

8. Implementation Plan

8.1 Introduction

Given the scale of the MWRRS – more than 3,000 route miles through nine states – and the level of capital funding required for the infrastructure improvements and rolling stock, implementation of the MWRRS will occur in a series of six construction phases. The MWRRS will be fully operational by the end of the tenth project year, during Implementation Phase 7 in 2014.

This timeframe takes the project through design and manufacture of rolling stock, project development, preliminary engineering, design and final construction of the rail system's infrastructure. Project development includes all environmental reviews and/or the steps necessary under the National Environmental Policy Act, including public involvement and necessary engineering to obtain a *record of decision*. This incremental approach allows the states to secure funding and to develop the infrastructure in conjunction with the freight railways, and enables the rail operator to assess the impact of various service attributes on ridership and revenue and make any necessary adjustments. The environmental assessment for the extension of 110-mph service from Milwaukee to Madison has been completed, final public hearings conducted and a FONSI (Finding of No Significant Impact) request submitted to FRA. MWRRS service at speeds of up to 110 mph using new track infrastructure and equipment is planned to begin between Chicago and St. Louis, Pontiac and Madison in 2008.

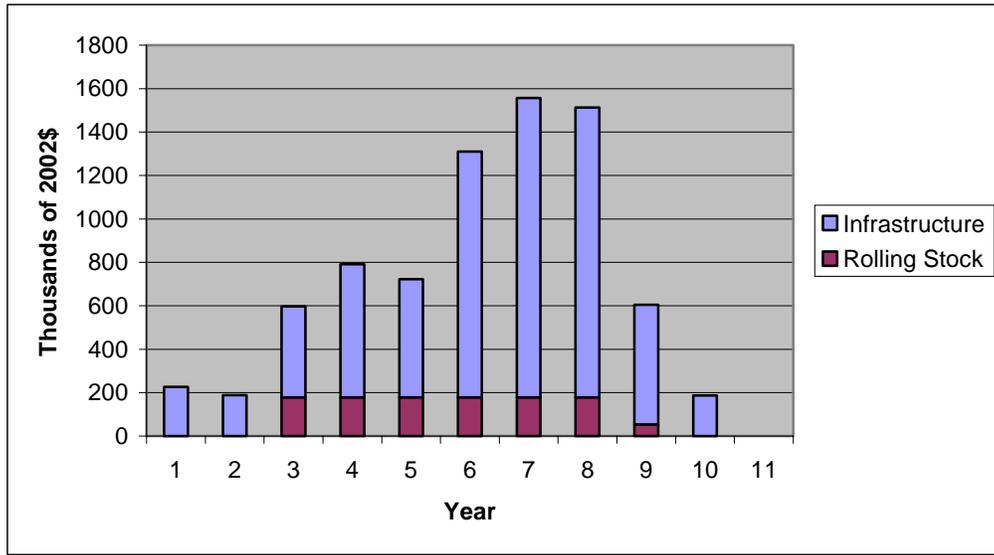
8.2 Implementation Approach

Five guiding principles characterize the implementation phases:

- Service is to be implemented as quickly as possible
- The most cost-effective corridors and services are to be implemented first
- Broad geographic coverage is to be achieved as early as possible
- Project phasing is to be consistent with the demand for service and affordability
- Passenger cars are to be assembled in the Midwest region to support the local manufacturing industry

While the MWRRS requires significant capital funding, its \$7.7 billion cost is reasonable given the size and population of the Midwest region (60 million people), the lack of previous regional investment in intercity passenger rail and the fact that these costs would be shared by nine states and the federal government. The proposed split of the necessary funding is 80 percent federal and 20 percent state and other sources – a long-established statutory arrangement used for highway, transit and airport funding. As shown in Exhibit 8-1, more than \$1.3 billion will be needed in each of three peak years to support construction and equipment purchases.

**Exhibit 8-1
MWRRS Capital Requirements by Year**



8.3 Implementation Phase Development

The implementation plan has been refined since the 1998 *Phase I Strategic Assessment and Business Plan* to ensure positive operating cash flows as early in the implementation schedule as possible. The corridors (routes) have been segmented and re-ordered in such a way as to optimize financial results. Thus, those corridor segments with the highest operating returns are implemented in the earlier phases of the plan. Exhibit 8-2, located at the end of this chapter, illustrates the full implementation plan by corridor and provides details on the ten-year schedule by activity – project development, preliminary engineering design and construction. Exhibits 8-3, 8-4 and 8-5 provide information on the development of each corridor and the financial costs to each state.

8.3.1 Description of Implementation Plan by Services

Implementation of the MWRRS begins with the design specifications for new rolling stock and preliminary engineering and design of the selected corridor segments. Upgrades to 110-mph are already underway on the Michigan and St. Louis corridors, where prototype Communications-Based Train Control systems are being tested. Extension of passenger service from Milwaukee to Madison via Watertown has already been environmentally cleared. MWRRS service using new trains will begin to St. Louis, Pontiac and Madison in 2008. This represents the first phase of MWRRS implementation. As construction continues and more equipment arrives, more routes will be added until the MWRRS system is fully operational in 2014.

Branch Line Services

Current state-supported passenger services (such as Chicago-Quincy, Grand Rapids, Port Huron, etc.) are presumed to continue as state-supported services during implementation, until infrastructure improvements are completed and sufficient new equipment is available to support launching the MWRRS service. Subsidies needed to maintain pre-existing Amtrak services are not included in the MWRRS business plan until after services are upgraded with improved track

and equipment. Any subsidy required on a short-term, transitional basis is included in the MWRRS business plan. Over the long term, the MWRRS goal is to eliminate the need for states to provide operating subsidies since taxpayer assistance can take the form of capital grants, and stronger routes can cross-subsidize operating losses of the weaker corridors, especially during the early implementation years. Funding for infrastructure and equipment is being used to improve service to the point where revenues cover operating costs as the system is fully built out, but some direct operating subsidies may still be required during the ramp-up period. Either these subsidies can be provided by direct state support or, as proposed in Chapter 10, the start-up cost can be financed by a TIFIA loan that is later repaid from the operating surplus that will be generated in later years.

Core Service (Main Line Services)

State-supported *core* services are considered part of MWRRS from the beginning. An example is service from Chicago to Milwaukee. This segment is integral to providing Madison service, although improvements are not fully completed until 2014. Likewise, Chicago-Detroit and Chicago-St. Louis are treated as core system elements, although the Chicago-Joliet and South-of-Lake improvements will not be fully operational until 2011 and 2012 respectively.

Long-distance Services

Long-distance Amtrak services are presumed to continue during and after MWRRS implementation, and may benefit from speed and line capacity improvements created by the MWRRS. Riders, revenue, operating costs and frequencies in the MWRRS business plan include only those for the MWRRS service. Long-distance trains are assumed as a federal responsibility and are not included in the MWRRS financial results. There is a potential downside of not including long-distance service figures. Total rail frequencies in the Midwest region will be understated, which will moderately decrease total demand on the MWRRS system. This appears to be less of a risk than overstating revenues and ridership without including the attendant costs.

Implementation of MWRRS should improve long-distance services as well. Where the MWRRS improves tracks that are currently used by Amtrak, such as from Chicago-St. Louis or Toledo-Cleveland, long-distance trains will be able to operate over improved infrastructure with reduced conflicts with freight trains. In other cases, such as Chicago-Des Moines-Omaha and Chicago-Fort Wayne-Cleveland, Amtrak may have an *option* to reroute their trains to serve more populous cities than is possible over current routes. Amtrak's desire to re-route a long distance train must be balanced against the needs of the territory now served. Some possible long-distance train reroute alternatives include:

- Rerouting the *California Zephyr* via Des Moines would directly serve a greater population base, but would also leave southern Iowa bereft of passenger rail service.
- A connection between MWRRS and CSXT at Defiance, Ohio would allow restoration of direct Amtrak service to Fort Wayne, IN (the *Three Rivers*) that was lost when Conrail downgraded the line in 1990.
- Amtrak's *Cardinal* could be routed via the MWRRS from Chicago-Cincinnati. This would eliminate a difficult Chicago access route on the north end and switch Cincinnati-Indianapolis service to a different line altogether.

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- Finally, there may be an opportunity to reroute the *Empire Builder* via Madison once MWRRS through-service to the Twin Cities starts.

All these re-route opportunities are business decisions that need to be considered by Amtrak and the respective states, once MWRRS passenger service starts.

8.4 Description of Implementation Phases

A description of each implementation phase, a data and cost summary and a map showing overall infrastructure improvements implemented prior to and during each phase are provided on the following pages. Additional information on travel times and frequencies by phase can be found in Appendix A8.

Acquisition of rolling stock is a critical factor in the implementation of the MWRRS due to the long lead-time required for manufacturing and assembly. There is also a desire to have the rolling stock built in the Midwest region. Consequently, vehicle procurement is the first major step in the implementation plan, with delivery of vehicles occurring throughout the implementation period. The MWRRS financial analysis anticipates the acquisition of 63 trains by 2014 with equipment received at a steady rate of 10 trains per year beginning in 2006. Given the size of this equipment order and by allowing the builder to run the production line at a steady pace for seven years, the MWRRS can be expected to receive the 25 percent volume discount assumed in the financial analysis¹.

A synergistic effect occurs as implementation of the MWRRS moves from one phase to the next. Each phase provides a strong base upon which to support the next phase by strengthening and increasing the value of the improved passenger rail service to the region. Phase 1 establishes a strong core for the new service – Chicago is established as the system hub, station improvements and on-board amenities are introduced, ridership grows and the availability of an attractive regional passenger rail service is marketed throughout the Midwest region. In later phases, additional improvements and service extensions are made throughout the region. Because of a phased approach in implementing infrastructure improvements, the system will not immediately achieve a positive operating ratio. To quickly reduce operating deficits associated with start-up, it is important to progress rapidly from phase to phase.

Operating costs and revenues of each phase were evaluated to minimize operating losses during the initial implementation period. Each of the three corridors selected for Phase 1 yields positive operating cost ratios by the time Phase 2 begins. The first year losses reflect the initial ramp-up of revenues over a one-year period assumed for each new segment as it is brought online. Despite the continuing expansion of the system, the system as a whole achieves a positive operating ratio by 2012, and maintains a positive operating ratio thereafter. However, individual corridors reach operating self-sufficiency at different times. All corridors except Quincy/Omaha reach a positive operating ratio by 2015 – the first year of full operation. The Quincy/Omaha line attains a positive operating ratio in 2024.

¹ Trains costs are set at \$17.9 million each. A normal procurement process may use a less conservative payment schedule. It would probably assume 30 percent down, 35 percent during the build-out and 35 percent upon completion.

Phase 1: Chicago-Pontiac; Chicago-St. Louis; Chicago-Madison

Phase 1 is based on infrastructure completed by state initiatives presently underway and on acquisition of new rolling stock for the Michigan, Illinois and Wisconsin corridors. Introduction of new trains would help establish a positive brand-identity for MWRRS, generate increased ridership and improve passenger ride quality and comfort. Equipment maintenance shops open at Pontiac, St. Louis and Madison. During 2008, significant construction is underway on line extensions to Iowa City and St. Paul.

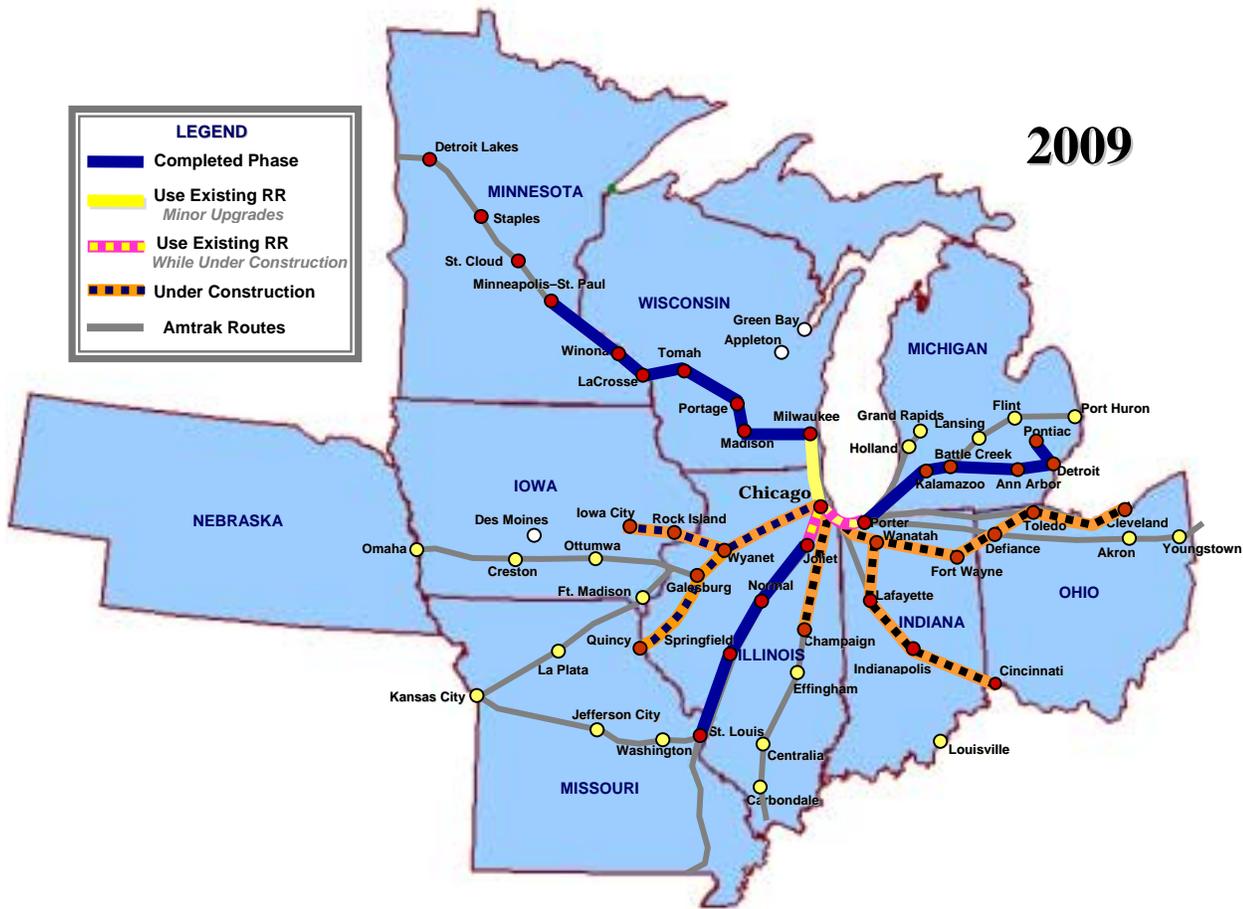
Phase 1 Data and Cost Summary	
Start-Up Year	2008
Infrastructure Costs	\$544.2
<i>System Operating Performance</i>	
Revenue	\$106.6
Cost	\$145.0
Surplus (Subsidy)	\$(38.4)
(All Costs in Millions of 2002\$)	



Phase 2: Service Extension to St. Paul

In 2009, 110-mph service is extended to St. Paul. A fourth shop facility is added in St. Paul, while construction continues on the Iowa City extension; construction begins on the South-of-the-Lake project, Chicago-Joliet, 110-mph extensions to Cleveland and Cincinnati and on 90-mph upgrades for Chicago-Champaign and Wyanet-Quincy.

Phase 2 Data and Cost Summary	
Start-Up Year	2009
Infrastructure Costs	\$1130.9
<i>System Operating Performance</i>	
Revenue	\$172.2
Cost	\$180.2
Surplus (Subsidy)	\$(8.0)
(All Costs in Millions of 2002\$)	



Phase 3: Service Extension to Iowa City

In 2010, service is extended to Iowa City. Construction continues on South-of-the-Lake, Chicago-Joliet, 110-mph corridors to Cleveland and Cincinnati and on a 90-mph upgrade between Chicago and Champaign. Construction begins on line upgrades between Milwaukee and Chicago, on capacity upgrades between St. Louis and Kansas City, on a line extension from Iowa City to Des Moines and on the Holland and Port Huron (Michigan) branch lines.

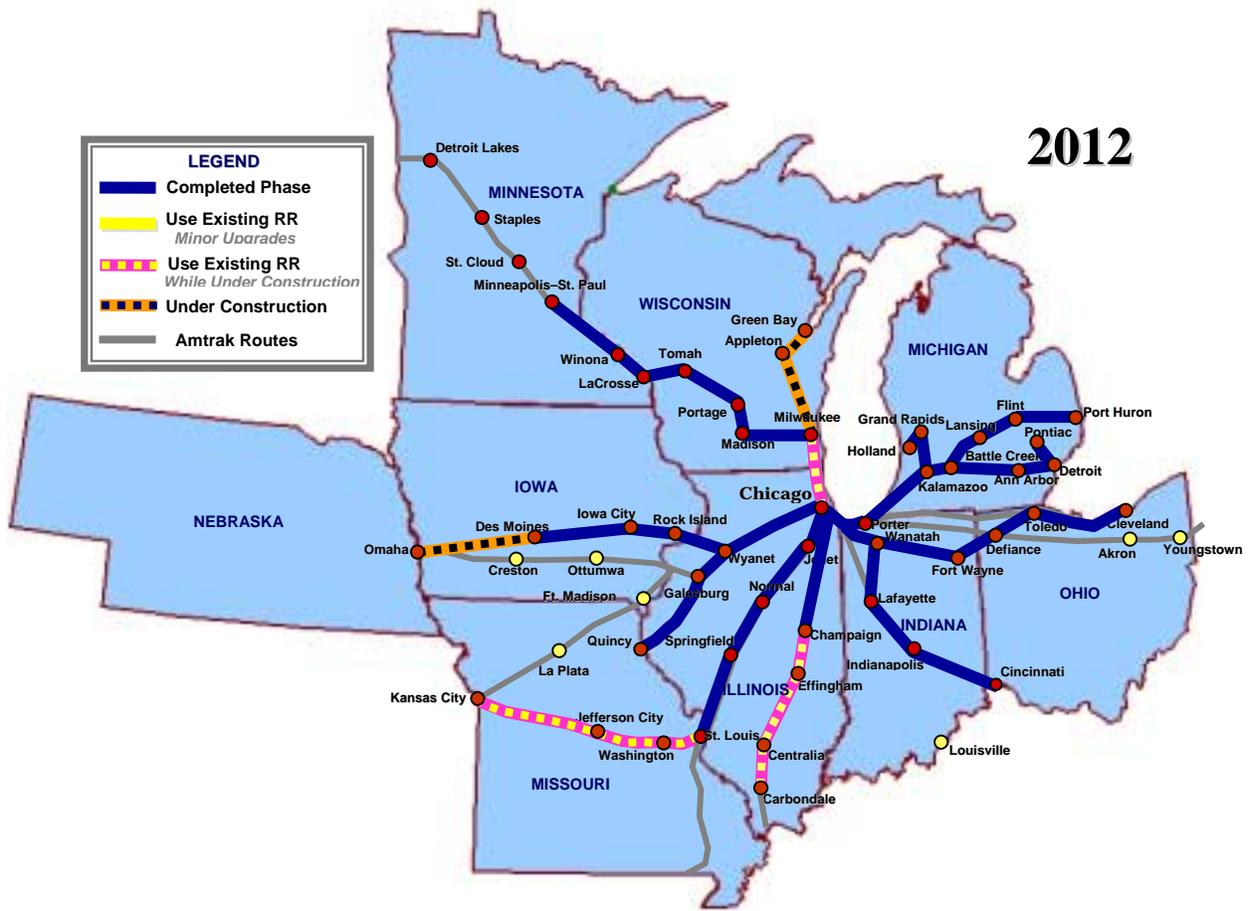
Phase 3 Data and Cost Summary	
Start - Up Year	2010
Infrastructure Costs	\$1378.3
<i>System Operating Performance</i>	
Revenue	\$ 223.5
Cost	\$ 210.1
Surplus (Subsidy)	\$ 13.4
(All Costs in Millions of 2002\$)	



Phase 5: Cincinnati, Cleveland, Des Moines and Michigan Branch Lines

With completion of the South-of-the-Lake improvement, Phase 5 implements service to Cincinnati, Cleveland, Des Moines, and on the Holland and Port Huron (Michigan) branch lines. A sixth equipment maintenance shop is added at Cleveland. The speed of service to Pontiac is increased. Construction continues on the Chicago-Milwaukee, Milwaukee-Green Bay, Champaign-Carbondale, Omaha and St. Louis-Kansas City lines.

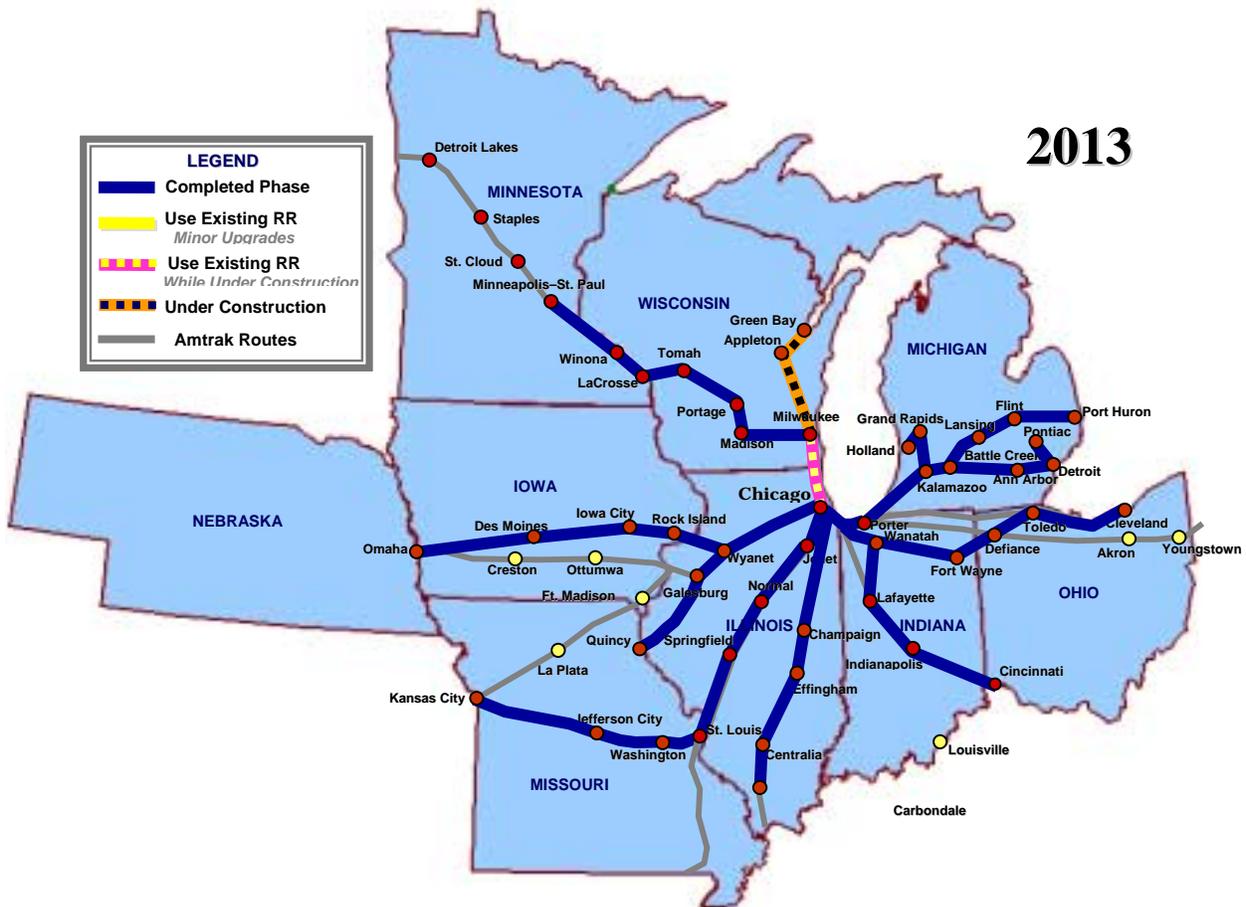
Phase 5 Data and Cost Summary	
Start-up Year	2012
Infrastructure Costs	\$ 550.4
<i>System Operating Performance</i>	
Revenue	\$ 414.0
Cost	\$ 402.6
Surplus (Subsidy)	\$ 11.4
(All Costs in Millions of 2002\$)	



Phase 6: Omaha Service Extension, Carbondale and Kansas City Speed-ups

Service is extended from Des Moines to Omaha. With completion of the upgrades between St. Louis and Kansas City, additional frequencies can be offered at 90-mph speeds. The 90-mph upgrade between Champaign-Carbondale is also completed. Work continues on Chicago-Milwaukee and Milwaukee-Green Bay.

Phase 6 Data and Cost Summary	
Start-up Year	2013
Infrastructure Costs	\$ 187.8
<i>System Operating Performance</i>	
Revenue	\$ 478.3
Cost	\$ 426.2
Surplus (Subsidy)	\$ 52.1
(All Costs in Millions of 2002\$)	



2013

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Phase 7: MWRRS System Complete

Completion of the capacity and speed upgrade between Chicago and Milwaukee allows a 15-minute schedule reduction on Madison and St. Paul trains. An additional seven trains are added to launch service to Green Bay in 2014. At this time, it is possible that a number of other branch lines could become viable. This could include such routes as Indianapolis-Louisville, Columbus-Cleveland and Tomah-Eau Claire, which are currently feeder bus routes on the MWRRS.

Phase 7 Data and Cost Summary	
Start-up Year	2014
Infrastructure Costs	\$ 0.0
System Operating Performance	
Revenue	\$ 528.4
Cost	\$ 452.8
Surplus (Subsidy)	\$ 75.6
(All Costs in Millions of 2002\$)	

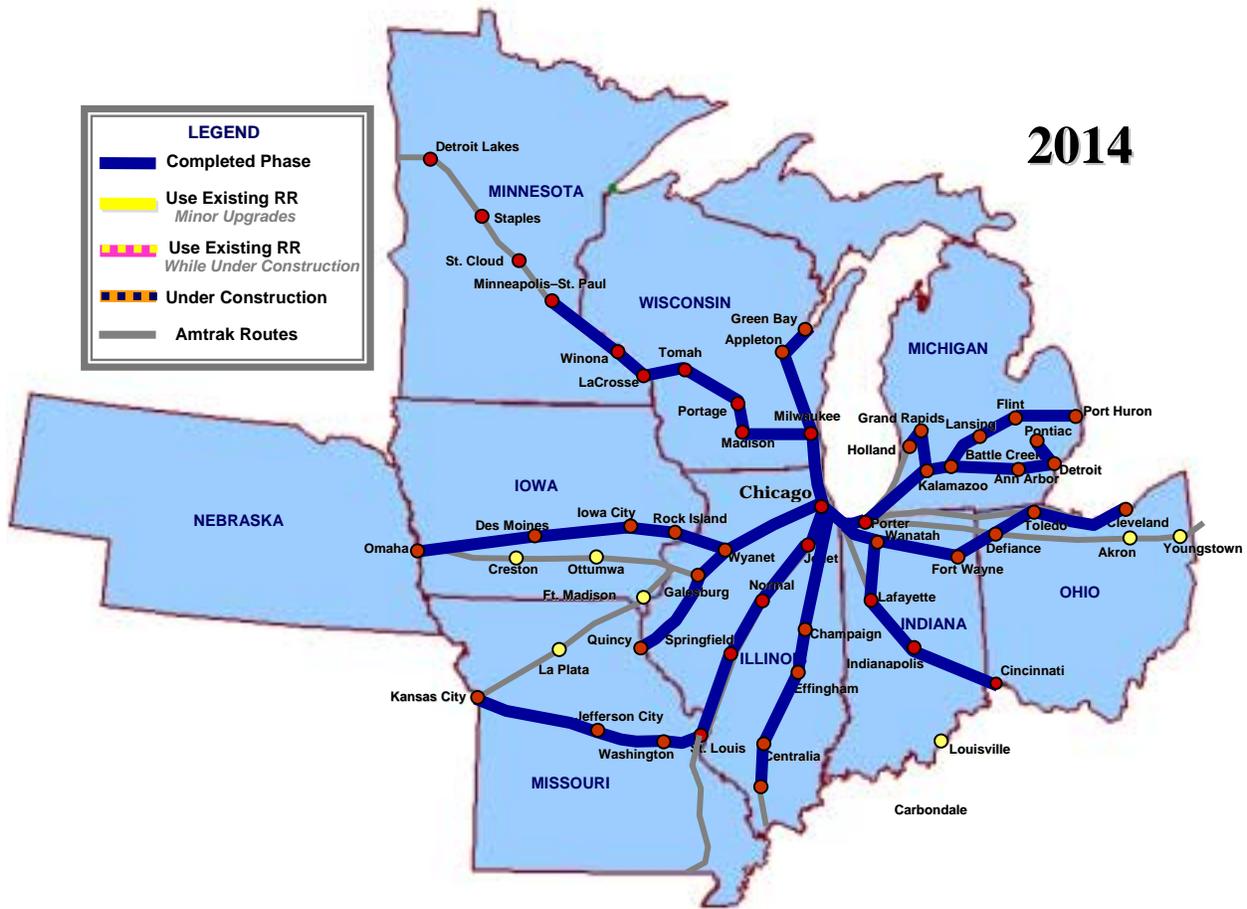
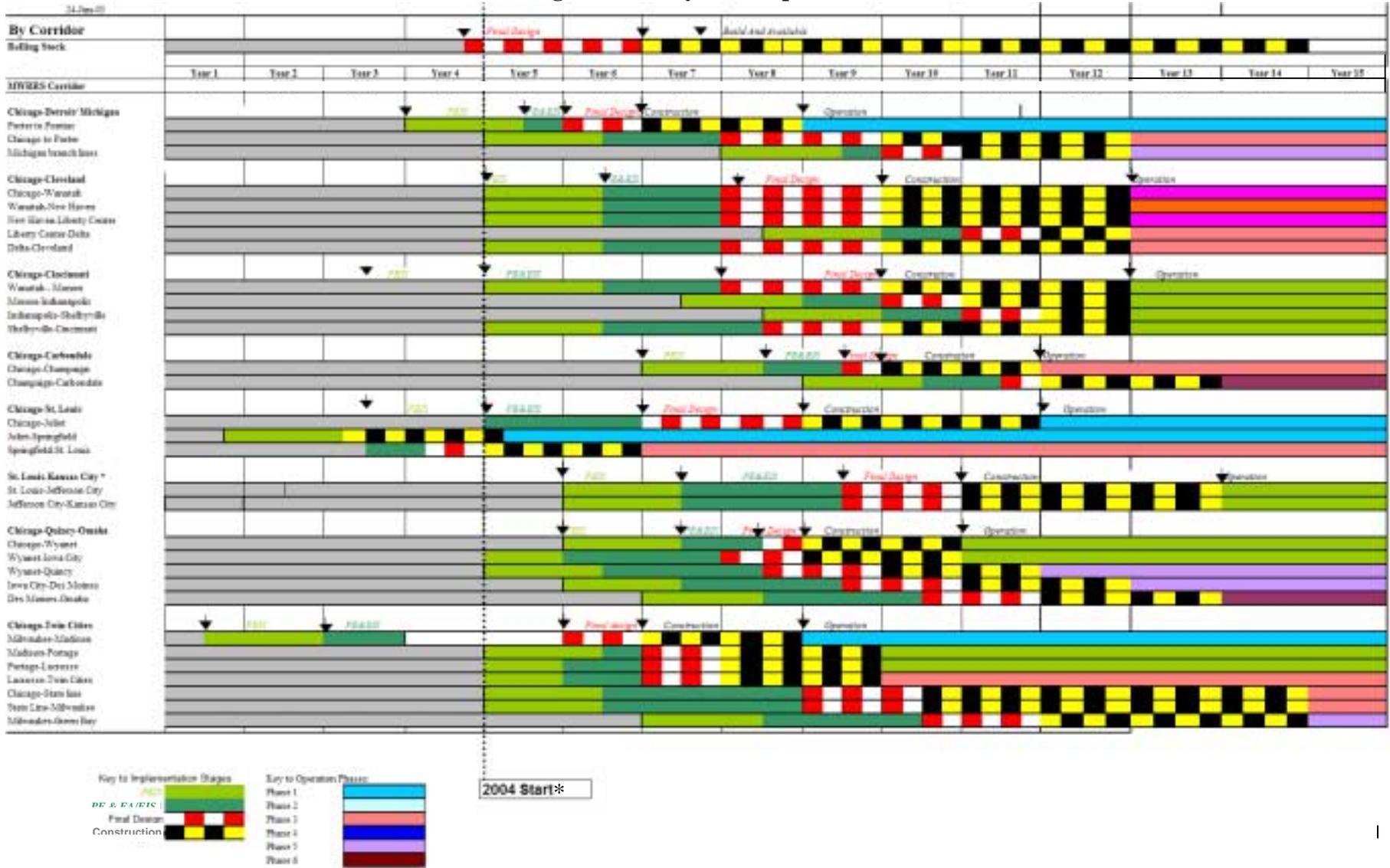


Exhibit 8-2 Midwest Regional Rail System Implementation Plan



* Dates are illustrative for planning purposes and the actual dates will be dependent upon federal funding.

Exhibit 8-3
MWRRS Train Schedule Implementation Plan

<i>Year</i>	<i>Chicago-Detroit</i>	<i>Chicago-Cleveland</i>	<i>Chicago-Cincinnati</i>	<i>Chicago-Carbondale</i>	<i>Chicago-St Louis</i>	<i>St. Louis-Kansas City</i>	<i>Chicago-Quincy / Omaha</i>	<i>Chicago-Twin Cities</i>
2008	6 Round Trips CHI-PNT, 5:23 running time (Old Phase 2 schedule extended to Pontiac)				8 round trips with 4:10 running (Old Phase 6 schedules)			Six round trips to Madison with 2:43 running time (Old Phase 2 but truncate St Paul back to Madison)
2009	"Same as above"				"Same as above"			Six round trips to Twin Cities at 6:44 running plus 4 to Madison (Old Phase 6 schedules without Green Bay)
2010	"Same as above"				"Same as above"		5 Round Trips to Iowa City service	"Same as above"
2011	"Same as above"			5 Round Trips CHI to Champaign at 90 mph; two trains continue to Carbondale at 79 mph.	"Same as above"	4 Round Trips on 5:34 schedule (old Phase 4 schedules)	Iowa City plus 4 Round Trips to Quincy	"Same as above"
2012	Full schedules with Branch Lines, 5:01 running time CHI-PNT. (Old Phase 6 schedules)	Full schedules with 8 round trips, 4:48 running time (Old Phase 6 schedules)	Full schedules with 5 round trips, 4:25 running time (Old Phase 6 schedules)	"Same as above"	"Same as above"	"Same as above"	Extend service to Des Moines, plus Quincy	"Same as above"
2013	"Same as above"	"Same as above"	"Same as above"	5 Round Trips CHI to Champaign at 90 mph; two trains continue to Carbondale at 90 mph.	"Same as above"	6 Round Trips on 4:42 schedule (old Phase 6 schedules)	Extend service to Omaha, plus Quincy (Old Phase 6 schedules)	"Same as above"
2014 - beyond	"Same as above"	"Same as above"	"Same as above"	"Same as above"	"Same as above"	"Same as above"	"Same as above"	Add Green Bay service; reduce Chicago-Milwaukee by 15 minutes

Exhibit 8-4
Capital Costs by Phase and Route Segment
(Millions of 2002\$)

<i>Route</i>	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>	<i>Year 5</i>	<i>Year 6</i>	<i>Year 7</i>	<i>Year 8</i>	<i>Year 9</i>	<i>Year 10</i>	<i>Total</i>
Michigan	\$20	\$24	\$165	\$157	\$15	\$165	\$163	\$163	\$0	\$0	\$873
Cleveland	\$0	\$28	\$42	\$23	\$23	\$422	\$316	\$332	\$0	\$0	\$1,187
Cincinnati	\$0	\$9	\$15	\$11	\$17	\$166	\$177	\$212	\$0	\$0	\$606
Carbondale	\$0	\$0	\$0	\$3	\$8	\$53	\$58	\$55	\$55	\$0	\$232
St. Louis	\$188	\$68	\$4	\$4	\$72	\$54	\$54	\$0	\$0	\$0	\$445
St. Louis-Kansas City	\$0	\$0	\$16	\$21	\$30	\$21	\$322	\$241	\$241	\$0	\$893
Omaha	\$0	\$7	\$12	\$22	\$110	\$179	\$125	\$116	\$66	\$0	\$638
Wisconsin	\$15	\$50	\$148	\$354	\$247	\$70	\$163	\$216	\$188	\$188	\$1,638
Chicago Terminal + Pontiac Shop	\$4	\$2	\$16	\$16	\$22	\$0	\$0	\$0	\$0	\$0	\$60
Rolling Stock	\$0	\$0	\$179	\$179	\$179	\$179	\$179	\$179	\$54	\$0	\$1,128
TOTAL	\$227	\$189	\$597	\$791	\$723	\$1,310	\$1,557	\$1,514	\$604	\$188	\$7,700

Exhibit 8-5
Summary of Capital Costs by Corridor
(Millions of 2002\$)

<i>Corridor</i>	<i>Infra-structure</i>	<i>Rolling Stock</i>	<i>Total</i>
Michigan	\$873	\$234	\$1,106
Cleveland	\$1,187	\$152	\$1,338
Cincinnati	\$606	\$101	\$707
Carbondale	\$232	\$51	\$283
St. Louis	\$445	\$115	\$560
St. Louis-Kansas City	\$893	\$86	\$980
Omaha	\$638	\$167	\$806
Wisconsin	\$1,638	\$222	\$1,860
Chicago Terminal + Pontiac Shop	\$60	-	\$60
TOTAL	\$6,572	\$1,128	\$7,700