity and market forces warrant it.

For this reason, the Ohio Rail Development Commission recommends that the next steps recommended in this study be taken and that we proceed now to complete the first four steps in the Ohio Department of Transportation's fourteen-step project development process.

Highways, airways, railways and waterways must work in concert to connect Ohio and the region to the global economy. And as the globalization of our economy continues, it is imperative for Ohio's multi-modal corridors to increase capacity and fluidity to handle the ever increasing movement of freight and people.

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 is challenged by rapid changes in the travel market, increasing freight traffic, and mounting costs for construction and fuel. Highway congestion and inefficiencies in air travel have inhibited mobility and reduced the utility of the transportation system. As a result, transportation departments have focused increased attention on improving the railroad system for both passenger and freight trains. The nation's privately owned freight railroads are a vital part of the transportation system and it is essential to ensure that they continue to serve commerce and economic growth.



The Ohio Rail Development Commission (ORDC) and the Ohio Department of Transportation (ODOT) recognized the potential for intercity passenger rail service and completed a feasibility study of a regional rail system of four corridors with a central hub in Cleveland. The study goal was to determine, at a conceptual level, the financial and economic feasibility of developing a system serving four intercity travel corridors:

- Cleveland – Columbus – Dayton – Cincinnati
- Cleveland – Toledo – Detroit
- Cleveland – Pittsburgh
- Cleveland – Buffalo – Niagara Falls – Toronto

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. This would improve intercity access and ensure that the region's core urban economies are served by an effective, world-class transportation system.

The rail system concept involves constructing and operating an 860-mile intercity passenger service with 32 passenger stations. It would serve over 22 million people in four states and southern Ontario, Canada. The four corridors connect nine 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, colleges and university towns would enhance the reach of the rail system.

The envisioned passenger rail system would provide same-day, round-trip service throughout the region by reducing downtown-to-downtown travel times and increasing train speeds. The rail service would complement both automobile and air travel by offering a modern transportation option with competitive travel times, reliable and frequent schedules and new, comfortable passenger trains.

The Business Model and the Challenge for Management

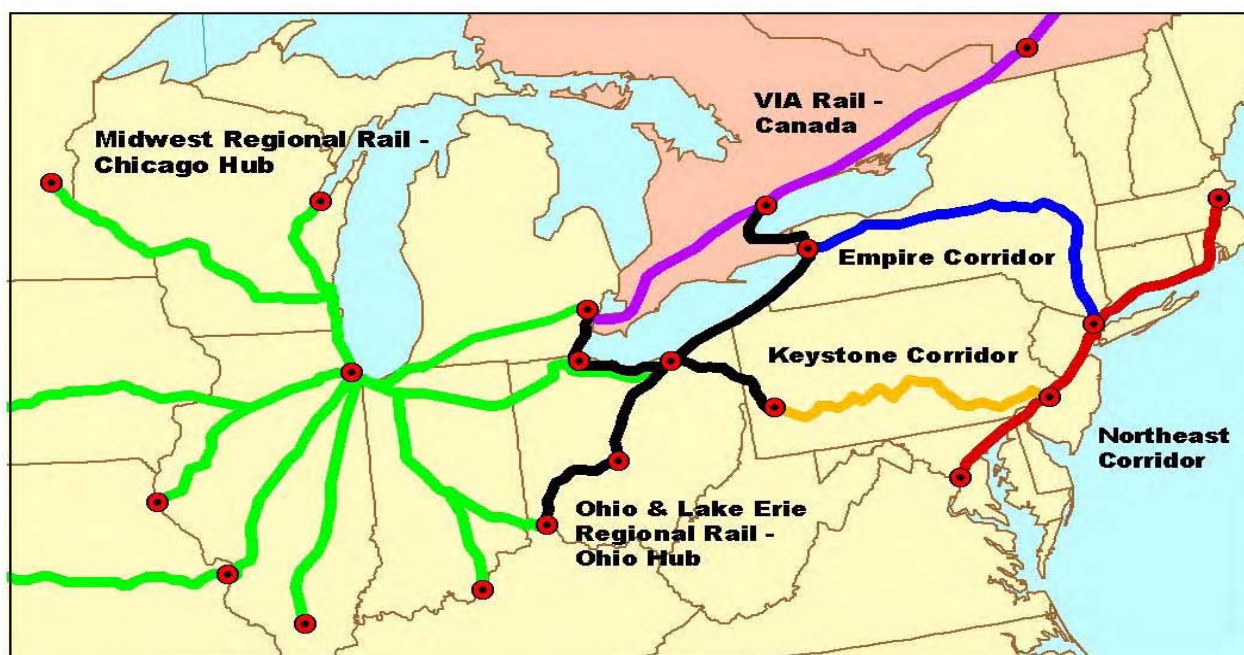
Once fully implemented, under FRA criteria the system's revenues should cover the operating costs.

The management of the passenger rail operation requires a new commercial approach that should focus on all aspects of potential revenue generation while working effectively to reduce costs. The Ohio Hub business plan suggests a paradigm shift in the management practices of passenger rail services and the administration of the private sector operators of ancillary services and other sources of revenue.

An Interconnected Regional Rail Network

When linked together by the Ohio Hub, the regional rail corridors create a national rail network that would serve over 140 million people or about half of the population of the United States.

The Ohio & Lake Erie Regional Rail system would play an important role as part of an interconnected, international 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 regional rail corridors including: the proposed Midwest Regional Rail System, New York's Empire Service, Pennsylvania's Keystone Service, the Northeast Corridor and Canada's VIA Rail. The study recommends that the Ohio Hub become part of the nation's federally recognized passenger rail system.



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 3.24 million Ohio Hub rail trips (forecast in 2025) are connecting riders from other regional rail, air and feeder bus systems.

Rail-planning goals include achieving operational efficiencies, maximizing economies of scale for rail operations, and creating opportunities for private sector participation. Potential network synergies include better equipment utilization, more efficient crew and employee utilization and cost savings from multi-state equipment procurements.

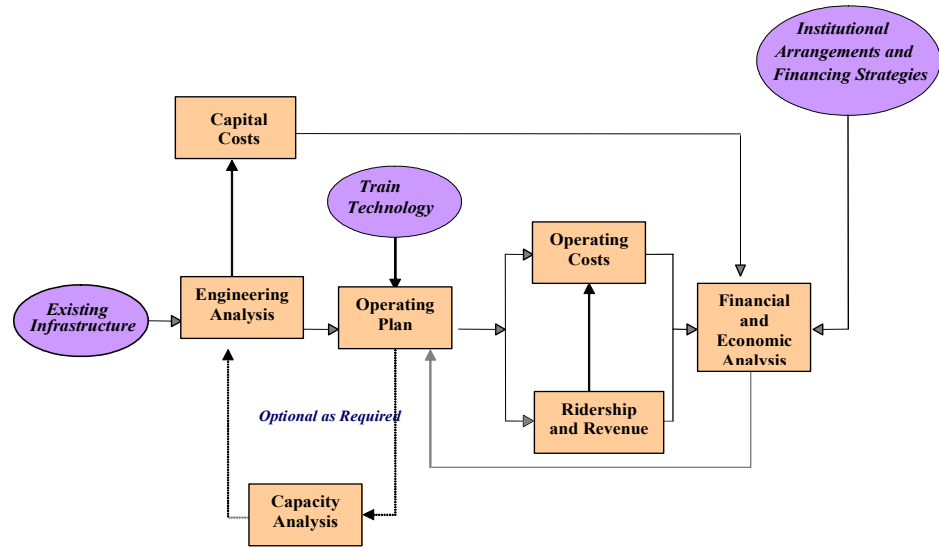
The Midwest Regional Rail System (MWRRS) calls for the development of the “Chicago Hub,” a 3,000-mile rail system with eight corridors serving nine states. Three MWRRS corridors would connect to the Ohio Hub: Chicago-Cleveland, Chicago-Cincinnati, and Chicago-Detroit. These connections create a very strong interaction between the Ohio Hub and the MWRRS. The Chicago-Cleveland line is currently part of the MWRRS service plan; however, as system planning advances, this corridor could be considered as an important leg of the Ohio Hub. Additionally, a Chicago-Columbus rail corridor would further strengthen the MWRRS/Ohio Hub connections and a feasibility study of this service will be advanced by ORDC in the near future. (Please see the Preliminary System Plan Map at the end of this Summary.)

Study Approach and Methodology

The analysis of potential passenger rail services in the Ohio and Lake Erie Region considered all of the factors that impact regional intercity travel.

The study utilized a railroad business-planning model, the TEMS' RightTrack System, to examine and forecast the market response to various levels of passenger rail service characteristics. This software models railroad infrastructure investment, train operations, ridership and revenue, financial performance and economic analysis.

The feasibility of operating additional passenger trains on existing railroad corridors is dependent on the capacity of the infrastructure. The interactive analysis focuses on infrastructure requirements, train frequencies and running times to forecast corresponding levels of ridership and revenue attained in future years.



The business model estimates the full life-cycle operating and financial performance of the rail system, as well as its costs and benefits. The RightTrack evaluation is designed to be consistent with the Federal Railroad Administration's criteria for evaluating the commercial feasibility of passenger rail projects.

Improved Railroad Capacity

The new passenger service must not impair railroad operations or create bottlenecks; rather, railroad improvements must increase capacity and improve the fluidity of the railroad operations.

An important objective in planning the Ohio Hub is to provide new transportation capacity for increasing volumes of freight traffic. The Ohio Hub will help re-capitalize the railroad system along the Ohio Hub corridor routes. The capital plan for the Ohio Hub will improve railroad safety, remove impediments to efficient rail operations, increase operating speeds and expand line capacity sufficient to accommodate both freight and passenger trains. The regional rail system would create a paradigm shift by investing heavily in railroad infrastructure. To a considerable extent, the passenger rail operation would use existing, privately held railroad rights-of-way and in some cases, passenger and freight trains would co-mingle on the same tracks.

Representatives from the freight railroads CSX and NS have participated in and provided critical input into the study. However, the feasibility planning is being advanced prior to negotiations with the freight railroad owners or the identification of specific federal, state or local funding sources. The study is conceptual and assumes that the railroads will be fairly compensated for the use of their land and facilities and these expenses have been incorporated into the capital and operating cost estimates.

Capital Cost Estimates and Project Implementation

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. It may be possible that Ohio's financial investment in the Grade Separation Program would be applied as the local match for project financing.

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.

The infrastructure improvements identified in the Ohio Hub Study are needed to increase capacity, upgrade the track and 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 \$2.607 billion or about \$3.5 million per mile for a 79-mph system, or \$3.324 billion or about \$4.5 million per mile for a 110-mph system. A fleet of 24 trains is needed for a total cost of \$322 million. The estimated capital cost for each corridor is highlighted in the table below.



Capital Investment Requirement by Corridor for High-Speed Service (in millions of 2002\$)

	Cleveland-Columbus-Cincinnati	Cleveland-Detroit via Detroit Airport	Cleveland-Pittsburgh via Youngstown	Cleveland-Buffalo-Toronto	Ohio Hub System Total Cost
Start-up Year	2010	2011	2012	2013	2013
Infrastructure	\$1,161.6	\$445.0	\$535.0	\$841.2	\$2,982.8
Rolling Stock	\$80.5	\$80.5	\$80.5	\$80.5	\$322.0
Total Capital Cost	\$1,242.1	\$525.5	\$615.5	\$941.7	\$3,324.8

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

Of the total capital cost, \$236 million would be invested in highway/railroad grade crossing safety improvements. This would significantly expand upon ODOT's \$200 million Grade Separation Program and ORDC's annual \$15 million investment in safety improvements.

The potential project implementation schedule reflects a nine-year phasing of the corridor segments. The following principles were used to develop the implementation plan:

- Service will be implemented consistent with market demand and the state's financial capacity to implement the plan.
- Corridor segments with the highest potential ridership per dollar invested will be implemented first.
- Broad geographic coverage will be achieved as early as possible.

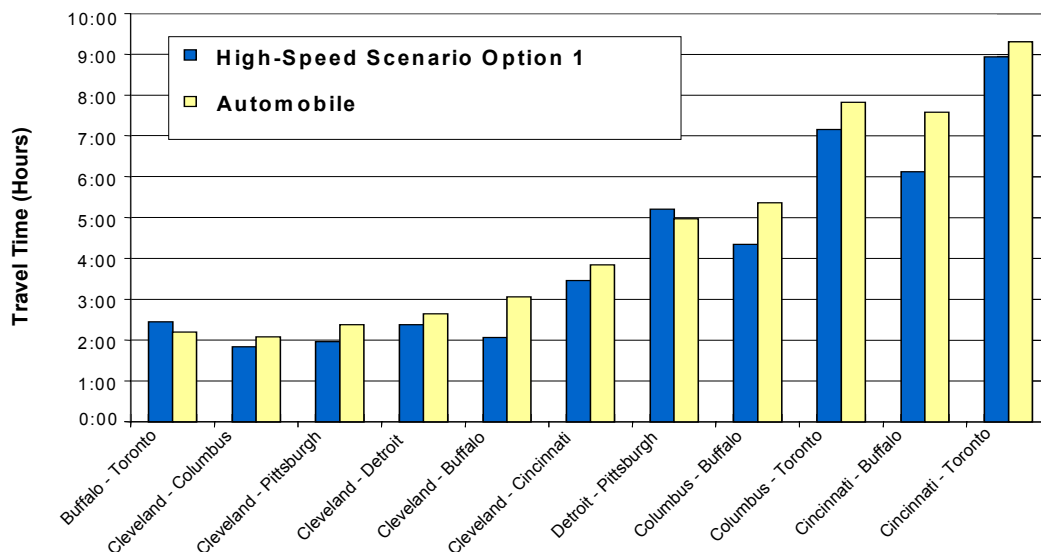
In the near term, the implementation plan calls for the initiation of a conventional, 79-mph Start-Up Service with two trains per day in each direction. The capital cost is conservatively estimated at \$500 million.

Travel Times and Passenger Fares

With a top speed of 110-mph, the train travel times between all of 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.

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



Passenger train fares will be competitive with air travel and have the potential to generate revenue in excess of 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 3.2 million riders will use a high-speed, 110-mph rail service. The annual operating revenue is estimated at \$152 Million.

The study evaluated multiple scenarios with different levels of rail service, train speeds (or travel times), train frequencies, alternative routes, and assessed the ridership and revenue synergies from interconnecting the Ohio Hub to other existing and planned regional rail services. The table below illustrates the results of eleven different operating scenarios with the associated corridor based and system-wide ridership forecasts.

Forecasts were generated for two train speed options: a 79-mph “*Modern Scenario*,” and a 110-mph “*High-Speed Scenario*.” The “*Stand-Alone*” forecasts assume little or no ridership benefits or operating synergies from interconnecting rail services. The “*Start-Up*” service is a *Stand-Alone* system based on two daily train frequencies and 79-mph speeds. The *Modern* and *High Speed* scenarios assume eight daily trains (five trains to Toronto). The study also analyzed alternative routes and estimated ridership on two alternatives between Cleveland and Pittsburgh and two alternatives between Toledo and Detroit. By pairing the Toledo-Detroit and Cleveland-Pittsburgh alternative routes in different combinations, four network configurations were constructed (Options 1-4). Interconnectivity with the MWRRS under the High-Speed Scenario Option 1 offers the best service and generates the greatest ridership and revenue. The Ohio Hub Study recommends Option 1 as the *preferred system configuration*.

2025 Ridership Forecasts (In Millions of Trips)

Corridors (Alternatives)	Modern Scenario (79-mph)						High-Speed Scenario (110-mph)				
	Stand-Alone		Shared				Stand-Alone	Shared			
	Start-Up	Option 1	Option 1	Option 2	Option 3	Option 4	Option 1	Option 1	Option 2	Option 3	Option 4
Cleveland-Detroit (Airport)	0.396	0.818	0.980			0.950	1.168	1.251			1.209
Cleveland-Detroit (Wyandotte)				0.851	0.868				1.184	1.109	
Cleveland-Pittsburgh (Youngstown)	0.220	0.365	0.522		0.498		0.473	0.663		0.627	
Cleveland-Pittsburgh (Alliance)				0.500		0.506			0.653		0.653
Cleveland-Buffalo-Toronto	0.292	0.504	0.565	0.534	0.550	0.541	0.671	0.722	0.688	0.698	0.692
Cleveland-Columbus-Cincinnati	0.480	1.122	1.671	1.500	1.650	1.618	1.568	2.156	2.075	2.075	2.083
Entire System*	0.819	1.868	2.487	1.996	2.114	2.401	2.633	3.236	2.742	2.756	3.127

* Ridership is not additive due to elimination of Cross-Cleveland double counting

The table below illustrates the strong positive effect MWRRS interconnectivity has on the Ohio Hub. The 51 percent increase in Cross Cleveland connections is due primarily to a heavy interchange of passengers between the MWRRS and the Ohio Hub corridors.

**Impact of MWRRS Connectivity on Ohio Hub Corridors
Percent Increase in Ridership and Revenue
(High-Speed Scenario Option 1)**

Corridors	Ridership	Revenue
Cleveland-Detroit	7%	7%
Cleveland-Buffalo-Toronto	8%	8%
Cleveland-Pittsburgh	40%	52%
Cleveland-Columbus-Cincinnati	37%	38%
Cross Cleveland	51%	--
Entire System	23%	28%

In addition to business and leisure travelers, the study found that the Ohio Hub could also serve a significant number of commuters. The study examined the potential commuter rail market between Toledo and Detroit and found that 20 to 30 percent of the corridor ridership would include commuter traffic.

Operating Cost Recovery

Once fully implemented, the system revenues are forecast to exceed system-operating costs.

Financial performance was evaluated by analyzing the 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 cost ratio) provides a key indicator of the financial viability of the Ohio Hub System and is calculated as follows:

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

While all operating ratios were forecast to be positive by 2025, during the construction and startup period system revenues may not be sufficient to cover all operating costs. This reflects the time it takes for the new rail system to be fully developed and for travelers to perceive the improved travel opportunity presented by the system. TIFIA loans (Transportation Infrastructure Finance and Innovation Act of 1997) may be used to finance these system start-up costs. The table below lists the operating ratio for each corridor in 2015 and 2025.

Corridors	Operating Ratio	
	2015	2025
Cleveland-Detroit via Detroit Airport	0.92	1.04
Cleveland-Pittsburgh via Youngstown	0.98	1.12
Cleveland-Buffalo/Toronto	0.92	1.09
Cleveland-Columbus-Cincinnati	1.64	1.84
Ohio Hub System Total	1.23	1.40

Cleveland–Columbus–Cincinnati Operating Performance

The Cleveland–Columbus–Dayton–Cincinnati (3-C) Corridor produces the best operating results and is forecast to produce a strong positive operating ratio.

The 3-C corridor has the highest revenue, but also the highest cost of any of the four routes. Its higher costs are due to track maintenance and the operation of a larger 300-seat train needed to meet the capacity requirements (200-seat trains are planned on the other corridors). Its higher volume of ticket sales and corresponding revenue is generated by heavy ridership demand over the entire corridor between Cleveland, Columbus, Dayton and Cincinnati. Extensive feeder bus services expand the market reach in Ohio, increase Ohio Hub system-wide ridership by 12 percent, and improve the 3-C’s overall performance.

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. This 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 on the largest trains with the greatest revenue potential. The study concluded that this corridor should be implemented first.

Economic Benefits and Preliminary Economic Impact

The Ohio Hub system will provide a wide range of benefits that contribute to economic growth and strengthen the region's attractiveness to manufacturing, service and tourism industries.

The Midwestern economy, like economies across the country, is dependent upon effective transportation within the region. The Ohio Hub is an initiative that can help sustain the Midwest's economic growth, continued vitality and quality of life in the new century. The Ohio Hub System will improve mobility and connectivity between regional centers and smaller towns, and will create a new travel alternative. An economic benefits analysis was completed for the Ohio Hub using the criteria and structure applied by the Federal Railroad Administration (FRA) in its 1997 study, *High-Speed Ground Transportation for America*.

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. As a rule of thumb, 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 study results suggest that the Ohio Hub will obtain a benefit/cost ratio of 1.24.

The Ohio Hub rail system would provide more capacity for freight and help keep the railroads fluid; it would link airports to major population centers, reduce U.S. dependency on expensive imported oil, and expand the capacity of the total transportation system. Travel and tourism, property values and tax revenues, and opportunities for downtown redevelopment are expected to increase. Passenger stations would be close to many cultural, academic, and research institutions, sports franchises and entertainment facilities and would be within a short walk to over 200 million square feet of downtown office space. A preliminary economic impact analysis suggests that the system would have a significant impact on manufacturing, construction and railroad employment, and stimulate broad economic growth that would create service sector jobs as well. A comprehensive analysis is needed to confirm and refine the estimated economic impact.

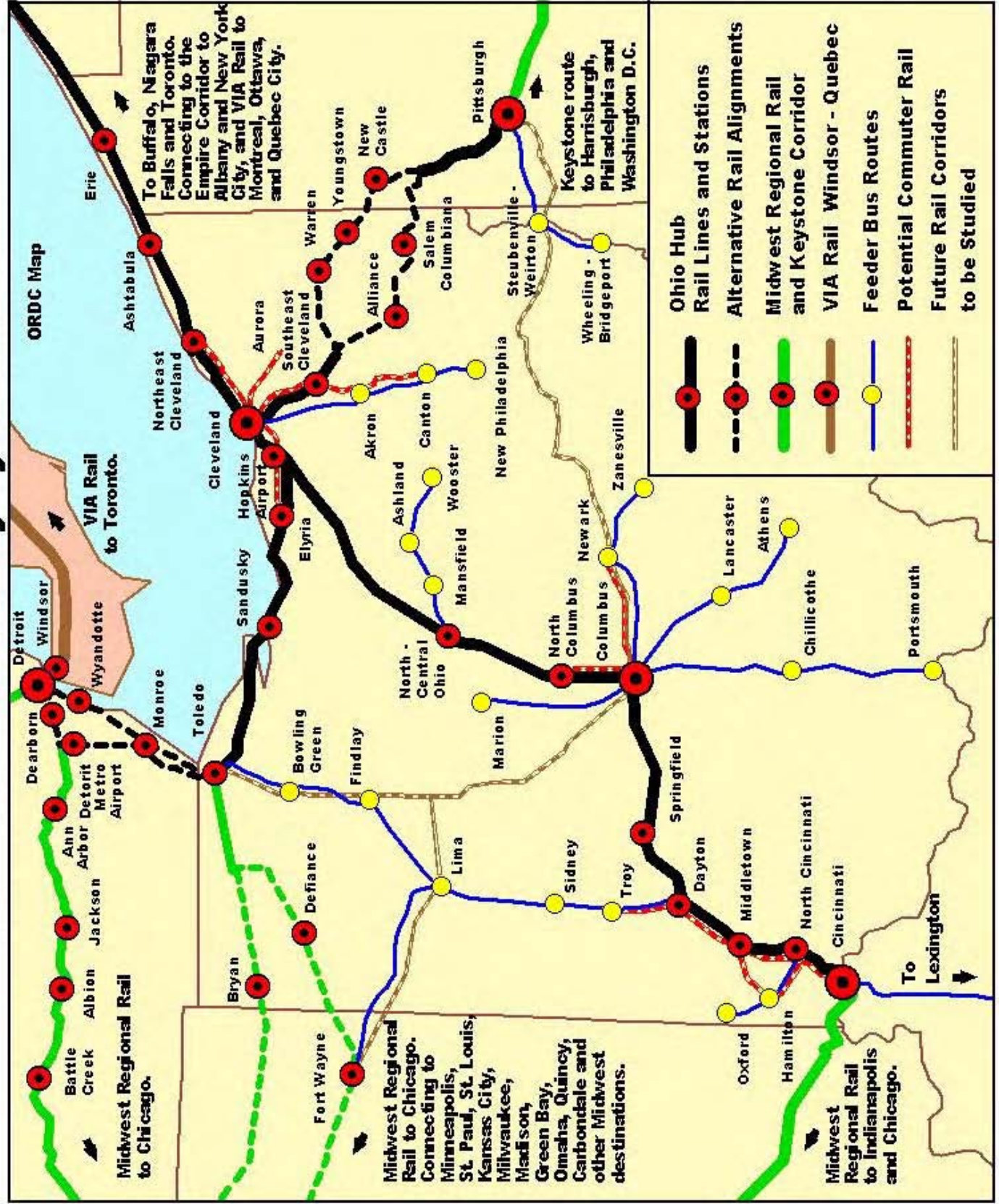
The Path Forward

A series of short and long-term actions are necessary to advance the system towards implementation.

Key actions include:

- **Project Advocacy:** A regional stakeholder coalition is required to solicit active support for the Ohio Hub and secure the required levels of state and federal funding. The coalition should include mayors, legislators, governors and members of Congress, and public and private sector advocates.
- **Project Funding Activities:** An action plan is required to obtain funding commitments for implementation and to secure a dedicated capital-funding source. Actions should commence to gain federal agency approvals by completing the necessary alternatives analysis, environmental reviews, and ODOT's 14-Step Project Development Process, which is needed to satisfy National Environmental Policy Act (NEPA) requirements and to position the Ohio Hub project for receipt of federal grants and TIFIA loans.
- **Shared Railroad Rights-of-Way:** Continuing dialogue with the freight railroads is needed to develop corridor capital improvement plans and agreements on operating, maintenance and access fees for the shared use of the privately owned rights-of-way, as well as to make other financial arrangements needed to accommodate both freight and passenger train operating schedules. The potential joint-development of intercity passenger rail with possible local commuter rail projects should be explored as part of the project development process.

Ohio Hub - Preliminary System Plan



Acknowledgements:

Transportation agencies from Ohio, Michigan, New York and Pennsylvania, 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) directed the planning effort and coordinated with the Ohio Department of Transportation. Transportation Economics & Management Systems, Inc. (TEMS) and HNTB, Inc. provided consulting and engineering services. The technical committee was comprised of senior staff from the transportation agencies and project meetings included representatives from local governments, metropolitan planning organizations, transit and airport authorities and other interested parties.

Funding for the Study came from a variety of sources. The Ohio Department of Transportation funded the majority of the costs through the State Planning and Research Program. The Ohio Rail Development Commission and the Michigan, New York and Pennsylvania Departments of Transportation, Amtrak and VIA Rail also contributed funds and/or in-kind services.

Cover:

The Cleveland skyline provides a backdrop for the Spanish Talgo-350. The electric passenger train will operate between Madrid and Barcelona at a top speed of 220-mph, which will be the fastest passenger rail operation in the world. The aerodynamic nose cone was designed to withstand the effects of “wind blast” at tunnel entrances and stabilizes the train at very high-speeds. At the time this report was printed, engineers from the Talgo/Bombardier consortium were testing the first of 16 new trainsets scheduled to begin service in the spring of 2005.

The Ohio Hub passenger trains have not yet been selected; however, this report suggests that the fleet will run on diesel fuel and have a top speed of 110-mph.

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