CHAPTER 5
COARSE-LEVEL SCREENING

Each route alternative and the No-Build Alternative were evaluated against the coarse-level screening criteria defined in Section 4.2.1, and the results of this evaluation are presented below. A summary of the screening results is provided in Table 5-1, located at the end of this chapter. The coarse-level screening effort addressed the route alternatives from west of Chicago to Council Bluffs. The respective approaches into Chicago were addressed during fine-level screening. In addition, because all route alternatives converge to a common point at Council Bluffs, the final section of the Corridor between Council Bluffs and Omaha was not included as a basis for comparison.

5.1 ROUTE ALTERNATIVE 1

Route Alternative 1 is the northernmost of the route alternatives and is owned by CN. This route alternative is 516 miles long between Chicago Union Station and Council Bluffs.

5.1.1 Purpose and Need: Travel Demand

Route Alternative 1 would serve the intermediate major communities of Elgin and Rockford, Illinois, and Dubuque, Waterloo, and Fort Dodge, Iowa. The total population within 20 miles of these intermediate stops is approximately 774,000. As described in Section 4.2.1.1, this excludes the population of Elgin because it is considered to be in the Chicago metropolitan area, and the population of the Chicago and Omaha metropolitan areas was excluded from the analysis. Figure 5-1, located at the end of this chapter, shows the population at potential stations for Route Alternative 1.

5.1.2 Purpose and Need: Competitive and Attractive Travel Modes

Route Alternative 1 is longer than Route Alternatives 2, 3, 4, 5, and 4-A and thus would have a longer travel time between Chicago and Omaha based on length alone. Route Alternative 1 has moderate to severe curvature that may degrade travel time as passenger train speeds increase.

5.1.3 Technical Feasibility

Route Alternative 1 is a light-density freight train route outside of the Chicago core, except where it is joint with BNSF's high-density main line between Chicago and the Twin Cities along the east bank of the Mississippi River near East Dubuque, Illinois. Beyond the Chicago core, and not including the joint BNSF trackage, freight train traffic averages less than 10 trains per day and is dominated by manifest freight supporting the agricultural, manufacturing, and construction industries of Illinois, Iowa, and Nebraska. Track structure and main track capacity is commensurate with the freight train density and type. Most of Route Alternative 1 is not equipped with wayside signals. This route alternative generally follows its original alignment as constructed and was not historically upgraded for higher speeds or traffic density.

5.1.4 Economic Feasibility

Route Alternative 1 is currently suitable for only low speeds. Even where there is adequate capacity, substantial upgrades to the existing infrastructure, including track and signaling systems, would be required to reach 90 mph. In the area between Portage and Dubuque, particularly in the area of shared track with BNSF, expensive capacity improvements would be required, including substantial fill along the Mississippi River. The addition of fill would lead to substantial environmental impacts, including floodplain and wetland impacts, and would occur within a Wildlife and Fish Refuge, as noted in Section 5.1.6.

5.1.5 Environmental Concerns: Major Challenges

There appear to be no major environmental challenges (such as extensive ROW requirements or the need for additional major structures) for Route Alternative 1.

5.1.6 Environmental Concerns: Sensitive Areas

There are many environmentally sensitive areas in the vicinity of Portage, Illinois, and Dubuque and Wood, Iowa. Most are wetlands and rivers.

Route Alternative 1 passes through six forest preserves (FP) and is adjacent to two FPs in Illinois, passes through the Upper Mississippi River National Wildlife and Fish Refuge, and is adjacent to a state preserve and a wildlife management area (WMA) in Iowa. This route alternative passes through one city park and is adjacent to eleven city parks in the Chicago area and three city parks in Iowa. In addition, Route Alternative 1 passes through four large areas of numerous wetlands in Illinois, including a 17-mile stretch through a river valley with numerous wetlands and sharp curves and a 12-mile stretch along the Mississippi River with numerous wetlands on both sides of the existing rail line. These would likely preclude straightening of curves or easy addition of capacity, particularly along the Mississippi River. This route alternative also passes through five large areas of wetlands in Iowa. Route Alternative 1 passes through or adjacent to large industrial areas in the Chicago area, adjacent to a petrochemical refinery with several large aboveground storage tanks (ASTs) adjacent to the Mississippi River, and adjacent to two industrial areas in Iowa. Finally, Route Alternative 1 is adjacent to a historic area in Dubuque, Iowa.

5.1.7 Environmental Concerns: Right-of-Way

Additional ROW would likely be required where Route Alternative 1 shares track with BNSF along the Mississippi River. The existing ROW is relatively narrow between Dubuque and Council Bluffs, and though the line has comparatively infrequent freight service, several long passing tracks (and additional ROW) would be required, much of it in farmland.

5.2 ROUTE ALTERNATIVE 2

Route Alternative 2 is south of Route Alternative 1. Route Alternative 2 is owned by Union Pacific Railroad (UP). This route alternative is 479 miles long between Chicago Union Station and Council Bluffs.

5.2.1 Purpose and Need: Travel Demand

Route Alternative 2 would serve the intermediate major communities of DeKalb, Illinois; and Clinton, Cedar Rapids, and Ames, Iowa. The total population within 20 miles of these intermediate stops is approximately 523,940. As described in Section 4.2.1.1, this excludes the population of DeKalb because it is considered to be in the Chicago metropolitan area, and the population of the Chicago and Omaha metropolitan areas was excluded from the analysis. Figure 5-2, located at the end of this chapter, shows the population at potential stations for Route Alternative 2.

5.2.2 Purpose and Need: Competitive and Attractive Travel Modes

Route Alternative 2 is similar in length to Route Alternatives 3, 4, 5, and 4-A and thus would have a similar travel time between Chicago and Omaha based on length alone. Route Alternative 2 has moderate curvature that may degrade travel time as passenger train speeds increase.

5.2.3 Technical Feasibility

Route Alternative 2 is a high-density freight train route from end to end. It hosts high-density Metra commuter train traffic between Chicago and Elburn, Illinois. There are substantial railroad capacity constraints over the entire route alternative, including congestion at the Mississippi River and Missouri River bridges. Current train traffic averages 50 to 80 freight trains per day, and 56 weekday commuter trains between Chicago and station stops as far west as Elburn. Freight trains operate at average maximum speeds of approximately 60 mph, but trains with low horsepower per ton ratios decline to substantially slower speeds on ascending grades. Track structure and wayside signaling are commensurate with the capacity and speed of this route alternative. Route Alternative 2 is equipped with wayside signaling throughout. Freight train traffic in the Chicago area is carefully coordinated with Metra commuter traffic. Freight trains are effectively restricted from entering Chicago during the morning and evening commuter rush hours. As a result, freight trains stage on main tracks west of Chicago for movement during off-peak hours.

To accommodate passenger trains without degrading freight train capacity, substantial infrastructure may be required to enable overtakes of freight trains and meet/pass events for the Chicago-Omaha passenger trains, to intermesh with Metra commuter traffic, and to provide adequate windows for track maintenance. Capacity for overtake events may require an additional main track. Obstacles to constructing an additional main track include lack of unused, existing ROW, which based on ground features (for example, fence lines, buildings, and field boundaries) is wide enough for the existing two main tracks but would, in most places, not accommodate a third main track without ROW acquisition along nearly all of this route alternative. Large bridges across the Mississippi, Des Moines, and Missouri rivers are double-track. Additional main track capacity may require replacement or additional bridges. The Mississippi River bridge is particularly problematic as it is a movable bridge that opens an average of eight times daily for river traffic, creating substantial rail congestion due to heavy freight train traffic on this route alternative.

5.2.4 Economic Feasibility

Because of the high infrastructure requirements, upgrading Route Alternative 2 for 90 mph passenger trains would be extremely expensive. In addition, adding main track capacity for the major river crossings would be particularly expensive.

5.2.5 Environmental Concerns: Major Challenges

The existing level of train traffic (see Section 5.2.6) along Route Alternative 2 dictates that substantial additional capacity would be required to provide reliable passenger train service. This may require substantial additional track construction in the most congested areas, including a new bridge across the Mississippi River. The accompanying construction efforts are likely to have major environmental impacts at multiple locations along this route alternative because substantial property acquisition would be required.

5.2.6 Environmental Concerns: Sensitive Areas

Track in the area around Sterling, Illinois, is on a causeway or along the bank of the Rock River. Adding a track here would require substantial fill in the river.

The area around Cedar Rapids, Iowa, is constrained, and an additional track would require property acquisitions in this urban area as well as impacts on public parks along the Cedar River.

Route Alternative 2 passes through one FP and is adjacent to seven FPs (two of these FPs are adjacent to each other on the opposite sides of the track) in Illinois. This route alternative is adjacent to a state park and a natural area in Illinois as well as two WMAs and a natural area in Iowa. This route alternative also passes through the Upper Mississippi River National Wildlife and Fish Refuge in Illinois, and a WMA in Iowa. In addition, Route Alternative 1 passes through a city park and is adjacent to ten city parks in Illinois and passes through a city park and is adjacent to one city park in Iowa. This route alternative passes through five areas of wetlands in Iowa. Finally, Route Alternative 2 passes adjacent to heavy industrial areas in the Chicago area, in northwest Illinois, and in Iowa.

5.2.7 Environmental Concerns: Right-of-Way

Additional ROW would likely be required over most of Route Alternative 2. In addition to being very expensive, this would require displacement of many landowners, particularly where the route alternative passes through towns, and would affect many agricultural resources.

5.3 ROUTE ALTERNATIVE 3

Route Alternative 3 was severed in the 1980s, when the Chicago, Milwaukee, St. Paul, and Pacific Railroad completed its final bankruptcy. Today, CP operates the east end of the railroad between Chicago and Green Island, Iowa (Regional Transportation owns the route from Chicago to Elgin, and CP from Elgin to Green Island), while BNSF owns and operates the extreme west end of the route from Bayard, Iowa, to Council Bluffs. Between Green Island and Bayard, the railroad has been abandoned, and the ROW in most areas has been converted to farmland, or to urban uses where it passes through towns. This route alternative is 490 miles long between Chicago Union Station and Council Bluffs.

5.3.1 Purpose and Need: Travel Demand

Route Alternative 3 would serve the intermediate major communities of Savanna, Illinois, and Cedar Rapids and Slater (near Des Moines), Iowa. The total population within 20 miles of these intermediate stops is approximately 674,000. As described in Section 4.2.1.1, the population of the Chicago and Omaha metropolitan areas was excluded from the analysis. Figure 5-3, located at the end of this chapter, shows the population at potential stations for Route Alternative 3.

5.3.2 Purpose and Need: Competitive and Attractive Travel Modes

Route Alternative 3 is similar in length to Route Alternatives 2, 4, 5, and 4-A and thus would have a similar travel time between Chicago and Omaha based on length alone. Route Alternative 4-A has moderate curvature that may degrade travel time as passenger train speeds increase. If constructed as an exclusive passenger-train railroad in the abandoned portion in Iowa, Route Alternative 4-A may have opportunities for improved travel times.

5.3.3 Technical Feasibility

Between Chicago and Savanna, Illinois/Green Island, Iowa, CP averages approximately 8 freight trains per day. Metra operates 58 commuter trains and station stops as far west as Big Timber Road near Elgin, Illinois. BNSF operates approximately 2 freight trains per day between Bayard, Iowa, and Council Bluffs. Freight trains operate at average maximum speeds of 40 mph on the CP portion and 20 mph on the BNSF portion. Wayside signaling is present on the CP portion but discontinued on the BNSF portion. The alignment was extensively upgraded by the Milwaukee Road in the 1900 to 1930 time period to enable high speeds and capacity (much of the line was double-track), but the track structure is now commensurate with the low speeds and density of the remaining route.

5.3.4 Economic Feasibility

Because so much of the railroad must be constructed essentially from scratch, costs would be extremely high. Not only would track construction be required, but also approximately 225 miles of ROW acquisition costs would be required. Because this portion of the corridor would likely be dedicated to passenger trains, the entire maintenance burden for that section of the corridor would be borne by the passenger trains.

5.3.5 Environmental Concerns: Major Challenges

Track has been removed from an abandoned section of Route Alternative 3 from Green Island to Bayard, Iowa (approximately 225 miles in total length), which presents a major environmental obstacle and is considered a major challenge. Buildings and streets have been developed over portions of the former ROW in 16 communities; consequently, extensive relocations affecting community cohesiveness would be required. Former bridges across the Iowa River, Cedar River, and Des Moines River have been removed. Numerous crossings across highways and local roads would need to be reconstructed and signalized. An early railroad bridge over the Des Moines River (replaced by a high bridge in 1973) has been rebuilt as a recreational trail crossing; this bridge would need to be reacquired and rebuilt, or a bridge on a new alignment would need to be built. Most of the former track between Green Island and Sprague ville, Iowa, a distance of approximately 10 miles, was constructed through

marshy areas; reconstruction of track through this area would affect wetlands, streams, and riverine habitat. Two sections of the former rail line have been converted into recreational trails. Extensive areas of the former railroad grade are being farmed. Reconstruction of the abandoned rail line would have significant effects on communities, infrastructure, wetlands, waters of the U.S., and wildlife habitat. The hurdle presented by the need for approximately 225 miles of new corridor, including requisite new utility relocations, grade separations, and property acquisitions is so high as to be effectively insurmountable.

5.3.6 Environmental Concerns: Sensitive Areas

Route Alternative 3 passes through one FP and is adjacent to three FPs and one state fish and wildlife area in Illinois, passes through the Upper Mississippi River National Wildlife and Fish Refuge, and passes through one WMA in Iowa. This route alternative passes through one city park and is adjacent to four city parks in the Chicago area. In addition, this route alternative passes through an area of wetlands in Iowa (the abandoned segment passes through several extensive areas of wetlands). Finally, Route Alternative 3 passes through heavy industrial areas in the Chicago area and an industrial area in Iowa.

Among the environmentally sensitive areas is the portion of Route Alternative 3 from Savanna, Illinois across the Mississippi River to Sabula, Iowa, which is on a combination of causeway, structure, and the bank of the Mississippi River and has an alignment suitable for only low speeds. Improvements in the alignment would require substantial fill in the Mississippi River or in adjacent wetlands.

Other sensitive areas have not yet been defined. By definition, constructing a greenfield railroad presents a major environmental challenge.

5.3.7 Environmental Concerns: Right-of-Way

Approximately 225 miles of ROW would be required along the abandoned portion of Route Alternative 3. This ROW would have to be acquired as a contiguous strip at least 50 feet wide and in a fashion that meets the requirements of railroad geometry. Much of the former ROW has been redeveloped into commercial and industrial businesses. ROW acquisition would present significant impacts to adjacent property owners.

5.4 ROUTE ALTERNATIVE 4

Route Alternative 4 is currently owned by three railroads. The Regional Transportation Authority (Illinois), operated by Metra, owns the route from La Salle Street Station (the line's terminus) to Joliet, Illinois. CSX Transportation owns the route from Joliet to Bureau, Illinois, but leases Utica to Bureau, Illinois to Iowa Interstate Railroad (IAIS). IAIS owns the route from Bureau, Illinois, to Council Bluffs. IAIS has trackage rights over CSX and Metra to Blue Island, Illinois. Originally, the entirety of this route was owned by the Chicago, Rock Island, and Pacific Railroad (the Rock Island). Upon the Rock Island's bankruptcy in 1980, the route was sold, in pieces, to Metra and predecessor companies of CSX and IAIS. This route alternative is 490 miles long between Chicago Union Station and Council Bluffs.

5.4.1 Purpose and Need: Travel Demand

Route Alternative 4 would serve the intermediate major communities of Joliet and Moline (one of the Quad Cities), Illinois; and Iowa City and Des Moines, Iowa. The total population within 20 miles of these intermediate stops is approximately 1,034,000. As described in Section 4.2.1.1, this excludes the population of Joliet because it is considered to be in the Chicago metropolitan area, and the population of the Chicago and Omaha metropolitan areas was excluded from the analysis. Figure 5-4, located at the end of this chapter, shows the population at potential stations for Route Alternative 4.

5.4.2 Purpose and Need: Competitive and Attractive Travel Modes

Route Alternative 4 is similar in length to Route Alternatives 2, 3, 5, and 4-A and thus would have a similar travel time between Chicago and Omaha based on length alone. Route Alternative 4-A has moderate curvature that may degrade travel time as passenger train speeds increase.

5.4.3 Technical Feasibility

Route Alternative 4 is a high-density commuter route in Chicago, a moderate-density freight route east of Homestead Junction, Iowa (approximately 20 miles west of Iowa City), and a low-density freight route between Homestead Junction and Council Bluffs. Current train traffic averages 10 to 14 trains per day between Chicago and Bureau, Illinois; 8 to 12 trains per day between Bureau and Des Moines; and 4 to 8 trains per day between Des Moines and Council Bluffs. Metra operates 46 weekday commuter trains between Chicago and station stops as far west as Joliet, Illinois. Freight train traffic is coordinated with the Chicago Metra commuter operations to operate off-peak and stages on main tracks to await off-peak time slots.

Route Alternative 4 was extensively reconstructed in some portions to improve capacity and speed from Chicago westward after 1900, but the modernization project was not completed by the Rock Island and ceased in the early 1950s. Double-track ended at West Liberty, Iowa, 222 miles west of Chicago. A major line relocation in the 1950s reduced curvature and gradient on 50 miles of track between Atlantic, Iowa, and Council Bluffs. The rail line was equipped with wayside signaling, but outside of the Chicago commuter territory, wayside signaling has been discontinued. Track structure and track speeds are commensurate with the moderate- to low-density freight train traffic; most of this route alternative is operated at a maximum speed of 40 mph.

To accommodate passenger trains at 90 mph, additional trackage may have to be constructed to enable passenger trains to meet and overtake freight trains and each other. Only one of the two original tracks remains from Joliet to West Liberty, but in most areas, the grade for the second track is still in existence. This would help to reduce the footprint associated with construction of a new second track. In addition, some of the existing track is “offset” in the ROW, meaning that one side of the ROW has more room than the other for a second track, which would help to minimize ROW acquisition requirements. The original second track was likely on 12.5 foot track centers, meaning that any new construction would still require widening of the existing embankment in order to meet modern standards.

The bridge over the Mississippi River is currently a double-track swing-span-type movable bridge structure, though only one track is used at any one time. While upgrades would be required, this structure has capacity for additional traffic, and a new bridge over the Mississippi River would likely be unnecessary. While the bridge opens an average of eight times daily for river traffic, the freight train volume over the bridge is not so high that this creates serious railroad congestion (as would be experienced at the similar bridges for Route Alternatives 2 and 5) to inhibit reliable schedules for passenger trains.

Route Alternative 4 cuts through the center of Des Moines and crosses UP's "Spine Line" between Minneapolis, Minnesota, and Kansas City, Missouri, at grade, as well as UP's yard leads and industrial switching leads for Des Moines. Some track reconfiguration and/or a grade separation may be required in this area to provide a reliable passenger operation and to avoid loss of freight capacity.

West of Des Moines, Route Alternative 4 was historically single track. While for planning purposes it may be necessary to assume that a second track would be necessary for the entire route alternative, it is possible that capacity for passenger trains could be established with several sections of second main track and sidings, rather than adding a second main track for the entire distance. West of Des Moines, ROW may need to be acquired to accommodate a second main track or sidings.

Route Alternative 4 is the only route alternative that does not directly enter Chicago Union Station. Construction of a connection between Route Alternative 4 and routes entering Chicago Union Station are possible, but would require acquisition of urban ROW, which potentially is disruptive and costly. Alternatively, Route Alternative 4 would not serve Chicago Union Station, and ridership and passenger convenience could be negatively affected through loss of connectivity with other high-speed passenger rail routes in the MWRRI system.

5.4.4 Economic Feasibility

Because eastern portions of Route Alternative 4 historically had a second main track, costs for re-establishing that second track would be reduced. Notably, the existing bridge over the Mississippi River still has two tracks, greatly reducing costs compared to other route alternatives (permitting and constructing a new bridge over the Mississippi River would likely cost in excess of $200 million).

5.4.5 Environmental Concerns: Major Challenges

Route Alternative 4 appears to have no major environmental challenges. Portions of this route alternative were studied in 2009 and 2010 as part of the Chicago to Iowa City high speed rail project. Though the Chicago to Iowa City project contemplated two round trips rather than five, and 79 mph maximum speeds (with commensurately lower infrastructure requirements), the study indicated that environmental impacts would be minimal.

5.4.6 Environmental Concerns: Sensitive Areas

Route Alternative 4 passes through one FP and is adjacent to four FPs, passes through a state park, and is adjacent to five city parks in Illinois. This route alternative passes through two adjacent city parks and is adjacent to five city parks in Iowa. In addition, this route

alternative passes through heavy industrial areas in the Chicago area, two in north central and western Illinois, and one in Iowa. Finally, Route Alternative 4 passes through an area between quarries and the Illinois River in Illinois.

Among the environmentally sensitive areas is the portion of the route alternative extending from Ottawa to Bureau, Illinois, which is located on structures along the bank of the Illinois River and is surrounded by wetlands and crosses the historic Hennepin Canal.

Other possible locations for wetland impacts are in the Des Moines area and just west of Des Moines near Van Meter, Iowa.

5.4.7 Environmental Concerns: Right-of-Way

The embankment east of West Liberty, Iowa, was, at one time, widened to support two main tracks, albeit on track centers of approximately 14 feet, which would likely reduce the amount of ROW acquisition required.

Additional ROW may be required, particularly west of West Liberty. However, if the rail line were located in a manner that would allow for a future second track by offsetting the track constructed to one side of the ROW, property acquisitions would also be minimized. Additional research would be required to confirm this.

5.5 ROUTE ALTERNATIVE 5

Route Alternative 5 is now owned entirely by BNSF. It is the southernmost of the route alternatives under consideration, extending from Chicago southward to Galesburg, Illinois, then west to Pacific Junction, Iowa, and then due north to Council Bluffs. This route alternative is 496 miles long between Chicago Union Station and Council Bluffs. The route is used by Amtrak's *California Zephyr* between Chicago and Pacific Junction, Iowa, and then a BNSF line on the west bank of the Missouri River near Plattsmouth, Nebraska, to access Omaha, bypassing Council Bluffs.

5.5.1 Purpose and Need: Travel Demand

Route Alternative 5 would serve the intermediate major communities of Naperville and Galesburg, Illinois, and Burlington and Osceola, Iowa. The total population within 20 miles of these intermediate stops is approximately 167,000. As described in Section 4.2.1.1, this excludes the population of Naperville because it is considered to be in the Chicago metropolitan area, and the population of the Chicago and Omaha metropolitan areas was excluded from the analysis. Figure 5-5, located at the end of this chapter, shows the population at potential stations for Route Alternative 5.

5.5.2 Purpose and Need: Competitive and Attractive Travel Modes

Route Alternative 5 is similar in length to Route Alternatives 2, 3, 4, and 4-A and thus would have a similar travel time between Chicago and Omaha based on length alone. Route Alternative 5 has moderate curvature that may degrade travel time as passenger train speeds increase.

5.5.3 Technical Feasibility

Route Alternative 5 is a high-density freight train route from Chicago to Pacific Junction, Iowa, and is a low-density freight train route on the east bank of the Missouri River north to Council Bluffs. Route Alternative 5 hosts high-density Metra commuter train traffic between Chicago and Aurora, Illinois, as well as four Amtrak long-distance and four Amtrak regional trains daily between Chicago and Galesburg, Illinois. There are substantial railroad capacity constraints over this entire route alternative, including congestion at the Missouri River and Mississippi River bridges. Metra is now studying adding service from Aurora to Oswego, Illinois, with the exact number of trains unknown at this time. Current train traffic averages 40 to 50 freight trains per day, and 64 weekday commuter trains between Chicago and station stops as far west as Aurora. Freight trains operate at average maximum speeds of approximately 60 mph, but trains with low horsepower/ton ratios decline to substantially slower speeds on ascending grades. Track structure and wayside signaling are commensurate with the capacity and speed of the route alternative. This route alternative is equipped with wayside signaling throughout. Freight train traffic in the Chicago area is carefully coordinated with Metra commuter traffic. Freight trains are effectively restricted from entering Chicago during the morning and evening commuter rush hours. As a result, freight trains stage on main tracks west of Chicago for movement during off-peak hours.

To accommodate passenger trains without degrading freight train capacity, substantial infrastructure may be required to enable overtakes of freight trains and meet/pass events for the Chicago-Omaha passenger trains, to intermesh with Metra commuter traffic, and to provide adequate windows for track maintenance. Capacity for overtake events may require an additional main track. Obstacles to constructing an additional main track include lack of unused, existing ROW, which based on ground features (for example, fence lines, buildings, and field boundaries) is wide enough for the existing two main tracks, but would, in most places, not accommodate a third main track without ROW acquisition along nearly all of the route alternative. Large bridges across the Mississippi and Missouri rivers are double-track. Additional main track capacity may require replacement or additional bridges. The Mississippi River bridge is particularly problematic as it is a movable bridge that opens an average of eight times daily for river traffic, creating substantial rail congestion due to heavy freight train traffic on this route alternative.

5.5.4 Economic Feasibility

Because Route Alternative 5 is at capacity, substantial additional capacity construction would be required. This would require adding an additional main track for much of the distance across Illinois and Iowa.

5.5.5 Environmental Concerns: Major Challenges

Route Alternative 5 appears to have few major environmental challenges. Additional capacity would be required across the Mississippi River at Burlington, Iowa, which would require a major permitting effort.

5.5.6 Environmental Concerns: Sensitive Areas

Route Alternative 5 passes through two FPs and is adjacent to two FPs in Illinois, passes through one state forest and WMA in Iowa, and is adjacent to two county parks and a

wildlife area in Iowa. This route alternative passes through two city parks and is adjacent to 15 city parks in Illinois. In addition to the areas near the Mississippi and Missouri rivers, this route alternative passes through an area of wetlands in Illinois and two areas of wetlands in Iowa. Finally, Route Alternative 5 passes through heavy industrial areas in the Chicago area, is adjacent to the Iowa Army Ammunition Plant near Burlington, Iowa, and adjacent to an industrial area in Council Bluffs.

The major environmental hurdles are at the Mississippi River bridge and near Ottumwa, Iowa, where Route Alternative 5 is bounded by wetlands and recreational areas.

5.5.7 Environmental Concerns: Right-of-Way

The existing ROW is 100 feet wide in most areas (wide enough for two tracks, but not wide enough for three tracks) but widens to 120 or 150 feet in many areas. However, these areas of wide ROW tend to be short sections, linked by stretches of 100-foot-wide ROW.

5.6 ROUTE ALTERNATIVE 4-A

Route Alternative 4-A is composed of Route Alternative 5 between Chicago and Wyanet, Illinois, and Route Alternative 4 between Wyanet and Council Bluffs. This route alternative is 474 miles long between Chicago Union Station and Council Bluffs.

5.6.1 Purpose and Need: Travel Demand

Route Alternative 4-A would serve the intermediate major communities of Naperville and Moline, Illinois (one of the Quad Cities), and Iowa City and Des Moines, Iowa, which are the same communities served by Route Alternative 4 with the exception of Naperville, which is served by Route Alternative 5. The total population within 20 miles of these intermediate stops is approximately 1,034,000, the same population as Route Alternative 4. As described in Section 4.2.1.1, this excludes the population of Naperville because it is considered to be in the Chicago metropolitan area, and the population of the Chicago and Omaha metropolitan areas was excluded from the analysis. Figure 5-6, located at the end of this chapter, shows the population at potential stations for Route Alternative 4-A.

5.6.2 Purpose and Need: Competitive and Attractive Travel Modes

Route Alternative 4-A is similar in length to Route Alternatives 2, 3, 4, and 5 and thus would have a similar travel time between Chicago and Omaha based on length alone. Route Alternative 4-A has moderate curvature that may degrade travel time as passenger train speeds increase.

5.6.3 Technical Feasibility

Route Alternative 4-A employs Route Alternative 5 between Chicago and Wyanet, Illinois, and Route Alternative 4 between Wyanet and Council Bluffs; therefore, the technical hurdles are those also found on the respective portions of Route Alternatives 5 and 4 (see Section 5.5.6 and 5.4.6, respectively). The only unique new route component would be found at Wyanet, where a connection would be required between the BNSF and IAIS rail lines in one of the quadrants formed by the intersection of the two railroads. A high-speed connection capable of operation at 60 mph or greater may necessitate some wetland or historic resource impacts. This connection point is rural and abuts agricultural lands.

The key difference between Route Alternative 4-A and Route Alternatives 4 and 5 individually are:

1. Shorter distance than Route Alternatives 4 and 5
2. Direct entrance to Chicago Union Station (not obtained in Route Alternative 4)
3. Potentially less infrastructure requirements between Chicago and Wyanet, Illinois
4. New route component near Wyanet, Illinois to connect BNSF and IAIS
5. Higher population served than Route Alternative 5

5.6.4 Economic Feasibility

The comparatively short connection between the BNSF and IAIS rail lines would pose no unusual cost challenge. The infrastructure differences between Route Alternatives 4 and 5 between Chicago and Wyanet, Illinois, are complex and are not considered in this coarse-level screening.

5.6.5 Environmental Concerns: Major Challenges

Route Alternative 4-A appears to have no major environmental challenges. The eastern portion of this route alternative was studied in 2009 and 2010 as part of the Chicago to Iowa City high speed rail project. Though the Chicago to Iowa City project contemplated two round trips rather than five, and 79 mph maximum speeds (with commensurately lower infrastructure requirements), the study indicated that environmental impacts would be minimal.

5.6.6 Environmental Concerns: Sensitive Areas

Route Alternative 4-A passes through two FPs and is adjacent to two FPs in Illinois. This route alternative passes through two city parks, and is adjacent to 15 city parks in Illinois, and passes through two adjacent city parks and is adjacent to five city parks in Iowa. In addition, this route alternative passes through heavy industrial areas in the Chicago area, two in northern Illinois, and one in Iowa.

5.6.7 Environmental Concerns: Right-of-Way

The ROW for Route Alternative 4-A is constrained in the Chicago area and presents challenges to expanding capacity. West of Aurora, Illinois, however, there may be adequate space to add an additional track with limited land acquisition.

The ROW for Route Alternative 4-A east of Iowa City was at one time wide enough for two tracks, which should reduce the amount of ROW acquisition required.

West of Iowa City, additional ROW may be required. However, if the rail line were located in a manner that would allow for a future second track (by offsetting the track constructed to one side of the ROW), property acquisitions would also be minimized. Additional research would be required to confirm this.

5.7 NO-BUILD ALTERNATIVE

The No-Build Alternative would result in the continued extensive use of automobiles, as well as airplane and bus transportation, along the Corridor. Additionally, Amtrak's *California Zephyr* would continue along the Corridor, and other passenger rail projects could develop service along sections of the Corridor.

5.7.1 Purpose and Need: Travel Demand

The No-Build Alternative would not meet travel demand for passenger rail service along the Corridor because no additional transportation service would be provided.

5.7.2 Purpose and Need: Competitive and Attractive Travel Modes

The No-Build Alternative would not meet the need for competitive and attractive travel modes between Chicago and Omaha because no new mode would be provided. The Project would not exist and would not provide a competitive option among existing travel modes.

5.7.3 Technical Feasibility

The No-Build Alternative cannot be evaluated for technical feasibility because the Project would not be constructed. Other passenger rail sections of the Corridor would be evaluated for technical feasibility on their own merits as independent projects.

5.7.4 Economic Feasibility

The No-Build Alternative cannot be evaluated for economic feasibility because the Project would not be constructed. However, under the No-Build Alternative, other passenger rail sections of the Corridor could be independently determined to be economically feasible.

5.7.5 Environmental Concerns: Major Challenges

The Project would not be constructed under the No-Build Alternative and would not present major environmental challenges. However, the current rail routes between Chicago and Omaha would continue to be used, resulting in continued minor environmental impacts such as air emissions, erosion and sedimentation from railroad grades to adjacent waterbodies and wetlands, and noise.

5.7.6 Environmental Concerns: Sensitive Areas

The Project would not be constructed under the No-Build Alternative and would not impact sensitive areas. However, the current rail routes between Chicago and Omaha would continue to be used, resulting in continued minor environmental impacts such as air emissions, erosion and sedimentation from railroad grades to adjacent waterbodies and wetlands, and noise near sensitive areas. Other travel modes would continue to be used and would likely be more congested in the future as travel demand increases, resulting in potential impacts on sensitive areas.

5.7.7 Environmental Concerns: Right-of-Way

The Project would not be constructed under the No-Build Alternative and would not require acquisition of ROW. However, other passenger rail sections of the Corridor could be developed and result in acquisition of ROW. Additionally, other travel modes could be more congested as travel demand increases, resulting in ROW acquisition for infrastructure improvements.

5.8 SUMMARY

Of the six route alternatives, the greatest challenges are presented by Route Alternative 3. Not only would Route Alternative 3 have the highest cost, but also the permitting effort would be substantial: establishing approximately 225 miles of new railroad ROW would create unacceptably high impacts on landowners, could reasonably be expected to cause a great deal of controversy, and the resulting permitting process would be extremely long. An extended permitting process could void the early baseline data prior to the permit being issued, thus requiring a second round of baseline data gathering and potentially requiring a re-evaluation of the findings of the Tier 1 Service Level EIS. Constructing essentially greenfield railroad for Route Alternative 3 would have significant impacts on communities, infrastructure, wetlands, streams, and wildlife habitat. Former bridges across major rivers would need to be constructed at high costs and environmental impacts. In addition to the high cost of ROW acquisition and bridge construction, track and infrastructure would also need to be reestablished at an appreciable cost.

As a result of the extremely high environmental and economic hurdles to re-establishing this abandoned rail corridor and anticipated local opposition and controversy, Route Alternative 3 is deemed unreasonable and is eliminated from further study.

The No-Build Alternative would not meet the purpose and need for the Project. For a build alternative, the fact that the route alternative would not meet purpose and need would be justification for eliminating the route alternative from further evaluation. However, for the purposes of NEPA analysis, the No-Build Alternative will be carried forward for detailed evaluation in the Tier 1 Service Level Draft/Final EIS. The reasons for retaining the No-Build Alternative include a requirement to evaluate the impacts of no action under CEQ's NEPA regulations (40 CFR 1502.14(d)), FRA Procedures for Considering Environmental Impacts (64 FR 28545), and the need to compare action alternatives against a baseline, which in the case of this Project would be the No-Build Alternative.

Subsequent studies will focus on Route Alternatives 1, 2, 4, 5, and 4-A. Route Alternative 5 has minimal population along this route alternative—nearly an order of magnitude less than other routes—and its viability with respect to travel demand should be carefully considered as part of the fine-level screening. Conversely, Route Alternatives 4 and 4-A have very high populations along these route alternatives.

Route Alternatives 1, 2, 4, 5, and 4-A have been retained for further analysis because they appear sufficiently viable and merit further analysis. The additional analysis will include more detailed operational analysis to refine travel times, conceptual definition of impacts of superimposing passenger trains upon existing freight train traffic, and conceptual cost estimates.

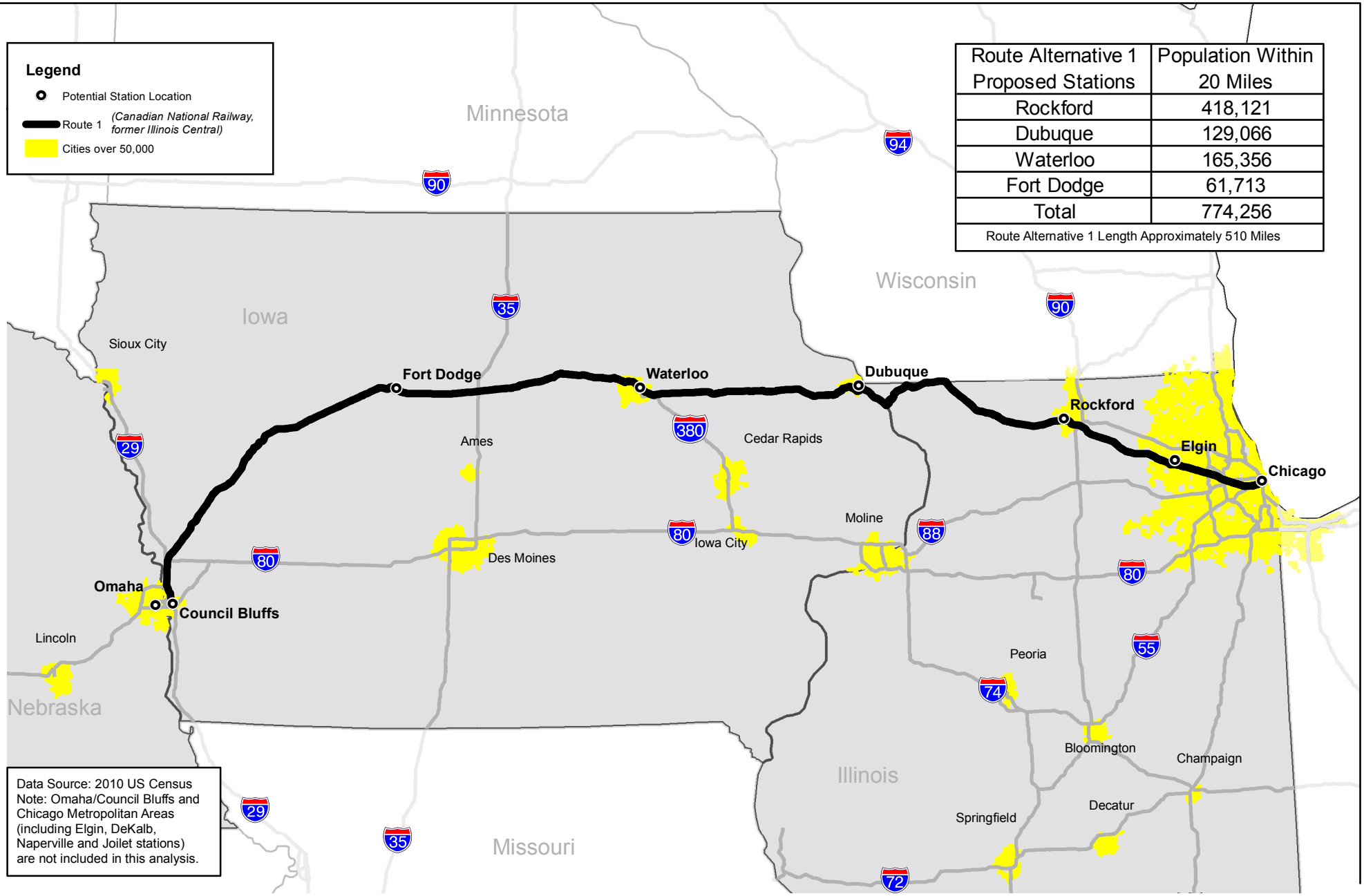
The coarse-level screening results are summarized in Table 5-1.

Table 5-1. Route Alternative Comparison

Criteria	Relative Ranking of Route Alternative						
	Route Alternative 1	Route Alternative 2	Route Alternative 3	Route Alternative 4	Route Alternative 5	Route Alternative 4-A	No-Build Alternative
Purpose and Need: Travel Demand	Medium ridership potential	Medium ridership potential	Medium ridership potential	High ridership potential	Low ridership potential	High ridership potential	No additional service
Purpose and Need: Competitive and Attractive Travel Modes	Poor competitiveness	Medium competitiveness	Medium competitiveness	High competitiveness	High competitiveness	High competitiveness	No new travel mode
Technical Feasibility	Medium complexity	High due to heavy freight train traffic	Low complexity associated with new route	Medium complexity	High due to heavy freight train traffic	Medium complexity	Not applicable
Economic Feasibility	Medium cost	High cost	High cost due to ROW acquisition	Medium cost due to previous second track in ROW	High cost	Medium cost due to previous second track in ROW	Not applicable
Environmental Concerns: Major Challenges	Medium overall impacts	High overall impacts due to ROW acquisition and river crossings	Extremely high overall impacts due to ROW acquisition	Medium overall impacts	High overall impacts due to ROW acquisition and river crossings	Medium overall impacts	No overall impacts
Environmental Concerns: Sensitive Areas	Medium impacts	High impacts due to ROW acquisition	Extremely high impacts due to ROW acquisition	Medium impacts	High impacts due to ROW acquisition	Medium impacts	No overall impacts
Environmental Concerns: Right-of-Way	Medium impacts	High impacts due to ROW acquisition	Extremely high impacts due to ROW acquisition	Medium impacts	High impacts due to ROW acquisition	Medium impacts	No overall impacts
Carried forward for fine-level screening?	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes[a]**

Note:

[a] *While the No-Build Alternative does not meet purpose and need, it was carried forward to the fine-level screening to provide a basis of comparison to the other route alternatives (40 CFR 1502.14; 64 FR 28545).*



Route Alternative 1 Proposed Stations	Population Within 20 Miles
Rockford	418,121
Dubuque	129,066
Waterloo	165,356
Fort Dodge	61,713
Total	774,256
Route Alternative 1 Length Approximately 510 Miles	

50 25 0 50 Miles
Scale

Iowa Department of Transportation
Iowa Connections
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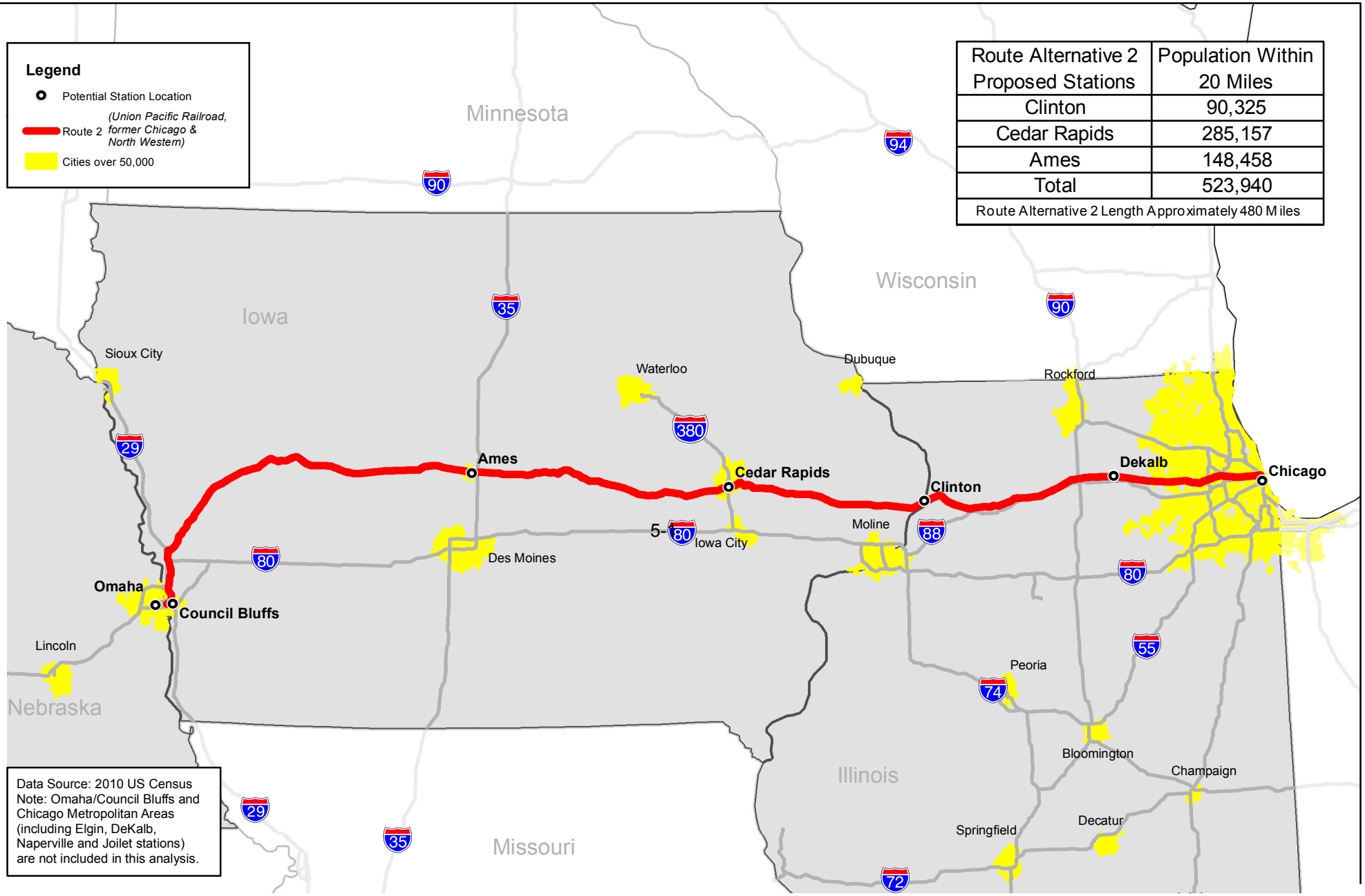
Route Alternative 1
Relative Population Served at Potential Stations

Chicago to Omaha
Regional Passenger Rail System Planning Study

DATE
April 2012

FIGURE
5-1



Route Alternative 2 Proposed Stations	Population Within 20 Miles
Clinton	90,325
Cedar Rapids	285,157
Ames	148,458
Total	523,940
Route Alternative 2 Length Approximately 480 Miles	

Iowa Department of Transportation

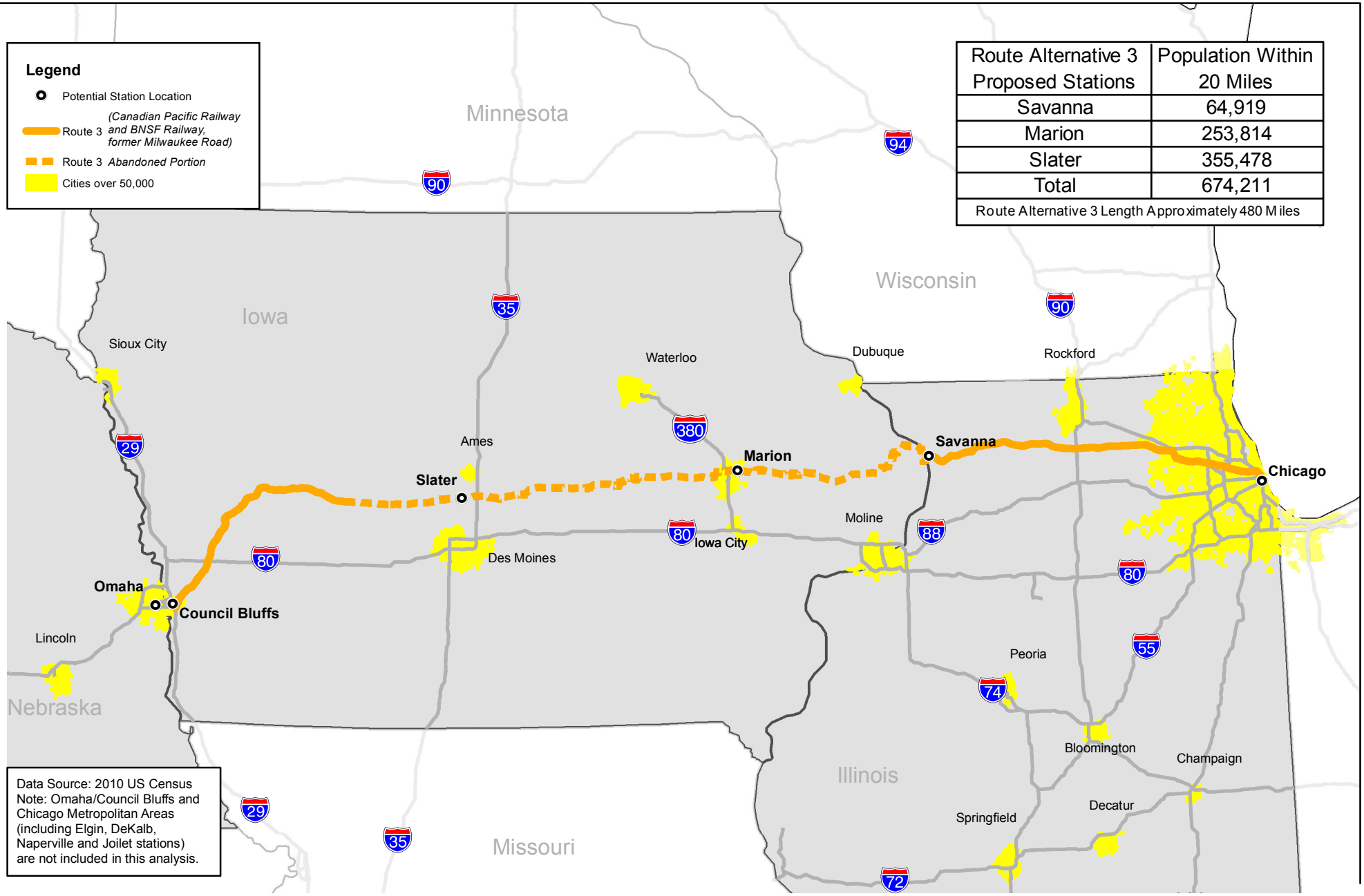
Iowa Connections
Get on Board

Route Alternative 2
Relative Population Served at Potential Stations

Chicago to Omaha
Regional Passenger Rail System Planning Study

DATE
April 2012

FIGURE
5-2



Route Alternative 3 Proposed Stations	Population Within 20 Miles
Savanna	64,919
Marion	253,814
Slater	355,478
Total	674,211
Route Alternative 3 Length Approximately 480 Miles	

50 25 0 50 Miles
Scale

Iowa Department of Transportation
Iowa Connections
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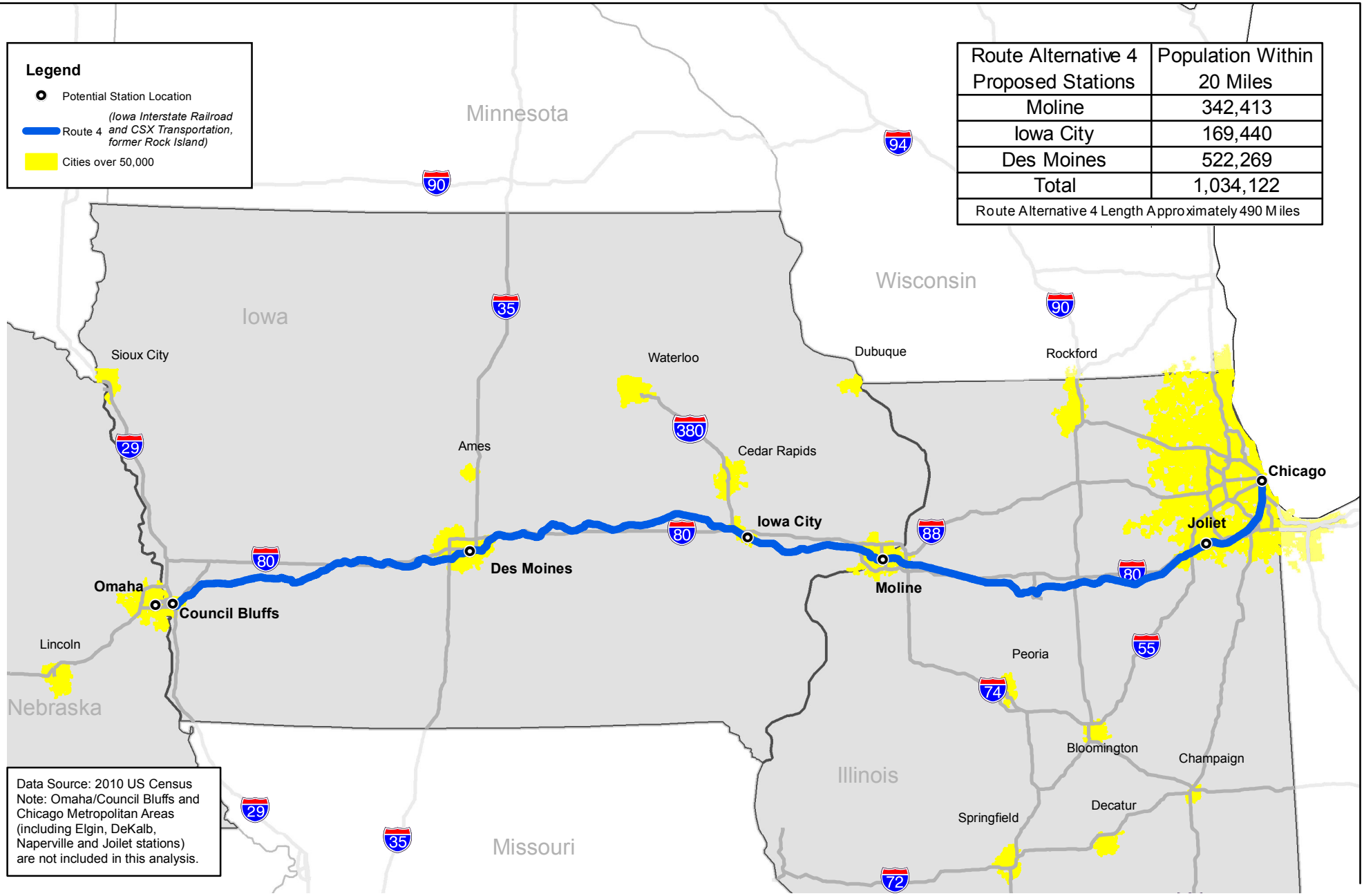
Route Alternative 3
Relative Population Served at Potential Stations

Chicago to Omaha
Regional Passenger Rail System Planning Study

DATE
April 2012

FIGURE
5-3



Route Alternative 4 Proposed Stations	Population Within 20 Miles
Moline	342,413
Iowa City	169,440
Des Moines	522,269
Total	1,034,122
Route Alternative 4 Length Approximately 490 Miles	

50 25 0 50 Miles
Scale

Iowa Department of Transportation
Iowa Connections Get on Board

Route Alternative 4
Relative Population Served at Potential Stations

Chicago to Omaha
Regional Passenger Rail System Planning Study

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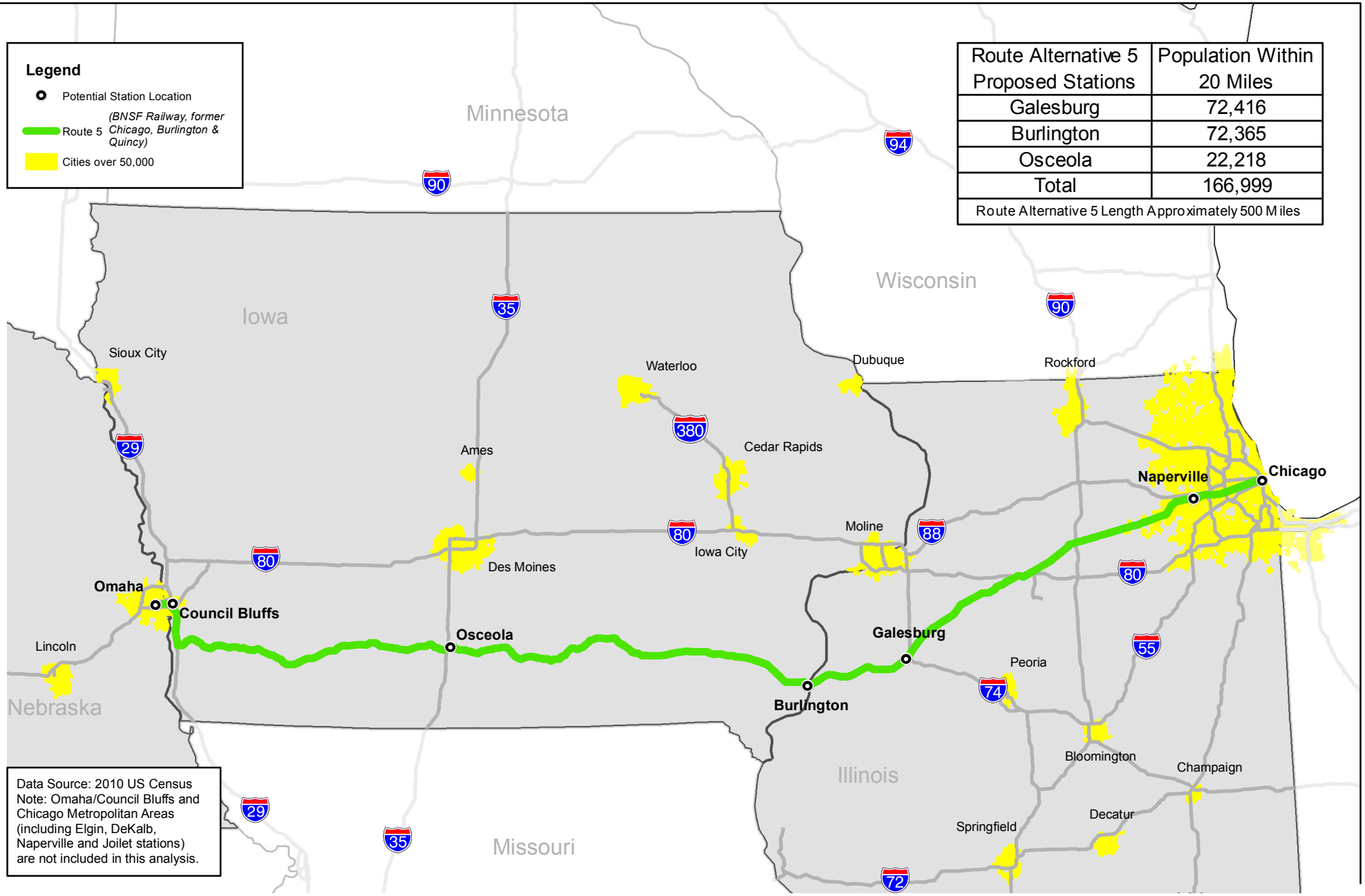
April 2012

FIGURE
5-4



Route Alternative 5 Proposed Stations	Population Within 20 Miles
Galesburg	72,416
Burlington	72,365
Osceola	22,218
Total	166,999
Route Alternative 5 Length Approximately 500 Miles	

50 25 0 50 Miles
Scale

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Route Alternative 5
Relative Population Served at Potential Stations

Chicago to Omaha
Regional Passenger Rail System Planning Study

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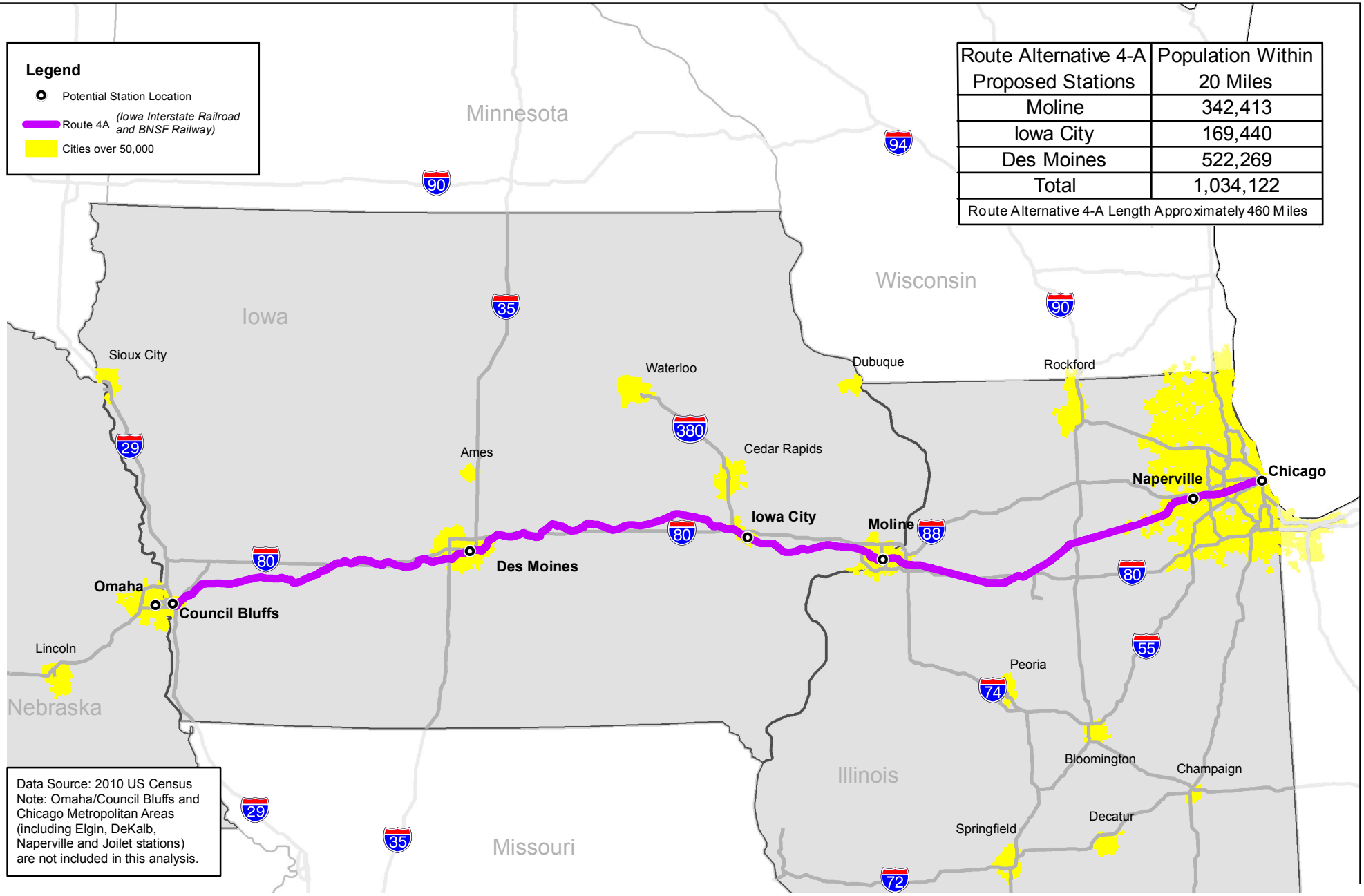
April 2012

FIGURE
5-5



Route Alternative 4-A Proposed Stations	Population Within 20 Miles
Moline	342,413
Iowa City	169,440
Des Moines	522,269
Total	1,034,122
Route Alternative 4-A Length Approximately 460 Miles	

Data Source: 2010 US Census
Note: Omaha/Council Bluffs and Chicago Metropolitan Areas (including Elgin, DeKalb, Naperville and Joilet stations) are not included in this analysis.

50 25 0 50 Miles
Scale

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Route Alternative 4-A
Relative Population Served at Potential Stations

Chicago to Omaha
Regional Passenger Rail System Planning Study

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FIGURE
5-6

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