

CHAPTER 7

REASONABLE AND FEASIBLE ALTERNATIVES CARRIED FORWARD

This report evaluates and screens the range of route alternatives which could potentially be utilized to provide intercity passenger rail service between Chicago and Omaha in order to identify the reasonable and feasible route alternatives to be carried forward for detailed consideration in the Tier 1 Service Level EIS. As described in Chapter 3, a total of six route alternatives made up the universe of potential route alternatives which were evaluated and screened in this Alternatives Analysis. The six route alternatives include five previously established rail corridors (Route Alternative 1 through Route Alternative 5) and one combination (Route Alternative 4-A). The screening process (described in Chapter 4) for evaluating, and eventually selecting one or more route alternatives for carrying forward for detailed consideration, relied on the following four broad screening criteria:

- Meeting the purpose and need for passenger rail service between Chicago and Omaha
- Environmental concerns
- Technical feasibility
- Economic feasibility

The screening was conducted in two steps. The first step, described in Chapter 5, was a coarse-level screening to identify if any of the route alternatives had major flaws or challenges that render the particular route alternative infeasible. The second step, described in Chapter 6, was a fine-level screening, during which more detailed engineering and cost information, ridership and revenue information, and environmental information were developed and evaluated for each of the route alternatives carried forward from the coarse-level screening.

7.1 RESULTS FROM THE COARSE-LEVEL SCREENING

The coarse-level screening concluded that one of the six route alternatives, Route Alternative 3, was not reasonable or feasible. Route Alternative 3 is route alternative, where a substantial portion of the former rail line is abandoned, the tracks removed and the former rail ROW reclaimed and reused. Route Alternative 3 would require the redevelopment of approximately 225 miles of abandoned railroad ROW with significant landowner, environmental and cost impacts. The remaining five route alternatives were carried forward for more detailed consideration in the fine-level screening.

7.2 RESULTS FROM THE FINE-LEVEL SCREENING

The fine-level screening concluded that of the remaining five alternatives carried forward from the coarse-level screening, four are not reasonable or feasible. Each of the route alternatives are discussed below. Table 7-1 provides a side-by-side comparison of each of the route alternatives.

Table 7-1. Route Alternative Comparison

Criteria	Relative Ranking of Route Alternative					
	Route Alternative 1	Route Alternative 2	Route Alternative 4	Route Alternative 5	Route Alternative 4-A	No-Build Alternative
Purpose and Need: Travel Demand	774,000 total population served	523,940 total population served	1,034,000 total population served	167,000 total population served	1,034,000 total population served	No additional service
Ridership Forecast	505,000 to 715,000	375,000 to 550,000	640,000 to 885,000	255,000 to 370,000	680,000 to 935,000	None
Revenue Forecast	\$15.2 to \$22.2 million	\$14.7 to \$22.0 million	\$22.9 to \$32.2 million	\$11.2 to \$16.6 million	\$24.2 to \$33.9 million	None
Preliminary Running Time	<ul style="list-style-type: none"> • Base 79 + 43 minutes • Base 90 + 43 minutes • Base 110 + 40 minutes 	<ul style="list-style-type: none"> • Base 79 • Base 90 • Base 110 	<ul style="list-style-type: none"> • Base 79 + 17 minutes • Base 90 + 22 minutes • Base 110 + 25 minutes 	<ul style="list-style-type: none"> • Base 79 + 18 minutes • Base 90 + 16 minutes • Base 110 + 13 minutes 	<ul style="list-style-type: none"> • Base 79 + 4 minutes • Base 90 + 8 minutes • Base 110 + 14 minutes 	Not Applicable
Purpose and Need: Competitive and Attractive Travel Modes	<ul style="list-style-type: none"> • 516 miles long • Excessive travel time 	<ul style="list-style-type: none"> • 479 miles long • Competitive travel time 	<ul style="list-style-type: none"> • 490 miles long • Competitive travel time • Lack of connection to Chicago Union Station 	<ul style="list-style-type: none"> • 496 miles long • Competitive travel time 	<ul style="list-style-type: none"> • 474 miles long • Competitive travel time 	No new travel mode
Technical Feasibility: Passenger and Freight Capacity	<ul style="list-style-type: none"> • New Mississippi River Bridge • Freight congestion Dubuque terminal • Partial second main track 	<ul style="list-style-type: none"> • New Mississippi River Bridge • New third main track entire distance 	<ul style="list-style-type: none"> • Freight congestion Des Moines terminal • Partial second main track 	<ul style="list-style-type: none"> • New Mississippi River Bridge • New third main track entire distance 	<ul style="list-style-type: none"> • Freight congestion Des Moines terminal • Partial second and third main track 	No change to existing capacity

Criteria	Relative Ranking of Route Alternative					
	Route Alternative 1	Route Alternative 2	Route Alternative 4	Route Alternative 5	Route Alternative 4-A	No-Build Alternative
Technical/ Economic Feasibility: Alignment	<ul style="list-style-type: none"> • Heavy curvature on approaches to Mississippi River valley • Moderate curvature in Iowa • Heavy earthwork requirements on approaches to Mississippi River valley 	<ul style="list-style-type: none"> • Light curvature • Heavy earthwork requirements to add third main track 	<ul style="list-style-type: none"> • Moderate curvature along Illinois River • Moderate curvature between Des Moines and Atlantic • Moderate earthwork requirements 	<ul style="list-style-type: none"> • Light curvature • Heavy earthwork requirements to add third main track 	<ul style="list-style-type: none"> • Moderate curvature between Des Moines and Atlantic • Moderate earthwork requirements 	<ul style="list-style-type: none"> • No change to existing alignments
Technical/ Economic Feasibility: Structures	<ul style="list-style-type: none"> • New or improved East Dubuque Tunnel • New Mississippi River bridge 	<ul style="list-style-type: none"> • New Mississippi and Des Moines (Kate Shelly) bridges 	<ul style="list-style-type: none"> • Grade separation with UP at Des Moines 	<ul style="list-style-type: none"> • New Mississippi River bridge 	<ul style="list-style-type: none"> • Grade separation with UP at Des Moines 	<ul style="list-style-type: none"> • No changes to structures
Technical/ Economic Feasibility: Grade Crossings	High number of grade crossings, but not technically complicated	Substantial challenges at each grade crossing	High number of grade crossings, but not technically complicated	Substantial challenges at each grade crossing	High number of grade crossings, but not technically complicated	No changes to grade crossings
Economic Feasibility:	Base + \$550 million	Base + \$1,005 million	Base	Base + \$1,230.6 million	Base + \$147.2 million	Not applicable
Environmental Concerns: Environmental Impacts	No unreasonable environmental resource issues identified	No unreasonable environmental resource issues identified	No unreasonable environmental resource issues identified	No unreasonable environmental resource issues identified	No unreasonable environmental resource issues identified	No unreasonable environmental resource issues identified
Environmental Concerns: Right-of-Way	2,200 acres needed (600 urban/1,600 rural)	3,200 acres needed (950 urban/2,250 rural)	2,100 acres needed (800 urban/1,300 rural)	3,000 acres needed (850 urban/2,150 rural)	2,200 acres needed (800 urban/1,400 rural)	None
Meets Purpose and Need	No	No	No	No	Yes	No
Carried forward	No	No	No	No	Yes	Yes ^a

Note: ^a While the No-Build Alternative does not meet purpose and need, it is carried forward to provide a basis of comparison to any route alternative (40 CFR 1502.14; 64 FR 28545).

7.2.1 Route Alternative 1

This route alternative did not meet the purpose and need for the Project because it would not attract the necessary ridership from Omaha and Iowa communities to generate adequate revenue. In addition, because this route alternative is longest and slowest of the routes it would not offer a competitive travel time. In addition, because of its length, Route Alternative 1 would have excessive operations and maintenance costs. Route Alternative 1 also did not meet the technical/economic criteria because it would require a major new structure over the Mississippi River and its costs were excessive. Route Alternative 1 was determined to be neither reasonable nor feasible.

7.2.2 Route Alternative 2

Despite the fact that it has the shortest travel time, this route alternative did not meet the purpose and need for the Project because it would not attract adequate ridership or generate the necessary revenue to make the service viable. Route Alternative 2 also did not meet the technical/economic criteria; it would require extensive new ROW and a major new structure over the Mississippi River. Route Alternative 2 did not meet the economic criteria because of the excessive capital cost requirements. Route Alternative 2 would cost approximately \$1 billion more than the base case, without providing any additional service or ridership benefits. Route Alternative 2 was determined to be neither reasonable nor feasible.

7.2.3 Route Alternative 3

Route Alternative 3 was eliminated during the coarse-level screening.

7.2.4 Route Alternative 4

Route Alternative 4 does not meet the purpose and need for the project because the Chicago termini of Route Alternative 4 is at LaSalle Street Station instead of Chicago Union Station and provides substantially less modal interconnectivity at Chicago. It would not provide for the connection to the MWRRI high-speed network which is connected through the Chicago hub at Chicago Union Station. This connection would be costly, have impacts on urban areas that the connection would be constructed through, and is not practical.

Route Alternative 4 was the least costly (not accounting for a connection from La Salle Street Station to Chicago Union Station) and would attract adequate ridership and would generate adequate revenue. However, based on the lack of a connection from La Salle Street Station to Union Station, and the associated cost and impacts of constructing a connection, Route Alternative 4 was determined to be neither reasonable nor feasible.

7.2.5 Route Alternative 5

This route alternative did not meet the purpose and need for the Project because it would not attract adequate ridership or generate the necessary revenue to make the service viable. Route Alternative 5 also did not meet the technical/economic criteria; it would require extensive new ROW and a major new structure over the Mississippi River. Route Alternative 5 did not meet the economic criteria because of the excessive capital cost requirements. Route Alternative 5 would cost approximately \$1.2 billion more than the base case, without providing any additional service or ridership benefits. Route Alternative 5 was determined to be neither reasonable nor feasible.

7.2.6 Route Alternative 4-A

This route alternative fully meets the purpose and need for the Project. In consideration of meeting the purpose and need and other criteria, Route Alternative 4-A was determined to be reasonable and feasible. This route alternative is fully compatible with the route for Chicago to Iowa City service, which received a FRA service development grant award and is being actively pursued and developed by Illinois DOT. This route alternative will be carried forward for evaluation in the Tier 1 Service Level EIS.

7.2.7 No-Build Alternative

The No-Build Alternative did not meet purpose and need for the Project because it would not provide any additional service or a new travel mode. There would be no change to existing capacity, alignment, structures, or grade crossings. However, to meet NEPA requirements for evaluating No Action and to serve as a baseline for comparing impacts of a route alternative, this alternative will be carried forward for evaluation in the Tier 1 Service Level EIS.

7.3 REASONABLE AND FEASIBLE ALTERNATIVES

Route Alternative 4-A will be carried forward for analysis in the Tier 1 Service Level EIS as the primary route because it:

- Meets project purpose and need
- Has low construction complexity and low construction costs
- Has modest grade crossing complexity
- Does not require a new bridge over the Mississippi River
- Is the shortest route alternative
- Has close to the shortest travel time
- Serves a large population
- Has a direct connection to Union Station
- Has no unreasonable environmental resource issues

The No-Build Alternative will also be carried forward for analysis in the Tier 1 Service Level EIS because evaluation of No Action is required by NEPA, and the alternative serves as a basis of comparison for likely impacts of constructing and operating the Chicago to Omaha Regional Rail Passenger System along Route Alternative 4-A.

Route Alternative 4-A is fully compatible with the selected route for Chicago to Iowa City intercity passenger rail service, which received an FRA service development grant award and is being actively pursued and developed by Illinois DOT. The Tier 1 Service Level EIS will evaluate various implementation alternatives of Route Alternative 4-A to incorporate the decisions made on by FRA and Illinois DOT concerning infrastructure improvements on the Chicago to Iowa City corridor. The Tier 1 Service Level EIS will also evaluate the reasonable alignment options in the Des Moines, Iowa vicinity to accommodate the freight traffic interference with the at-grade UP Railroad crossing while still providing the passenger service benefits. In addition, the Tier 1 Service Level EIS will evaluate the reasonable alternatives for connecting the new passenger rail service between Council Bluffs, Iowa and Omaha, Nebraska.

The Tier 1 Service Level EIS will also evaluate the various service levels and station locations (Table 7-2). With respect to service levels, the Tier 1 Service Level EIS will evaluate three possible speed regimes (79 mph, 90 mph, and 110 mph) and several different reasonable service frequencies for the passenger rail service. In addition, reasonable alternatives for cities to be served will also be evaluated in the Tier 1 Service Level EIS. The Tier 1 Service Level EIS analysis will provide a basis for selecting the service level (operating speed, station stops, and frequency) that will best meet the purpose and need for the new passenger rail service.

Table 7-2. Implementation Alternatives to be Evaluated in the Tier 1 Service Level EIS

Alternative Type	Parameter	Variation
Service Level	Speed	<ul style="list-style-type: none"> • 79 mph • 90 mph • 110 mph
	Frequency and Schedule	<ul style="list-style-type: none"> • 5 round trips /day • Variable frequency (6-7 round trips per day) • Intermediate station starts/stops • Express service options
	Stations and Communities Served	<ul style="list-style-type: none"> • Limited intermediate stops • Expanded intermediate stops
Configuration	Des Moines	<ul style="list-style-type: none"> • At-grade crossing of UP • Grade separation of UP • New alignment
	Council Bluffs/Omaha	<ul style="list-style-type: none"> • Missouri River Crossing Options – Council Bluffs • Missouri River Crossing Options - Blair