Part II. Iowa railroad resource guide

This section of the *2009 Iowa Railroad System Plan* provides background information for the plan, grouped by topic. The resource guide also provides users with important information about the railroad industry and Iowa's railroad system. The major topics covered below include:

- Iowa's railroad system and carriers.
- Railroad freight and Iowa's economy.
- Rail passenger service and Iowa's economy.
- The safety of Iowa's railroad system, including network safety and security, and railroad and communication interaction.

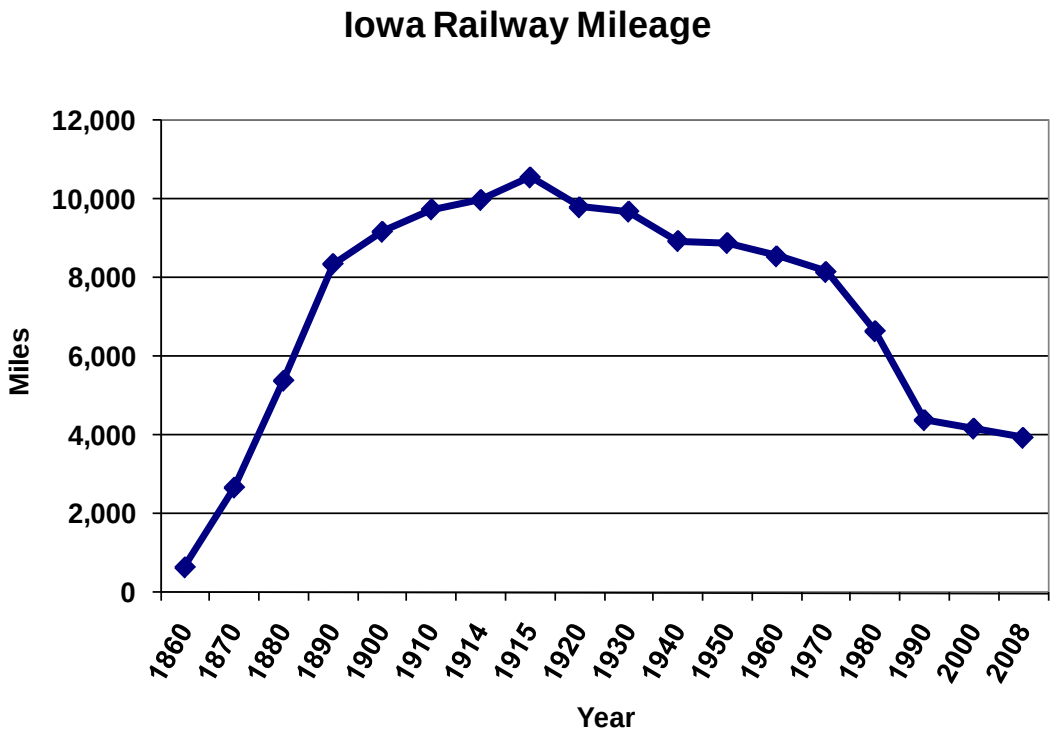
Iowa's railroad system and carriers

History

The railroad industry has been with Iowa almost as long as Iowa has been a state. The first railroad to cross the Mississippi River was completed in 1855, and the first main line across the state was completed in 1867. Railroads developed densely across Iowa's landscape, peaking in 1915 at 10,566 miles of track. When competing modes, such as trucks and automobiles became available, the railroad system was oversaturated. These modes provided a much faster alternative to the horse-drawn wagon trips that were used in earlier times to access the railroad system. Since the early 20th century, market forces have reduced the Iowa railroad network in terms of track miles, even as freight volume has risen steadily.

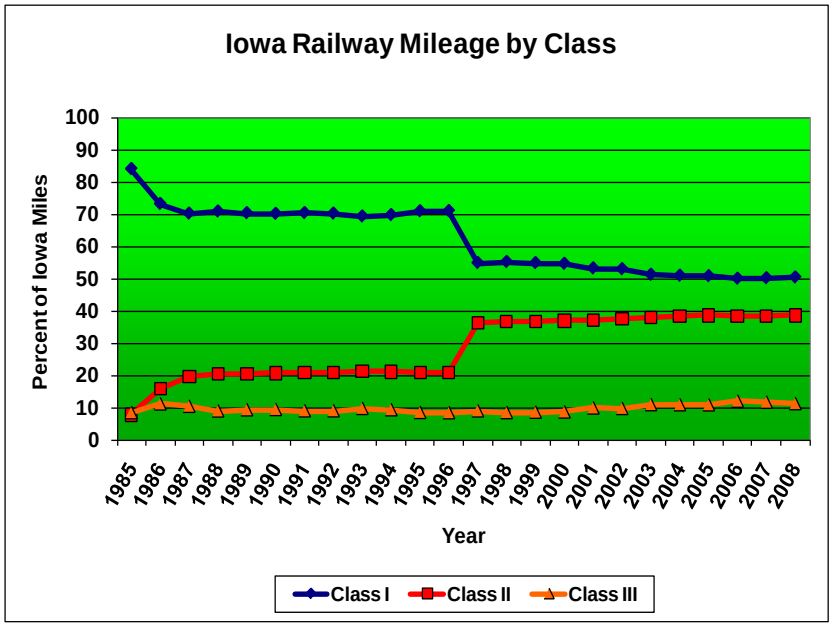
The development patterns of Iowa towns were greatly shaped by the presence of railroads. This is evident when one looks at the distribution of towns and state and county highways along the state's primary railroad corridors. Some towns appeared with the advent of a grain-loading elevator, steam engine water tower or railroad interchange. Passenger rail too was once a highly competitive option in Iowa, but was also overtaken by the automobile as the primary means of personal transport. The passenger rail service that remains in the state is limited, although it is still important to an increasing number of people.

The railroad industry experienced economic hardship throughout the 1970s due in part to overregulation by the Interstate Commerce Commission. During this time, Iowa lost a significant percentage of track mileage to abandonments. After rail mileage peaked in 1915, it has stabilized around 4,000 track-miles. The mileage trend is shown in the following chart.



Source: Railroads' annual reports

The concentration of railroad operators has changed over the last 20 years. Freight rail in the United States is a private enterprise that has public impacts. Therefore, railroads are an inevitable public interest; the balance of that interest has long been a source of debate. The Staggers Rail Act of 1980 brought about a major reduction in railroad regulation and established the Surface Transportation Board (STB) as a federal body with limited oversight of the railroad industry. This deregulation has brought about many broad changes to the industry, notably more freedom in setting rates and acquisitions and mergers. This industry restructuring is discussed later in this report, but many Class I railroad miles have been purchased by smaller Class II railroads, leading to a decrease in the share of Class I miles and an increase in Class II miles. Class III relative rail-mileage share remained constant. Class III railroads are the smallest railroads in terms of revenues.



Source: Railroads' annual reports

Another historical reason for the importance of rail as a key mode of transportation for Iowa has been its agricultural exports. Iowa's network of passenger and freight rail once crisscrossed the state. While passenger rail has declined, the state's freight railroad system remains critical, especially with the network of grain elevators. Appropriately, the Midwest is often referred to as "the nation's breadbasket." Even today, Iowa plays a major role in feeding the world, but the state is also developing as a biofuels production center. This simply could not be the case without railroad service. Grain shipping by rail remains critically important, but market changes have affected the distribution of elevators. This impact is described in later sections.

Highlights of Iowa's railroad system

- It serves all major urban areas plus 90 counties in Iowa.
- One rail car hauls as much as four semi-trucks.
- The equivalent of 10 million semi-trucks annually is hauled into, out of and through Iowa, which saves energy and improves air quality.
- Farmers save up to 10 cents per bushel by using the railroad system.
- It employs 4,038 workers and contributes $276 million to Iowa's economy.
- Railroad companies invested more than $435 million in 2008 to maintain their system.
- It moves a ton of freight 469 miles for each gallon of fuel consumed.
- It is served by two Amtrak long-distance routes.

Current trends

- Iowa has fewer rail miles.
- Iowa rail traffic continues to grow.
- Revenues per ton-mile are declining.
- Cars are getting larger.
- Trains are getting longer.
- There has been a shift to fewer, larger shipping facilities.
- A dramatic growth in biofuels is impacting rail service and equipment needs.
- Fewer train derailments and highway-railroad crossing incidents are occurring.
- Financial constraints limit railroad companies' ability to expand their capacity.
- Iowa's passenger rail ridership is increasing.
- There is growing interest in adding additional intercity passenger rail service in Iowa.

Key indicators of Iowa's overall railroad system condition, include the following.

- Of Iowa's 3,947 miles of rail, 893 or 23 percent are not able to carry 286,000-pound cars, which have become the standard size in the railroad industry.
- Demand for railroad spurs that add new traffic to the railroad system has grown over time, but is limited by funding availability.
- The annual number of crossings completed lags behind the average number of crossings needing improvements to meet the standards.

Current situation

Over the years, Iowa's railroad system has changed greatly. Deregulation in the 1980s has led to a significant amount of railroad consolidation and route abandonment. This has resulted in fewer, but more densely concentrated railroad lines. Service in Iowa for freight shipment remains extensive, providing service to 90 of Iowa's 99 counties on 3,947 miles of track.

Railroad freight service

Railroads are classified as Class I, II or III according to their operating revenue or route mileage. Because of the variability of the value of money, the range of dollar values for classifications change over time. According to the 2007 definitions from the Association of American Railroads' (AAR) Policy and Economics Department, Class I railroads, the major national and international railroads, had operating revenues of at least $359.6 million. Class II, regional railroads, posted operating revenues between $40 million and the Class I threshold and/or had at least 350 route-miles. Class III railroads, the local line-haul, switching and terminal roads, operate less than 350 route-miles and have revenues of less than $40 million annually.

Iowa has an extensive railroad transportation system that plays a vital role in moving goods throughout Iowa and to other states and foreign markets. Railroads in Iowa are owned and operated by private companies. The railroads' ability to haul large volumes, as an energy-efficient, environmentally sound network is a major factor in moving freight in a safe and secure manner.

In 2008, 19 railroads operated track in Iowa: five were Class I, three were Class II and 12 were Class III. The following table briefly details the railroads, the miles they own and the miles they operate under trackage rights. For more in-depth information about each railroad operating in Iowa, refer to Appendix D. Note that the CN is a Class I railroad that owns and operates track in Iowa, but reports its operations under the names of two subsidiary railroads: Chicago, Central and Pacific Railroad (Class II) and Cedar River Railroad (Class III).

Railroads Operating in Iowa (2008)

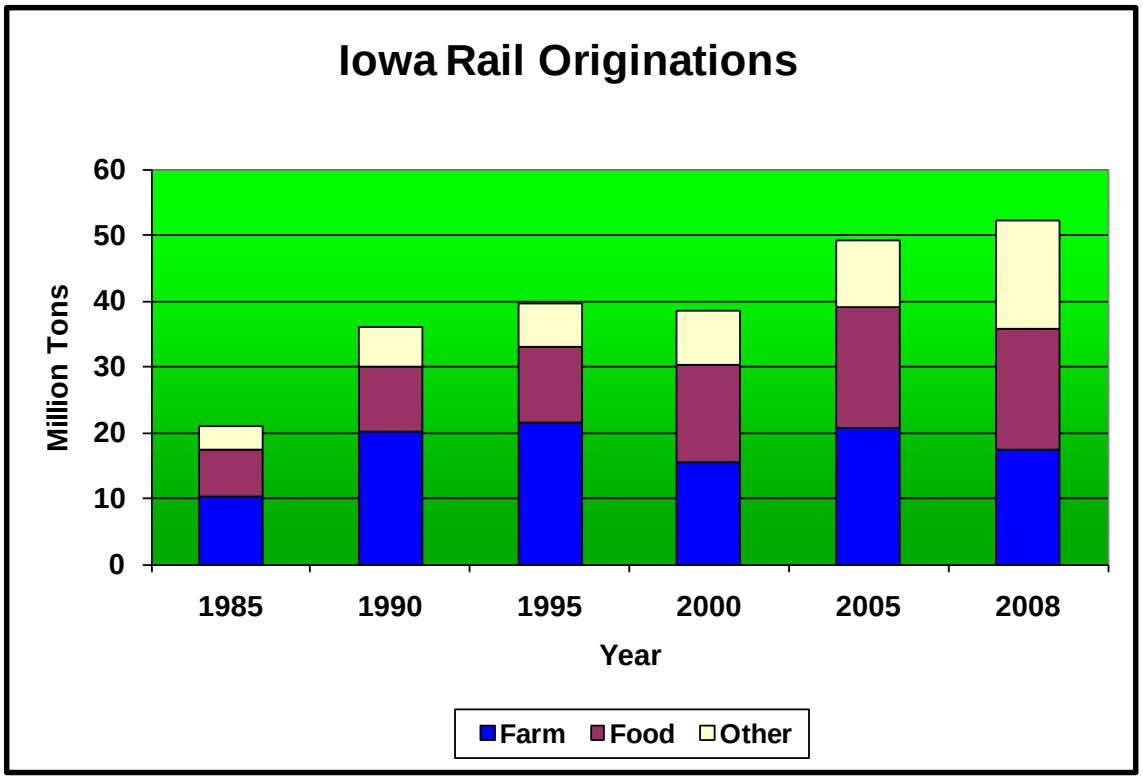
Railroad	Miles owned	Percent of total	Trackage rights
Class I			
BNSF Railway	636	16.11	39
CN* – Chicago, Central and Pacific Railroad Co.	538	13.63	0
CN*– Cedar River Railroad Co.	83	2.10	0
Norfolk Southern Railway Co.	7	0.18	37
Union Pacific Railroad	1,341	33.98	94
Subtotal	**2,605**	**66.00**	**170**
Class II			
Dakota, Minnesota & Eastern Railroad Corp.	0	0.00	24
Iowa Interstate Railroad Ltd.	334	8.46	27
Iowa, Chicago & Eastern Railroad Corp.	651	16.49	9
Subtotal	**985**	**24.96**	**60**
Class III			
Appanoose County Community Railroad Inc.	35	0.89	0
Boone & Scenic Valley Railroad	2	0.05	0
Burlington Junction Railway	5	0.13	0
CBEC Railway Inc.	6	0.15	0
Cedar Rapids and Iowa City Railway Co.	60	1.52	0
D & I Railroad Co.	0	0.00	39
D & W Railroad, LLC	19	0.48	6
Iowa Northern Railway Co.	134	3.39	35
Iowa Northwestern Railway**	0	0.00	0
Iowa River Railroad Inc.	43	1.09	0
Iowa Traction Railroad Co.	13	0.33	0
Keokuk Junction Railway Co.	1	0.03	0
Subtotal	**318**	**8.06**	**80**
Other			
State of South Dakota	**39**	**0.99**	**0**
Total	**3,947**	**100.00**	**310**

*Includes CN subsidiaries of Chicago, Central and Pacific Railroad Co. and Cedar River Railroad Co.
**Inactive during 2008, abandonment effective October 2008.

Source: Railroads' annual reports

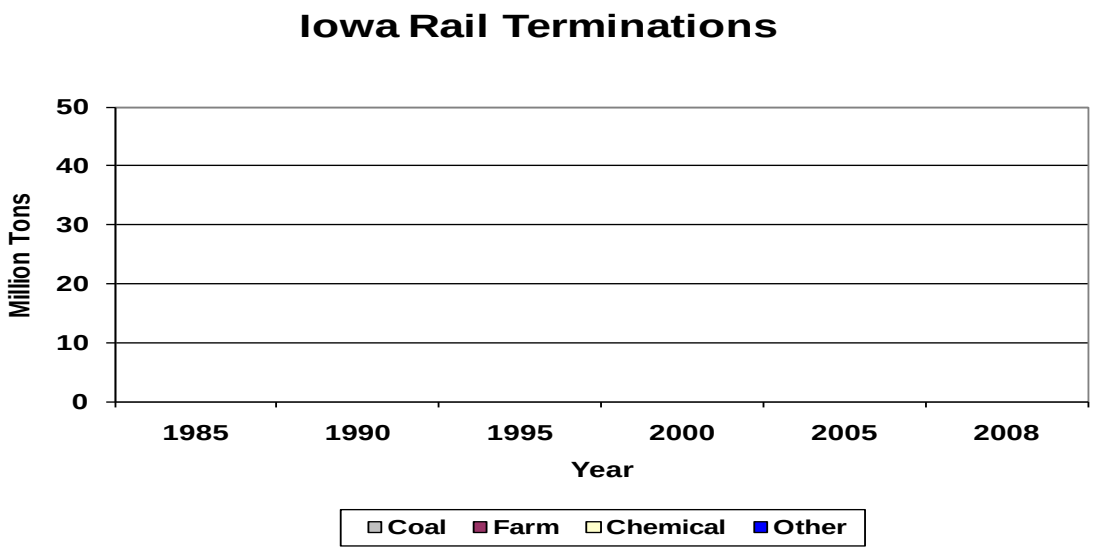
Key commodities

Iowa's railroad traffic consists primarily of pass-through traffic, as well as originating and terminating traffic of various commodities, mostly agriculture or energy products. The primary commodities with railroad trips originating in Iowa are farm and food products. Farm products are goods such as raw corn and soybeans. Food products include refined value-added products, such as oils and high-fructose corn syrup.



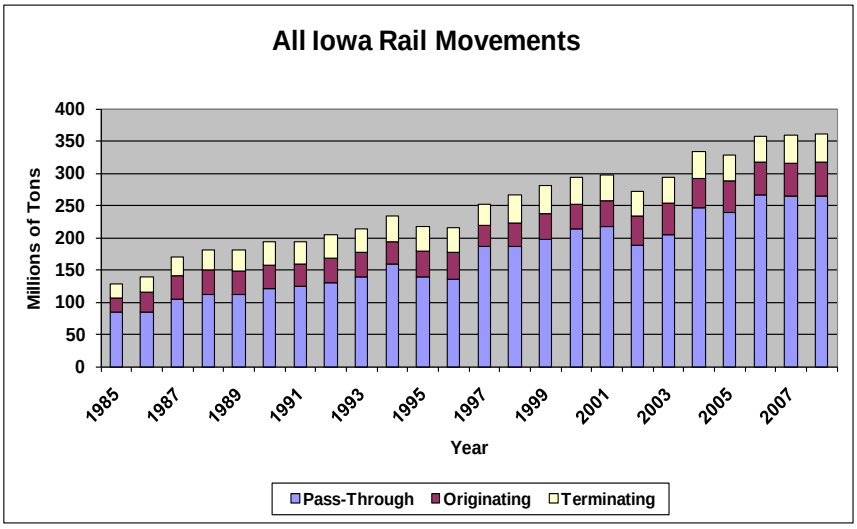
Source: Railroad's annual reports

The primary commodities for rail freight trips terminating in Iowa are coal, and farm and chemical products. Coal is largely imported to Iowa's coal-fired power stations from the Powder River Basin in Wyoming for electricity generation around the state. Farm product terminations include corn and soybeans for processing and barge departures, as well as goods to other food production facilities. The primary chemical products are fertilizers for agriculture.



Source: Railroads' annual reports

Although trucking holds a considerably higher share of freight originations, terminations and especially intrastate traffic, the bulk of rail freight movements in Iowa involve pass-through commodities. Iowa has experienced a general increase of pass-through traffic over the last 20 years, primarily resulting from economic shifts in global markets and in the railroad industry. This trend has also correlated well with the growth of the U.S. economy. Iowa is an important linking state for the UP and BNSF. It is important to keep the railroad capacity at an adequate level for originating, terminating and especially pass-through railroad traffic.



Source: Railroads' annual reports

Passenger rail service

Passenger rail service in Iowa can be classified as national, intercity passenger and commuter rail.

Amtrak provides the **national** or long-distance system for passenger rail in the United States. Ticket revenues and the federal government support Amtrak's long-distance routes. No state funding is required for the long-distance network. Iowa has two national Amtrak routes – the California Zephyr and Southwest Chief.

Intercity passenger rail is normally short trips of less than 500 miles, several hours in length and focused on basic transportation rather than the "travel experience." Routes normally connect larger cities for frequent and repeat travel, which is important to the business travel market. Intercity passenger rail are state-sponsored routes (funded by the state or a combination of federal and state funding and ticket revenues).

Commuter rail refers to shorter distance routes between nearby cities or suburbs to city center, and supports commuting trips to and from work. A Passenger Transportation Funding Study, currently under way, will look at commuter rail in Iowa.

National routes

National Railroad Passenger Corp. (Amtrak)

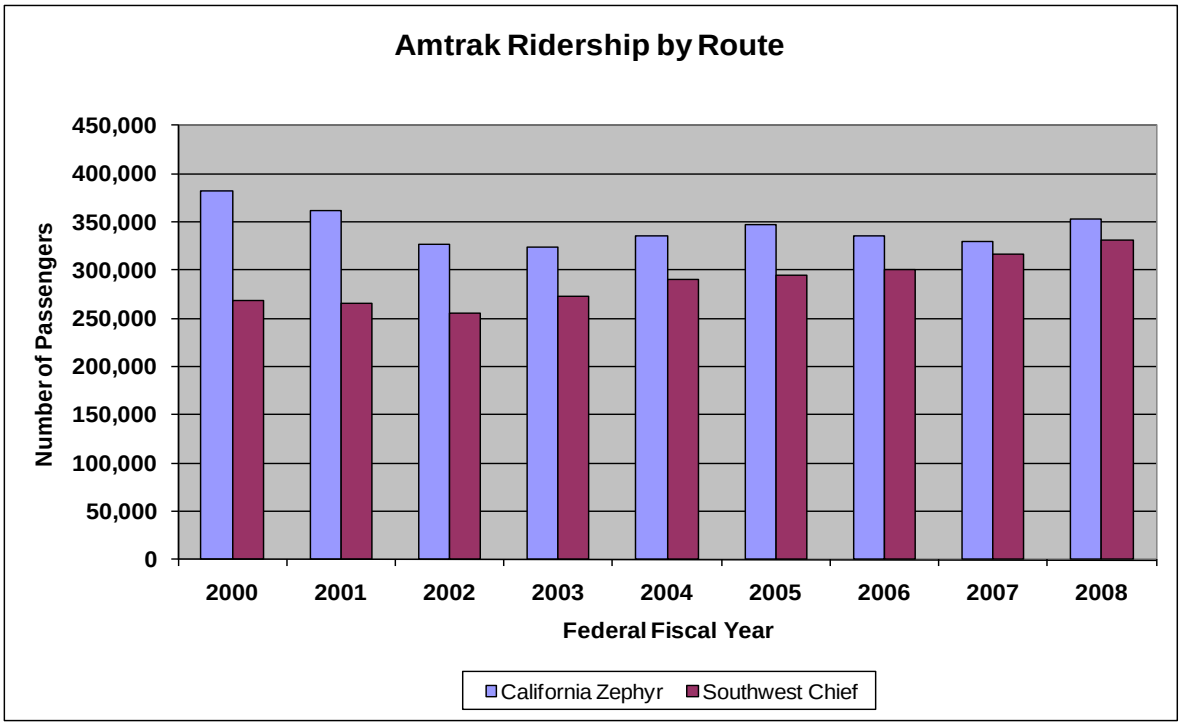
Two lines of the National Railroad Passenger Corp.'s (more commonly known as Amtrak) railroad system currently serve Iowa, the California Zephyr and Southwest Chief. The California Zephyr operates across Iowa as it runs from Chicago to Oakland and serves five stops in Iowa along the BNSF rail line in the southern portion of the state: Burlington, Mount Pleasant, Ottumwa, Osceola, and Creston. The Southwest Chief line runs from Chicago to Los Angeles, crossing the southeast tip of Iowa with one stop in Fort Madison.

Amtrak Routes in Iowa

Iowa's two Amtrak routes operate at a maximum speed of 79 mph, which are not considered to be high-speed rail corridors. FRA refers to trains traveling at speeds of 90 to 300 mph as high-speed rail. A number of states are planning high-speed rail systems that typically involve upgrades of existing rail line rather than entirely new rail lines. Amtrak has 150 mph service, which operates in the Northeast Corridor.

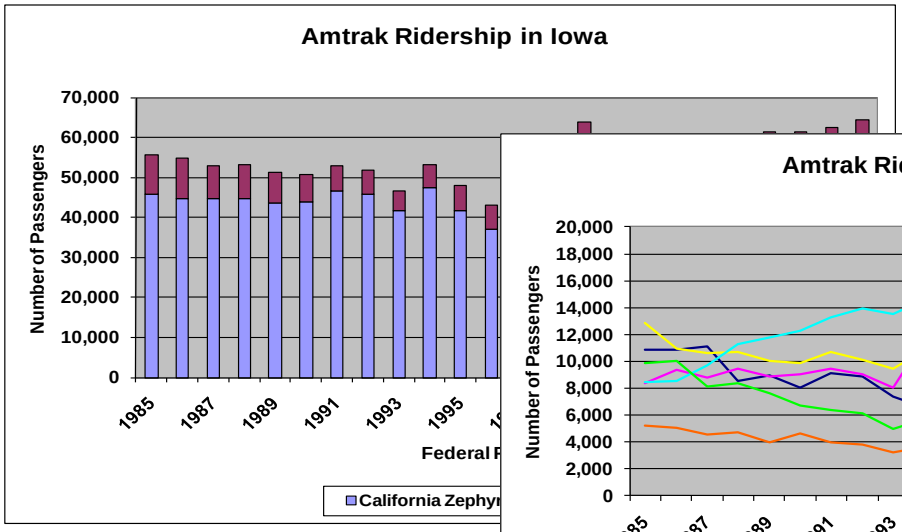
Ridership

National ridership on the entire California Zephyr and Southwest Chief routes in 2008 totaled about 340,000 each. Since 2000, ridership on the Zephyr has declined slightly while the Southwest Chief has been growing. In 2007, trips on the California Zephyr averaged 825 miles (one-third of the total distance between Chicago and San Francisco). Trips on the Southwest Chief averaged 950 miles (40 percent of the total route distance).

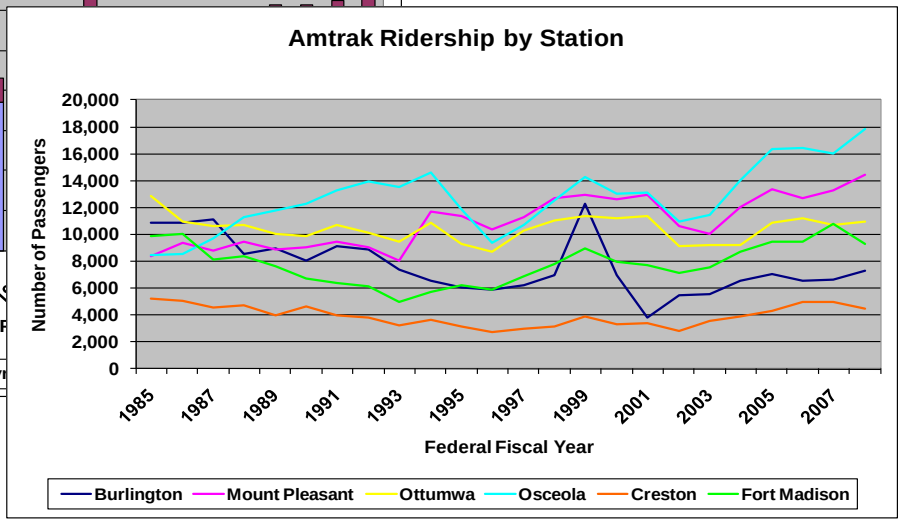


Source: Amtrak

Amtrak ridership in Iowa has remained rather steady over the long term, hovering between 50,000 and 60,000 passengers. In recent years, the trend has increased, returning to 1999 levels with an 18,000-rider increase between 2002 and 2008. All stations in Iowa experienced general increases in ridership during that same period. Recent increases in fuel prices have likely boosted Iowa's Amtrak ridership to its highest level since 1985 at 64,260 rides. Iowa accounts for 16 percent of the ridership on the California Zephyr route and 3 percent on the Southwest Chief.



Source: Amtrak



Source: Amtrak

Fares

During 2007, the most popular destinations for riders boarding the train in Iowa were Chicago, Denver and Kansas City. Based on these destinations, one-way fare information is presented in the following table. In addition to the popular destinations, fares to California are included for comparison. Additional fare information is available on Amtrak's Web site at www.amtrak.com.

Typical fares from Iowa stations leaving June 1, 2008

Service	From	To	Mileage	Duration	One-way fare
Zephyr	Osceola, Iowa	Chicago, Ill.	359	7h 10m	$ 53
Zephyr	Osceola, Iowa	Denver, Colo.	679	12h 6m	$ 77
Zephyr	Osceola, Iowa	Emeryville, Calif.	2,078	48h 1m	$ 158
Southwest Chief	Fort Madison, Iowa	Chicago, Ill.	220	4h 9m	$ 46
Southwest Chief	Fort Madison, Iowa	Kansas City, Mo.	217	3h 14m	$ 53
Southwest Chief	Fort Madison, Iowa	Los Angeles, Calif.	2,036	35h 18m	$ 172

Source: Amtrak

Schedules

Both the California Zephyr and Southwest Chief provide daily service in both directions through Iowa. The California Zephyr travels 2,438 miles between Chicago and Oakland. The westbound and eastbound trip from Chicago to San Francisco takes about 54 hours to complete. The Southwest Chief travels 2,256 miles between Chicago and Los Angeles taking about 39 hours. The average speed for the California Zephyr and the Southwest Chief is 45 and 52 mph, respectively. The schedule for each route is shown in the following tables.

California Zephyr schedule: Chicago – Denver – Oakland

Westbound Daily Read down	Mile						Eastbound Daily Read up
2:00 p.m.	0	↓	Dp	Chicago, Ill. - Union Station	Ar	↑	3:50 p.m.
2:34 p.m.	28		Dp	Naperville, Ill.	Dp		2:13 p.m.
3:44 p.m.	104		Dp	Princeton, Ill.	Dp		1:05 p.m.
4:38 p.m.	162		Dp	Galesburg, Ill.	Dp		12:14 p.m.
5:25 p.m.	205		Dp	Burlington, Iowa	Dp		11:26 a.m.
5:59 p.m.	233		Dp	Mount Pleasant, Iowa	Dp		10:54 a.m.
6:53 p.m.	279		Dp	Ottumwa, Iowa	Dp		10:09 a.m.
8:09 p.m.	359		Dp	Osceola, Iowa	Dp		8:40 a.m.
8:41 p.m.	392		Dp	Creston, Iowa	Dp		8:04 a.m.
10.39 p.m.	500		Dp	Omaha, Neb.	Dp		6:14 a.m.
8:05 a.m.	1038		Dp	Denver, Colo.	Dp		8:10 p.m.
11:30 p.m.	1608		Dp	Salt Lake City, Utah	Dp		4:35 a.m.
6:10 p.m.	2438		Ar	Emeryville, Calif.	Dp		8:10 a.m.

Some stations between Omaha and Emeryville have not been included on this table.
Source: Amtrak System Timetable, winter 2008

Southwest Chief schedule: Chicago – Albuquerque – Los Angeles

Westbound daily read down	Mile						Eastbound daily read up
3:15 p.m.	0	↓	Dp	Chicago, Ill.- Union Station	Ar	↑	3:20 p.m.
3:50 p.m.	28		Dp	Naperville, Ill.	Dp		2:44 p.m.
4:39 p.m.	83		Dp	Mendota, Ill.	Dp		1:21 p.m.
5:01 p.m.	104		Dp	Princeton, Ill.	Dp		1:00 p.m.
5:53 p.m.	162		Dp	Galesburg, Ill.	Dp		12:10 p.m.
6:57 p.m.	220		Dp	Fort Madison, Iowa	Dp		11:11 a.m.
8:06 p.m.	298		Dp	La Plata, Mo.	Dp		9:57 a.m.
10:55 p.m.	437		Dp	Kansas City, Mo.	Dp		7:45 a.m.
3:55 p.m.	1332		Dp	Albuquerque, N.M.	Dp		12:55 p.m.
9:57 p.m.	1691		Dp	Flagstaff, Ariz.	Dp		6:11 a.m.
8:15 a.m.	2256		Ar	Los Angeles, Calif.	Dp		6:45 p.m.

Some stations between Kansas City and Los Angeles have not been included on this table.
Source: Amtrak System Timetable, winter 2008

Revenues and expenses

Total operating revenues and expenses for the two national Amtrak routes serving Iowa are shown in the following table. Operating revenues include income from tickets, food and beverage, mail, and other transportation (package express and baggage). The majority of total operating revenues come from tickets. The summer months of June, July and August account for one-third of the year's revenues.

As shown in the following table, operating revenues dropped from 2002 to 2005, largely due to the loss of mail and express revenues. Since 2005, operating revenues have increased on both routes, while Amtrak has been able to keep operating expenses at a steady level. As a result, the cost-recovery ratio (operating revenues divided by

operating expenses) has increased from its low point in 2005.

Operating revenues and expenses

Federal fiscal year	California Zephyr			Southwest Chief		
	Operating revenues*	Operating expense*	Cost recovery ratio	Operating revenues*	Operating expense*	Cost recovery ratio (percent)
2002	$ 50.0	$ 117.5	42.6%	$ 69.8	$ 154.2	45.3
2003	$ 42.3	$ 115.7	36.6%	$ 53.3	$ 154.6	34.5
2004	$ 40.6	$ 117.4	34.6%	$ 51.4	$ 158.0	32.5
2005	$ 36.5	$ 106.9	34.1%	$ 35.6	$ 111.1	32.0
2006	$ 39.8	$ 110.6	36.0%	$ 39.2	$ 114.1	34.4
2007	$ 40.0	$ 109.7	36.5%	$ 41.3	$ 100.9	40.9

* In million dollars
Source: Amtrak

Iowa has actively been looking at adding additional passenger rail service from Chicago to Quad Cities to Iowa City and from Chicago to Dubuque. Amtrak has conducted feasibility studies on the Chicago to Iowa City and Chicago to Dubuque routes. Iowa has also participated with several Midwestern states in the Midwest Regional Rail Initiative (MWRRI), with the primary hub in Chicago. Results of this initiative are detailed in Appendix C.

Intermodal facilities
Modal connections are important in the movement of both freight and passengers. Railroads, through their connections with other modes, are involved in many intermodal traffic movements. Rail intermodal is typically thought of as a trailer-on-flat-car (TOFC) or container-on-flat-car (COFC) movement where rail provides the long-haul portion of the movement. Intermodal shipments often combine the low cost and energy efficiency of rail line haul with the fast, door-to-door service time and flexibility of trucks.

The trend in intermodal facilities is toward development of regional hub facilities located outside of Iowa (Chicago, Minneapolis/St. Paul, Kansas City, St. Louis, etc.) that are fully mechanized to transfer the trailer and containers between rail and truck. This trend has affected Iowa in that the number of facilities has decreased from 13 in 1985 to one at the present time. The TOFC/COFC facility is located in Council Bluffs served by IAIS and UP.

In addition, railroads provide intermodal service through other facilities, including barge terminals, grain elevators and Amtrak passenger stations, as previously discussed. Iowa currently has 43 barge terminals that are served by rail, 198 grain elevators that are capable of loading more than 25 cars at one time and six Amtrak stations.

Key challenges and future issues
Impacts of economic changes on capacity: As a result of the economic and logistic changes described further in the next section of this report, railroad system capacity is becoming a constraining factor on Class I railroads nationwide as they seek to retain or increase their freight modal share against trucking. It is in the interest of the Iowa DOT to reserve the use of rail for freight, as this helps reduce congestion on Iowa's highways

and lowers maintenance costs. Because a single 100-car train may carry the equivalent of nearly 400 semi-trailers, congestion implications on Iowa interstates and highways are obvious. A shift toward trucking, however, is unavoidable unless rail can provide the desired level of service. To achieve such efficiency may require infrastructure enhancements that can offer faster travel times and shorter dwell times, allowing supply chain and inventory costs to be reduced dramatically.

Impacts of economic changes on mode choices: As explained in the performance measures section, changes in rail shipping have favored the use of larger and heavier freight cars for more efficient shipments. This is especially true for coal and grain shipments. In the past, local elevators were the primary destinations of farmers unloading harvested goods. Today, however, larger-capacity elevators located along main line railroads are more attractive to farmers because of higher rates. Producing 75- or 100-car trains, these large elevators receive better shipping rates from the railroads, which enable them to offer increased rates to farmers. This, coupled with larger farms able to afford larger trucks, shifts traffic from short-line railroads to truck-on-highway trips to the larger elevators.

The driving factor for this trend are longer, more efficient trains of 75, 100 or more cars referred to as “unit” or ”shuttle” trains. However, newer rail cars that can handle 286,000 pounds (up from the previous standard of 263,000 pounds) require upgrades to some track (rail and ties) and roadbed (substructure and ballast). In addition, not all elevators can handle the length of the shuttle trains, and will require upgrading. Higher-capacity equipment and longer trains have inevitably reduced the number of grain elevators.

Increases in freight: Iowa’s freight traffic is projected to grow significantly. This increase in freight will impact rail as well as other modes of transport, especially trucking. Between 1985 and 2008, through traffic on Iowa railroads more than doubled, as Iowa’s freight growth in general. In 2003, the American Association of State Highway Transportation Officials (AASHTO) published a report concerning future freight projection, as well as investment needs. Using these projections, the Iowa DOT has projected a 44 percent freight growth by 2020 and funding needs of approximately $14 million for track upgrades, as well as $18 million for present economic opportunities and future economic development through spur tracks.

Spur tracks are an essential element to attracting rail-dependent industry. Connection to larger rail lines is becoming integral in the larger globalized economy, as different industry locations become stops in a lengthened supply chain. From an economic development standpoint, the ability to construct spur tracks will be necessary to attract and maintain an industry presence in Iowa communities. Spur installation should be encouraged by the Iowa DOT's Office of Rail Transportation and supported by the Iowa Legislature.

Biofuels production impacts: As discussed above, the production of ethanol and other biofuels is increasing in Iowa. This increase will have many impacts across the state, including impacts on rail and highway freight. The primary input for ethanol is grain, and the finished ethanol product and other agricultural outputs, such as distillers dried grains [DDGs] used as livestock feed, must leave the plant following production. Because ethanol cannot run in a pipeline like other forms of motor fuel, it must move by rail or truck.

The Iowa DOT estimates that a 50-million gallon capacity ethanol plant would require 80 trucks per day to satisfy inputs alone. For all of the trucks necessary for all constructed and planned ethanol plants in Iowa, the number of inbound trucks rises to 10,465.

Outbound freight requirements will depend on the modal split of the exiting freight. Part of this mode selection will depend on the final destination, with rail being a more desirable alternative if the ethanol is shipped to a distant destination (e.g., California) rather than a local destination. The following table displays the number of rail cars and mix of rail cars and trucks depending on possible scenarios for outbound ethanol-related freight. The Iowa DOT must work with ethanol producers to plan for increases in truck and rail traffic, and possible capacity issues as ethanol industries move from planning to operation.

Outbound requirements for Iowa ethanol freight

Mode	Output	50 million gallons	100 million gallons	Existing plants	Existing and planned Sites
100% rail	Corn	4,630	9,260	208,704	612,222
100% rail	Ethanol	1,667	3,333	75,133	220,400
	DDGs	1,574	3,148	70,959	208,156
	Total cars	**3,241**	**6,481**	**146,093**	**428,556**
67% rail	Ethanol	1,083	2,167	48,834	143,260
63% rail	DDGs	881	1,763	39,737	116,567
	Total cars	**1,965**	**3,930**	**88,574**	**259,827**
33% truck	Ethanol	2,188	4,375	98,613	289,275
37% truck	DDGs	2,770	5,541	124,888	366,354
	Total trucks	**4,958**	**9,916**	**223,501**	**655,629**

Source: Iowa DOT

Increases in agricultural production: As the amount of freight moving through Iowa by rail continues to increase, so does the production levels of Iowa's agricultural commodities. Corn and soybean production are increasing and forecasted to exceed 2 billion bushels and 550 million bushels, respectively, by 2010.

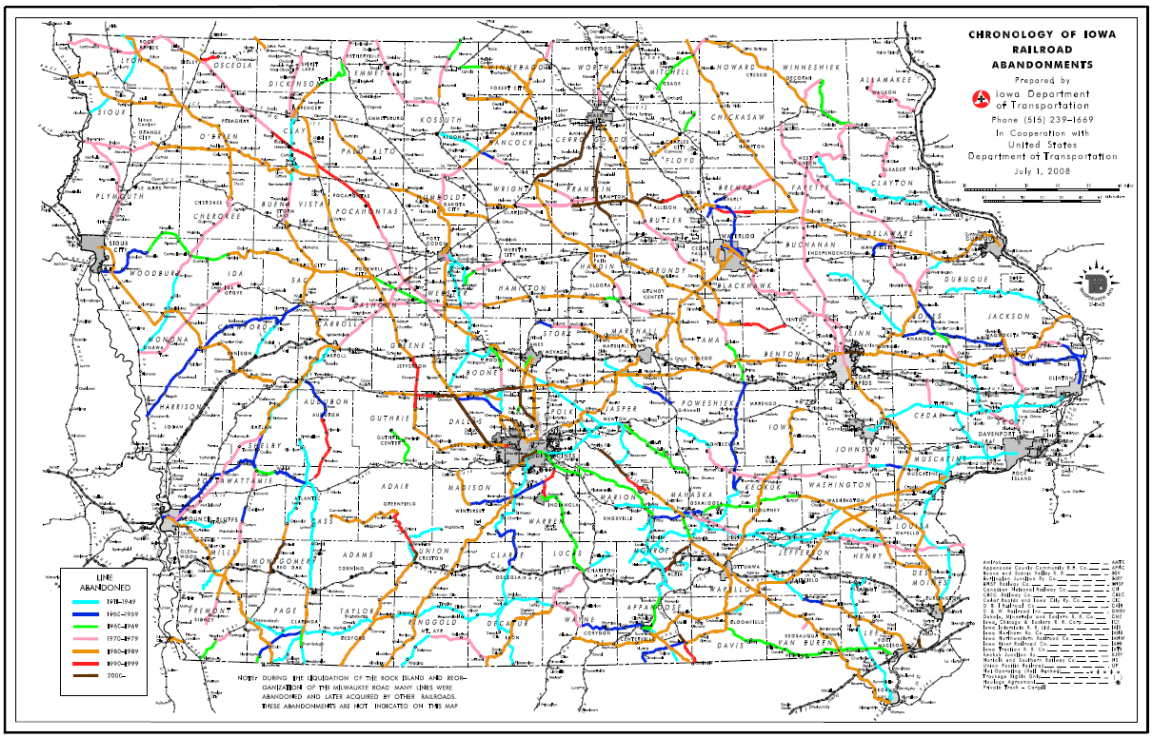
Railroad abandonment: Railroad abandonment is an option for railroad companies in which the companies may discontinue service on segments of railroad. This may be brought on by various factors, including low service, industry closures or deferred track maintenance. The Iowa DOT is involved in any abandonment proposals, which must be approved by the Surface Transportation Board. This involvement includes public meetings to assess concerns from the affected community and impacts to various stakeholder groups, as well as a staff report documenting the Iowa DOT's findings.

Railroad abandonments have varying impacts on local communities. In some instances, the railroad may have simply become irrelevant, and the effect of its departure on the community will be minimal. In others, the abandonment may result in significant changes to the community's and local industry's shipment of goods. Loss of the rail line may hinder future economic development attractiveness, as potential industries may desire rail for inbound or outbound shipment of goods.

Rural communities with grain elevators served by rail might be especially affected by abandonment. The State of Kansas has done several studies concerning the effects of rail abandonment and found that a loss of rail service for local grain elevators affects the grain shipment process in two ways. First, the farmer might ship his/her grain to a terminal farther away with rail access to obtain a higher rate. Second, loss of rail service affects the stage of shipment in which the local county elevator ships grain to a larger terminal elevator by truck instead of by rail. This can have major impacts on pavement damage to local, county and state roads. One study found that maintenance costs of farm-to-elevator routes increased 43 percent, while elevator-to-terminal route maintenance costs would increase 50 percent. These second-stage costs would be borne primarily by the Iowa DOT's maintenance funds.

With these considerations in mind, the Iowa DOT should work closely with railroads and affected communities to prevent abandonment where feasible. Funding assistance can be sought from the Iowa Railroad Revolving Loan and Grant Program. A chronology of Iowa's railroad abandonments appears on the following map. As of July 1, 2009, only one section of track from Des Moines to Bondurant in central Iowa is undergoing study for abandonment.

Chronology of Iowa railroad abandonment



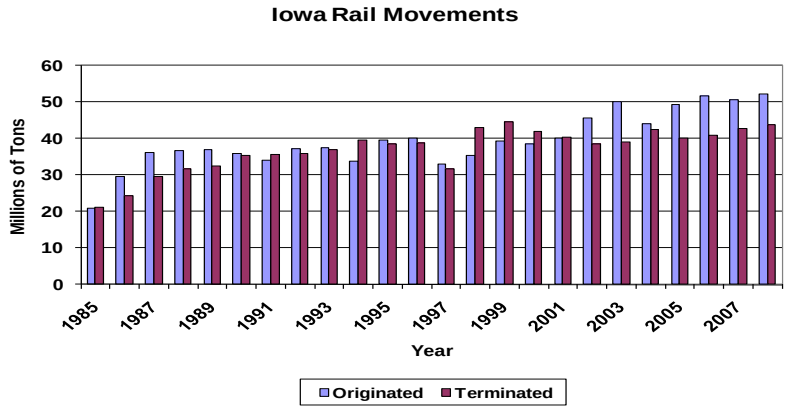
Passenger rail: As with much of the United States, Iowa's passenger rail service is crippled. The reliability of Amtrak is often called into question — usually running several hours behind schedule, especially when coming from the west. As the passenger rail proposals, including the MWRRI move forward, Iowa should participate actively in system planning and development to ensure that Iowans are well served and represented by any investments. Part I and Appendix C outlines the passenger rail proposals.

Railroad freight and Iowa's economy

As shown in the chart on page 66 and explained in the previous section, Iowa's railroad network has shrunk considerably since its peak in the early 1900s. Through "route rationalization," larger railroads have shed their less profitable lines by either selling them to smaller carriers or through line abandonment. Although Iowa has experienced a large extent of abandonment, the economic importance of the network for freight remains critical. In fact, as Iowa continues to develop as a center for the production of biofuels and the broader bioeconomy, railroads will become more rather than less important.

Railroad employment: In 2007, railroads employed nearly 4,038 Iowans paying $276 million in salaries. In that same year, 8,970 Iowans were retired railroad beneficiaries.

Rail use and freight flow: Railroads carry a large amount of freight to and from Iowa each year, and play an important role in the Iowa economy. Railroads currently serve 90 of Iowa's 99 counties, 449 of 949 cities, 43 of 69 river terminals, and 519 of 967 grain elevators. As the number of rail-miles decreased over time, the amount of freight traveling on those miles has increased. Rail- and truck-based freight transport contributes nearly 70 percent of originating and terminating freight traffic in Iowa. Considering the much greater capacity of a rail car (up to five times that of a trailer), maintaining a healthy railroad system is essential in keeping the burden on the state's highways and interstates at a reasonable level. The following chart shows movements of rail freight originating or terminating in Iowa.



Source: Railroads' annual reports

Rail's share of the total value is noticeably smaller when compared to its share of the tonnage. Rail's main commodities being of a lower value, such as grain and coal, explains this difference. Iowa railroads carry 27 percent and 21 percent of Iowa's outbound and inbound freight, respectively, with 5 percent of the inbound freight value and 8 percent of the outbound freight value. The freight values are lower than freight percentages, because much of the rail freight tends to be lower value goods and commodities. When considering the primary inbound commodity is coal, used to power most of Iowa's power plants and provide electricity to homes and businesses, rail benefits multiply.

Freight tons shipped by mode (2002)

Mode	Intrastate		Originating		Terminating	
	million tons	%	million tons	%	million tons	%
Truck	164.5	91	69.6	42	68.4	46
Rail	1.3	<1	44.3	27	31.8	21
Water	<0.1	<1	8.7	5	0.2	<1
Air, air and truck	<0.1	<1	0.1	<1	<0.1	<1
Truck and rail	<0.1	<1	0.2	<1	0.3	<1
Other intermodal	<0.1	<1	1.3	<1	0.4	<1
Pipeline	15.6	9	40.9	25	48.3	32
Total	**181.6**	**100**	**165**	**100**	**149.4**	**100**

Source: FHWA Freight Analysis Framework

Value shipped by mode (2002)

Mode	Intrastate		Originating		Terminating	
	$ (millions)	%	$ (millions)	%	$ (millions)	%
Truck	42,096.70	91	75,478.60	71	60,994.50	67
Rail	174.4	<1	9,038.10	8	4,744.40	5
Water	3.4	<1	1,113.70	1	9.5	<1
Air, air and truck	12.7	<1	2,122.90	2	539.5	<1
Truck and rail	14	<1	1,000.70	<1	300.8	<1
Other intermodal	629.3	1	5,046.60	5	8,922.50	10
Pipeline	3,433.60	7	13,161.40	12	15,334.40	17
Total	**46,364.20**	**100**	**106,962.00**	**100**	**90,845.80**	**100**

Source: FHWA Freight Analysis Framework

Economic impacts on rail freight: As the global economy continues to shift to a more integrated network, changes will affect all modes of freight, especially rail. Many of these changes are already apparent. First, businesses have shifted from “pull” logistics to “push” logistics, where shippers rely on carriers to make on-time deliveries for businesses that use less warehousing and rely on just-in-time deliveries. This is the model characteristic of many of the big-box stores, as well as many manufacturing facilities.

This economic shift puts pressure on rail in multiple ways. It requires a smaller window of arrival times at a destination, and it increases the amount of freight in transit and length of rail freight trips, especially as product parts and finished goods are shipped across the United States or the world as part of the supply chain. As national freight levels are expected to increase 67 percent between 2000 and 2020 (AASHTO), and as Iowa’s freight traffic is projected to grow 44 percent, railroads must remain competitive by increasing capacity and accommodating heavier rail cars.

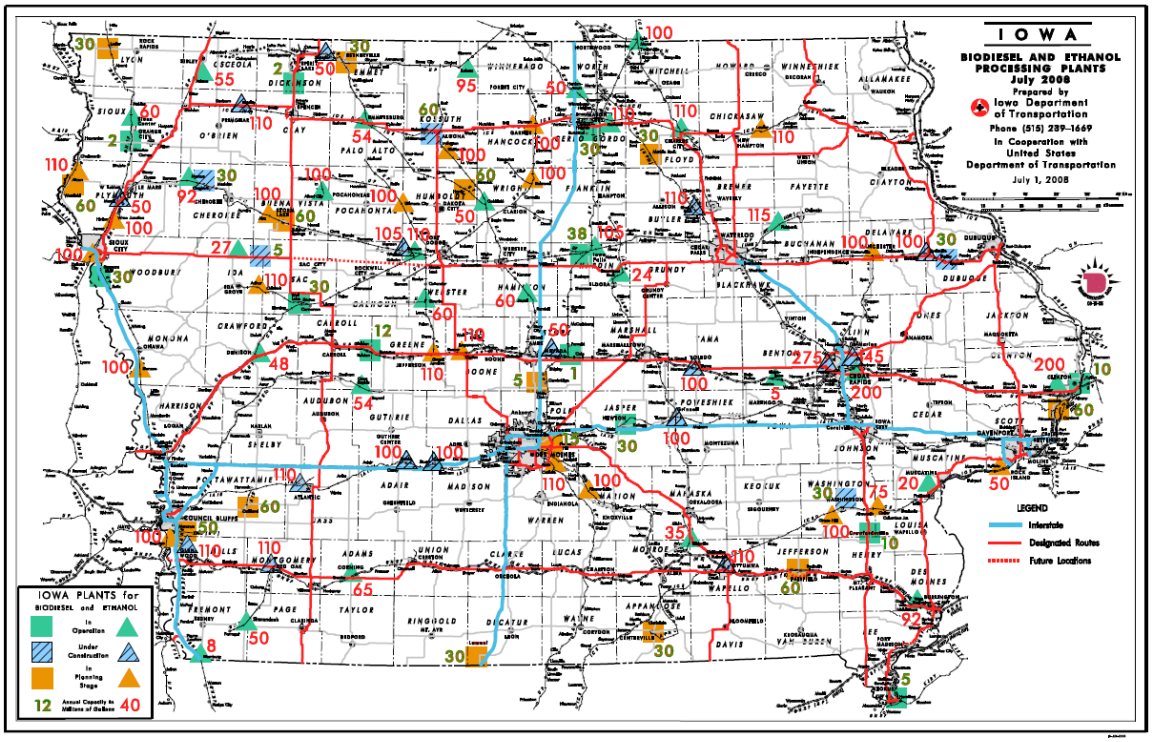
Pass-through-state and congestion: While Iowa has a significant amount of rail origins and destinations, it also plays an important part in the health of the national economy as a key pass-through state. At 265-million tons per year, 73 percent of Iowa's rail freight has an origin and destination outside of Iowa. For the UP and BNSF, Iowa accounts for approximately 25 percent of the tons hauled by those railroads.

Economic interdependence dictates that Iowa's economy reflects the health of the national economy; thus, Iowa has an interest in preserving the role of rail as a reliable and efficient mode of transportation.

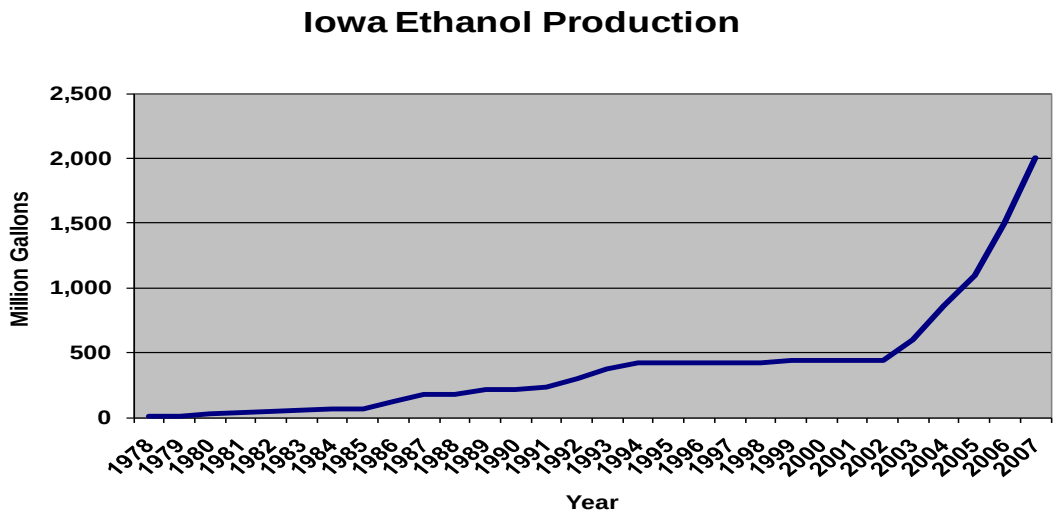
Coordinated planning for ethanol and other value-added industries: Providing rail access to ethanol production facilities through spur tracks can provide valuable economic benefits. Ethanol is a form of value-added product, where lower value corn is exported as a higher-value fuel product. There is a need for coordination between rail service providers and ethanol facilities from the early phases of planning for ethanol plants. The Iowa DOT's Office of Rail Transportation plays a facilitating role between ethanol producers and railroads.

Other value-added industries, such as livestock feed, biodiesel production plants and pharmaceutical companies using Iowa agricultural products, would also benefit from cooperation with the Iowa DOT for interest in rail spur planning, coordination and funding assistance. As shown by the spatial distribution of ethanol and biodiesel plants in following map, rail serves as an important link for these facilities. However, biofuels production will require multiple modes of transport as grain moves from farm to plant, as the fuel moves from the production plant to final destinations, and as production by-products are moved.

Biofuel facilities in Iowa



Ethanol (biofuels) plants and production: Ethanol has become a significant component of the American fuel market, with federal policy increasing research and support for ethanol production. Iowa has long been at the forefront of the ethanol movement — producing approximately 2 billion gallons in 2007. The ethanol industry creates approximately 4,000 jobs in the state, contributes nearly $480 million to local communities throughout Iowa and increases in production revenues for corn growers.



Source: Iowa Renewal Fuels Association

Ethanol production is not a panacea for the state economy. Like any industry, ethanol is subject to market forces of supply and demand. Indeed, it is currently influenced by government subsidies, and policy changes could affect the industry in Iowa. With these political realities in mind, supporting ethanol plants is advantageous for the state of Iowa, and rail policy can contribute to that end.

The impact of the biofuels industry on Iowa freight railroading is significant. Both ethanol and biodiesel production have experienced dramatic increases during recent years, and this trend is expected to continue as the United States attempts to reduce its dependence on foreign oil. The following table shows the number of plants for biodiesel and ethanol in various states of operations.

Iowa biofuel plant status (mid-2008)

	Plants		Capacity (million gallons) in		
	status	**number**	**existing**	**construction**	**planned**
Ethanol (corn)	Operational	31	2254	0	598
	Construction	15	0	1635	0
	Planning	23	0	0	2125
	Totals	**69**	**2254**	**1635**	**2723**
Biodiesel (soybeans)	Operational	13	228	0	0
	Construction	5	0	155	0
	Planning	13	0	0	490
	Totals	**31**	**228**	**155**	**490**

Source: Iowa DOT

Rail passenger service and Iowa's economy

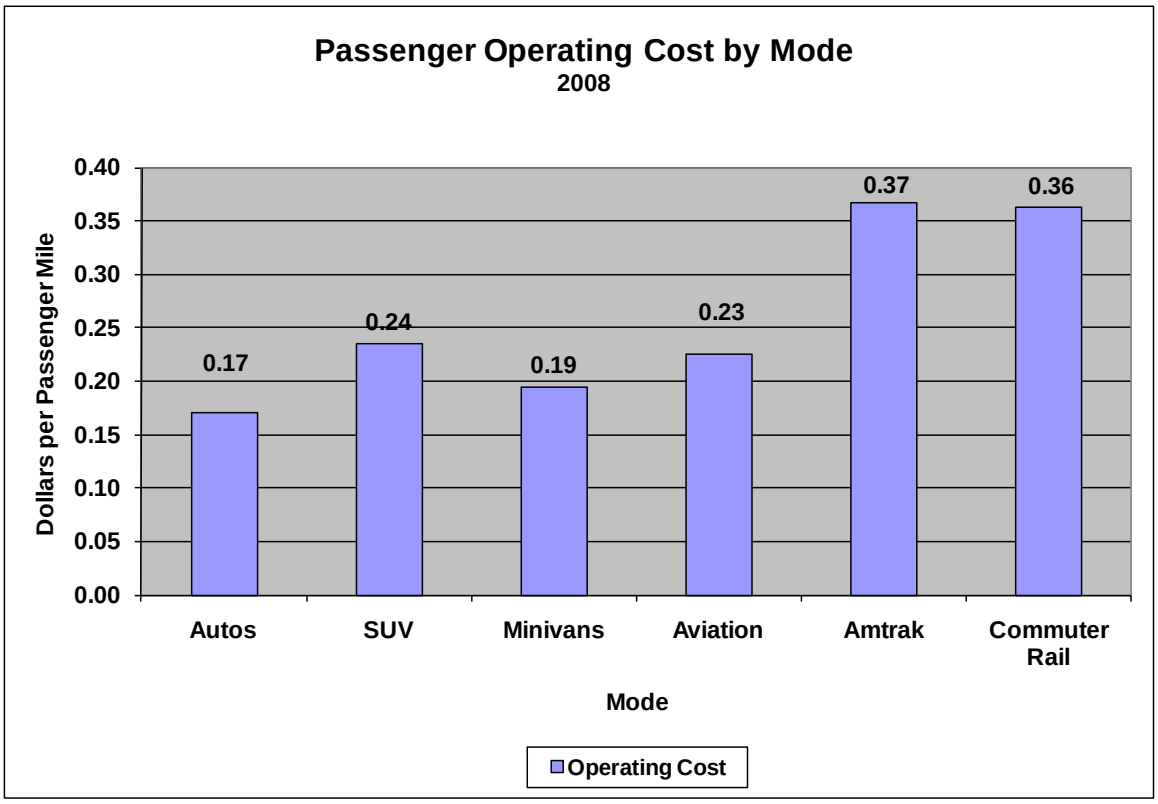
A balanced transportation system is one that accommodates the safe and efficient flow of people and goods using an integrated system of highways, aviation, rail, intercity bus, and public transit. Reviving passenger rail service in Iowa has many benefits. The expansion of intercity passenger rail would improve the nation's transportation system by reducing congestion on other modes and offering mobility options to travelers. Rail passenger service will improve access between Iowa communities. This access supports existing industries, fosters the growth of new businesses and expands the job base.

Rail passenger service can:

- Offer alternative transportation choices for:
  - 200 to 500 mile air travel trips.
  - Senior citizens.
  - Business travel.
  - Medical trips to major hospitals, such as the University of Iowa hospitals and clinics.
  - University students (30 percent of the University of Iowa's freshman class is from Chicago).
- Provide mobility options for individuals who do not wish to drive or fly.
- Create economic development and tourism opportunities.
- Reduce travel times and costs that users of other transportation modes receive because of lower congestion levels.
- Reduce emissions resulting from travelers being diverted from air, bus and auto to rail passenger.
- Relieve highway and air congestion.
- Improve public safety.
- Reduce fuel consumption per passenger-mile, potentially reducing the nation's dependence on imported oil.
- Help mitigate the negative impacts of short or prolonged energy supply disruptions and energy price increases.

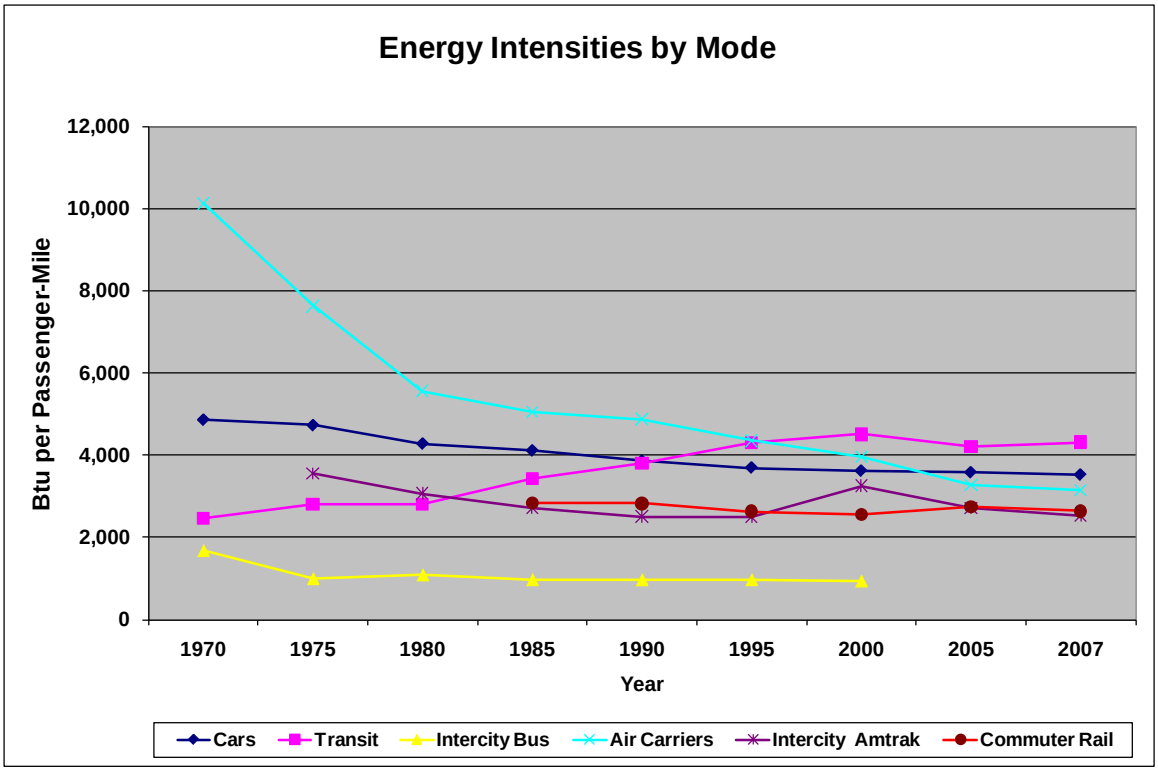
- Provide land use and travel pattern change that could improve air and water quality, as well as aesthetic appeal.
- Provide mobility and economic development opportunities to smaller communities with little or no other access to public transport.
- Assure a redundant transportation mode for use in emergencies.

The cost per passenger-mile for the various modes is presented in the following chart.



Source: AAA and U.S. Department of Transportation's Bureau of Transportation Statistics

Rail passenger service provides an alternative to auto and air travel that promotes potential environmental benefits, including reduced air pollutant emissions, less land use, and fewer habitat and water resource impacts compared to expanding existing highways and airports. The following chart shows that Amtrak service has historically used less BTUs (British thermal units) per passenger-mile than air carriers and cars.



Source: Transportation Energy Data Book, U.S. Department of Energy

In an environment of rising oil prices, rail passenger service can offer an energy-efficient and cost-effective alternative to air and automobile travel that will connect businesses and individuals with cities and towns across the Midwest.

Safety of Iowa's railroad system

Railroad network safety and security

The safety of a railroad begins with the conditions of its infrastructure and equipment. Regular examination and upkeep are critical in preventing most major incidents, such as derailments. Employee awareness and training are also integral to operating safely and ensuring that the tracks are properly maintained. As new technologies are developed and the demand for capacity grows, so should the attention to safety.

Track conditions

As stated above, the condition of the railroad track is a key factor to the safety of the railroad's general operations. Much effort must be taken to ensure that the track is maintained to an optimal level to minimize such track-related incidents, including human observation and automated track inspection techniques.

In addition to the railroad personnel that are constantly working to keep the system safe, the FRA employs inspectors in five disciplines to enforce federal safety standards, including track, operating practice, motive power and equipment, signal and train control, and hazardous materials. Inspectors from each discipline inspect railroad operations and rail infrastructure in Iowa. They identify deviations from the standards, issue violations and assess civil penalties when standards are not met. These standards differ

depending on the classification of a particular section of track. FRA classifications for railroad track are based on the maximum allowed operating speed.

Classes of track

Track classification	Freight speed	Passenger speed
Excepted	10	N/A
Class 1	10	15
Class 2	25	30
Class 3	40	60
Class 4	60	80
Class 5	80	90

Source: FRA § 213.9

Since the mid-1970s, the Iowa DOT has employed two full-time track inspectors to supplement the federal track inspectors, providing regulatory oversight of the railroad track safety to enhance railroad compliance with federal law. The Iowa DOT track inspectors are certified and licensed through the FRA and travel throughout the state visually inspecting the railroad track conditions. Each railroad also employs its own track inspectors. It is the railroad's responsibility to inspect its tracks regularly in accordance with the FRA guidelines. Failure to comply is not only hazardous to operations safety, it may also come with penalty from the FRA. FRA requirements for the frequency of track inspection are listed in the following table.

Track inspection schedule

Track classification	Type of track	Required frequency
Excepted track and Class 1, 2 and 3 track	Main track and sidings	Weekly with at least an interval of three calendar days between inspections, or before use, if the track is used less than once a week, or twice weekly with at least an interval of one calendar day between inspections, if the track carries passenger trains or more than 10 million gross tons of traffic during the preceding calendar year.
Excepted track and Class 1, 2 and 3 track	Other than main track and sidings	Monthly with at least an interval of 20 calendar days between inspections.
Class 4 and 5 track	All	Inspect twice weekly with at least an interval of one calendar day between inspections.

Source: FRA § 213.233

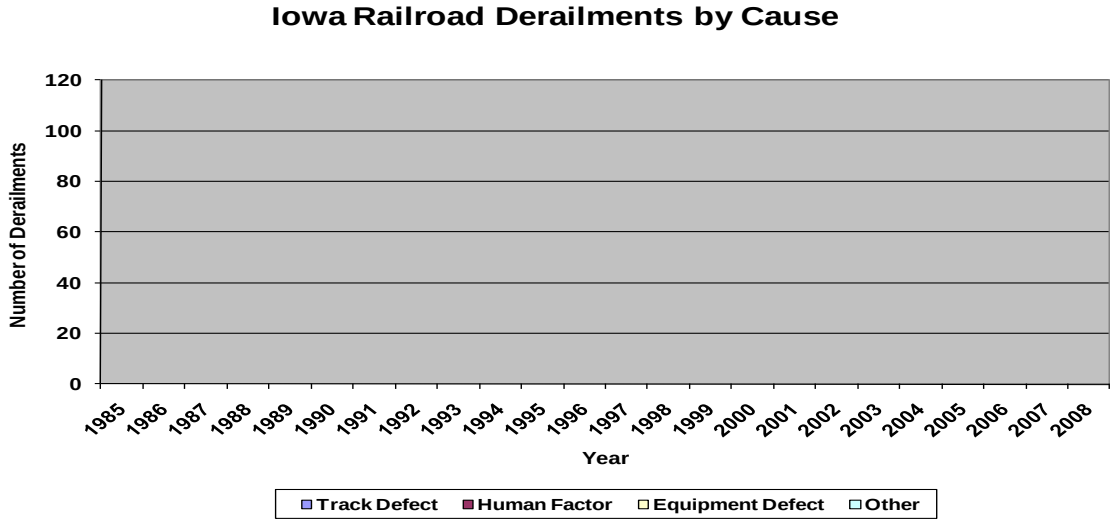
The FRA supplements human inspections with its Automated Track Inspection Program (ATIP). The ATIP uses track geometry vehicles that travel on the rails and have the ability to measure and record data related to the conditions of the track that are not able to be detected by people. The data collected is used primarily to:

- Monitor and assess the railroad's compliance with Federal Track Safety Standards.
- Function as an early indicator of the safety trends within the industry.
- Create a track data management system (TDMS).

The TDMS serves as an archive for safety studies, as well as a tool to set priorities for compliance and enforcement activities.

Derailments
A derailment occurs when on-track equipment leaves the rail for a reason other than a collision, explosion, highway-rail crossing impact or similar event. Since 1985, there has been a general decline in the number of derailments in Iowa decreasing from 86 to 53.

Most derailments are either track-related or human factor-related. Track problems mainly include broken or otherwise damaged rails. On rare occasions involving flooding, washouts may occur, endangering a train. Human factors are any type of error by the operators. This may include factors such as fatigue, communication problems or distraction. Types of equipment failures include broken flanges or couplers, bearings overheating and other similar problems. Factors not included in any of the previous three types are classified as "other." Causes of these derailments include anything from vandalism to shifting loads to even something rare, like high winds blowing cars or locomotives off the track.



Source: FRA's Office of Safety Analysis

The following table describes the number of derailments by railroad in Iowa over the last five years. The number of derailments has fluctuated among the various railroads. Certainly, the larger volume carriers represent a higher number of incidents. A discrepancy between the total number of derailments from the table below and the chart above has a simple explanation. A derailment occurring on trackage rights or from a transfer may be reported by more than one railroad. For instance, if a DAIR train were to derail on a BNSF-owned transfer track in Sioux City, the DAIR would report the derailment for its damaged equipment, whereas the BNSF may report the derailment for

track damages, as was the case on July 27, 2006.

Derailments in Iowa by railroad

Railroad	2004	2005	2006	2007	2008	Total
BNSF Railway	15	7	9	11	9	**51**
Great Western Railway of Council Bluffs	0	1	0	0	0	**1**
Cedar Rapids and Iowa City Railway Co.	3	0	1	3	3	**10**
CN (CC & CEDR)	1	2	3	5	2	**13**
D & I Railroad Co.	0	0	2	0	0	**2**
DME/ICE	33	16	9	6	12	**76**
Iowa Interstate Railroad Ltd.	2	5	6	1	7	**21**
Iowa Northern Railway Co.	2	0	3	6	1	**12**
Keokuk Junction Railway Co.	1	0	0	0	1	**2**
Union Pacific Railroad	31	30	36	34	22	**153**
Total	**88**	**61**	**69**	**66**	**57**	**341**

Source: FRA's Office of Safety Analysis

Hazardous materials in Iowa

Rail incidents involving hazardous materials occur infrequently in Iowa, but they have the potential for significant health, safety and/or property impacts. An increasing interest in national security and the potential of terrorists targeting hazardous material shipments may require added safety measures in the future. Railroads have invested hundreds of millions of dollars to upgrade and maintain their tracks, install new signal systems to regulate train operations and protect the public at highway-rail crossings, and continually educate their employees in safe handling of the trains.

Hazardous materials incidents

Year	State of Iowa			United States		
	injury	fatal	total	injury	fatal	total
2001	1	0	**15**	43	3	**899**
2002	1	0	**13**	13	1	**870**
2003	0	0	**7**	12	0	**802**
2004	0	0	**5**	99	3	**753**
2005	1	0	**17**	587	10	**736**
Total	**3**	**0**	**57**	**754**	**17**	**4060**

Source: FRA's Office of Safety Analysis

Security

Recent events, especially the 2004 Madrid, Spain, and 2005 London, England, train bombings, have increased the level of concern for the security of the nation's railroad network. By its nature, a large portion of railroad infrastructure is easily accessible and generally unprotected. For this reason, railroads are conceivable targets for terrorist organizations and individuals. Thus, a high priority has been placed on reducing the potential for railroad equipment and infrastructure to be used for terrorist attacks. Railroads and their customers have long been targets of more conventional crimes, including larceny, robbery, shipment of stolen goods or contraband, and theft of services.

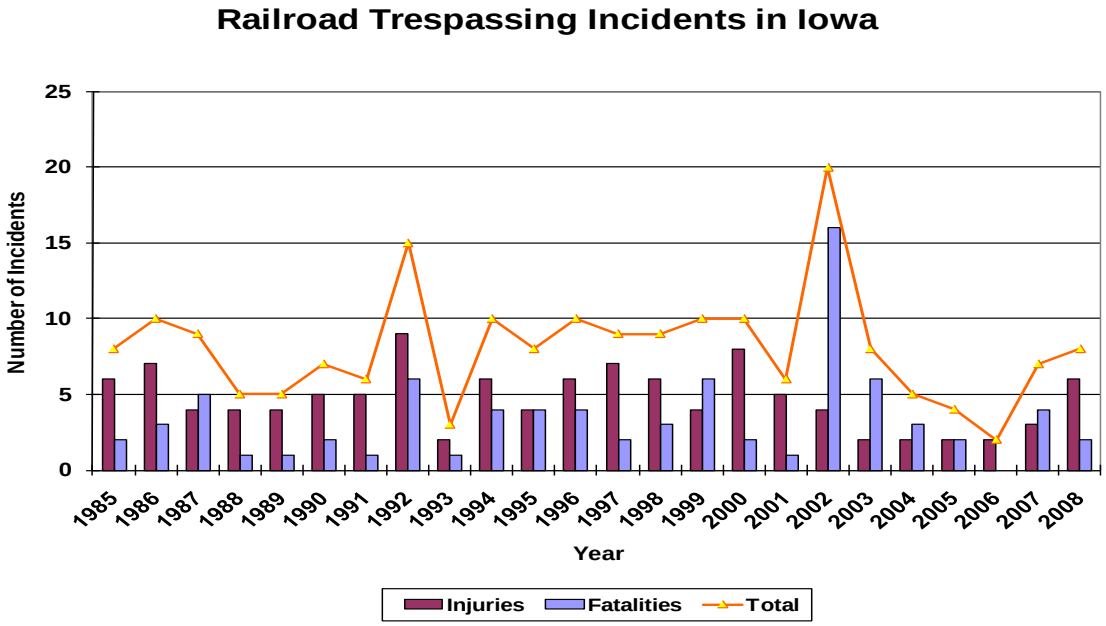
Railroads could be vulnerable to attack in numerous ways, including:

- A train hijacked to use passengers or cargo as hostages.
- Deliberate derailment of a train carrying hazardous cargo through an urban area could be detrimental to the health of its population.
- Destruction of key bridges could result in a long-term interruption of railroad service, causing economic hardship to shippers and consumers.
- A weapon placed on a train for use within a populated area or strategic location.

At the local level, railroads can help prevent such crimes and terrorism by physically blocking access to vulnerable portions of the infrastructure, such as bridges; carefully screening people who have access to the property; examining goods and containers that are presented for shipment; or in extreme cases, placing armed guards on the premises. Screening procedures can be time consuming and may require expensive equipment such as X-rays, thermal imaging, metal or radiation detectors or real-time background checks. Further, the need to make such investments or implement such procedures should be evaluated in comparison with other potential security targets. In doing so, the nation's investment in security can be directed toward the most at-risk points. Nonetheless, there are many things that can be done to improve security with little or no additional investment, including employee training, local police surveillance, and citizen involvement regarding the spotting and reporting of suspicious activity.

Trespassing
Railroad tracks, yards and bridges are private property. Generally, railroad property extends at least 50 feet from the center of the track. Any unauthorized person on railroad property is a trespasser and may be charged with trespassing. Utilizing railroad property for any use other than railroad business is illegal. Some common examples of trespassing include hunting, hiking, biking, joy riding, and taking a shortcut across a set of tracks at a location other than at a grade crossing.

Trespasser casualties occur when an individual is injured or killed while on railroad property and whose presence is prohibited, forbidden or otherwise unlawful. Trespasser casualty statistics do not include those incidents that occur at a public highway-rail grade crossing; these are included with the highway-rail crossing incident statistics.



Source: FRA's Office of Safety Analysis

Trends for trespasser casualties are very sporadic and vary greatly over a period of years. During 2008 in Iowa, there were eight incidents associated with trespassing; six involving injuries and two fatalities. In 2002, there was a special situation and is something that is currently of great concern. The situation was at a grain elevator outside of Denison, where 11 illegal immigrants from Mexico were found dead in a grain hopper. As immigration reform debates continue in Congress, this type of trespassing may become more prevalent. The Iowa DOT may want to get involved with any legislation regarding border security, especially if it deals with car- or container-screening processes at international terminals.

Remote-control locomotives

For the last several years, larger railroads — including BNSF and UP — have been developing remote-control technology for use within their yards. A 2006 FRA report on the use of remote-control locomotives (RCL) shows a slight increase in human-related incidents for use of RCL compared to conventional switching methods. The FRA found this increase very minimal and claims that the use of RCL in urban areas poses no more risk than conventional switching methods. Council Bluffs (UP), Des Moines (UP) and Sioux City (BNSF) each have RCL programs in operation. Clinton County and Fort Madison each have ordinances restricting the use of RCL technology until it is further studied.

Positive train control
Positive train control (PTC) refers to technology that will automatically stop or slow a train if there is danger ahead. PTC systems are integrated command, control, communications and information systems for controlling train movements. PTC is expected to improve railroad safety by reducing collisions between trains, casualties with railroad workers, damage to equipment, and over speed accidents. In addition to the safety benefits, PTC systems will assist railroads in measuring and managing costs including energy.

Prior to October 2008, various carriers were voluntarily installing PTC systems. On Oct. 16, 2008, the Rail Safety Improvement Act of 2008 was signed requiring certain freight and passenger railroads to implement PTC by December 2015. PTC will need to be installed on main lines that carry at least 5 million gross-tons annually over which intercity or commuter passenger rail is regularly provided, poison or toxic-by-inhalation hazardous materials are transported, or such other tracks prescribed by regulation or by the U.S. Secretary of Transportation. Currently, all of the affected railroads are aggressively pursuing development of the PTC as required and adapting their individual PTC systems to maximize interoperability.

Railroad and community interaction
Railroads are private companies and are not public infrastructure in the same sense as highways and water systems. However, railroad rights of way often pass through towns, by public and private property. Thus, physical interactions between railroads and the people and communities they serve are unavoidable, and the relationship can be positive. Cooperative efforts from both the railroads and the communities can make this a constructive coexistence. Many such programs are in place in Iowa, focusing especially on efficiency, safety and quality of life.

Railroad crossings
Safety: The most noticeable interaction between railroads and communities occurs around at-grade railroad crossings, where public roadways intersect with railroad tracks. At these points, the railroad has the right of way and road traffic must yield. Many safety measures and programs can increase safety at these junctions for the benefit of both the railroad and the community.

Railroad safety improvements can be approached in many ways, though a distinction is frequently made between education, enforcement and engineering; commonly referred to as “the three Es.” For example, Iowa’s involvement with Operation Lifesaver, a nonprofit organization sponsored by federal, state and local authorities (including the Iowa DOT) contributes to the education component. Operation Lifesaver programs educate drivers, pedestrians and school children about the dangers of railroad crossings in an effort to help them make safer decisions. Recently in coordination with the UP, Operation Lifesaver has offered many communities the opportunity to ride a portion of the railroad, educating the passengers of safety along the way.

Maintenance: Jurisdictional authority varies, depending on the classification of the roadway intersecting the railroad. While the railroad installs, owns and maintains the crossing and often the right of way to either side (generally 25 feet), the appropriate municipality (or, sometimes, private land owner) maintains the roadway approaching the crossing. Despite the multiple authorities, the *roadway must remain consistent, safe and functional for the driver who is passing by and is not much concerned with the*

maintenance responsibilities. To that end, the Iowa DOT provides funding for the state's Grade Crossing Surface Repair Program, as explained in Appendix B.

Highway-rail grade crossing incident trends

The highway-rail grade crossing safety trends presented herein were derived from the FRA's Office of Safety Analysis data displayed at the organization's Web site (http://safetydata.fra.dot.gov/officeofsafety/). Information was summarized into a database that could then be queried to discern trends.

Incidents at highway-rail crossings and accidents involving trespassers on railroad right of way continue to be critical railroad safety problems. In 2004, these two categories accounted for 94 percent of railroad-related fatalities, as reported by the Association of American Railroads (www.aar.org/Rail-Safety). According to the FRA, Iowa has 7,282 grade crossings — 4,404 are public and 2,878 are private. Of the public crossings, 922 are equipped with lights and gates, 860 with other active warning devices (i.e., lights and/or bells) and 2,622 crossings are equipped with passive devices (i.e., crossbucks or stop signs).

As a whole, the number of highway-rail incidents at public grade crossings decreased between 2004 and 2008. The percentage of incidents with injuries also declined. Despite that fact, the number of fatalities has remained about the same, leading to a higher percentage overall. In 2004, the percentage of incidents with injuries was 31 percent, while in 2008 the percentage was 35. The percentage of fatal incidents was six in 2004, but it was 7 percent in 2008.

Highway-Rail crossing incidents in Iowa

Year	All accidents			At public crossings			At private crossings		
	number	fatalities	injuries	number	fatalities	injuries	number	fatalities	injuries
2004	81	5	25	78	5	25	3	0	0
2005	77	6	32	70	6	30	7	0	2
2006	69	6	20	60	5	15	9	1	5
2007	82	7	27	74	7	27	8	0	0
2008	72	5	25	64	5	24	8	0	1

Source: FRA's Office of Safety Analysis

Accidents by warning device: The majority of crossings in Iowa are marked with passive warning devices, such as a crossbuck sign, that instructs drivers to yield to train traffic. Other crossings with higher train and/or vehicle traffic or other safety concerns are equipped with active warning devices, such as flashing lights and/or gates, which warn of an approaching train. More than 2,600 Iowa public at-grade crossings are passive crossings, where the crossing is marked by a crossbuck. Nearly 1,800 Iowa public at-grade crossings are equipped with active warning devices.

Historically, the number of incidents at Iowa's public grade crossings has been higher for those with passive warning devices. Over the last five years, the data shows a slight decrease in the overall number of incidents. However, there are still more incidents at crossings with passive warning devices, as 55 percent of the accidents occurred at crossings with only passive warning signs.

Iowa incidents at public crossings by warning device

Year	Total	Active devices		Passive devices	
		number	percent	number	percent
2004	**78**	34	44	44	56
2005	**70**	43	61	27	39
2006	**60**	25	42	35	58
2007	**74**	27	36	47	64
2008	**64**	27	42	37	58
Totals	**346**	**156**	**45**	**190**	**55**

Source: FRA's Office of Safety Analysis

Accidents by county: From 2004 to 2008, the five Iowa counties with the highest number of incidents were Black Hawk, Polk, Pottawattamie, Scott, and Woodbury. Of the 346 total highway-rail incidents over that period, these five counties accounted for nearly 25 percent of the incidents.

Although the overall safety record for Iowa and the railroad industry has improved over the past five years, a significant number of train incidents continue to occur. Moreover, recent train incidents have highlighted specific issues that need government and industry attention, and the strong growth of rail and highway traffic continues to drive up exposure at highway-rail grade crossings. The Iowa DOT will work with industry and organizations such as Operation Lifesaver to aggressively address these critical issues and implement a plan to improve railroad safety.

Iowa counties with the most incidents at public crossings

County	Year					Totals	
	2004	2005	2006	2007	2008	number	percentage
Black Hawk	3	5	5	6	1	**20**	**5.8**
Polk	3	4	3	0	1	**11**	**3.2**
Pottawattamie	9	7	2	5	2	**25**	**7.2**
Scott	4	3	1	3	0	**11**	**3.2**
Woodbury	4	5	3	4	4	**20**	**5.8**
All of Iowa	***78***	***70***	***60***	***74***	***64***	***346***	***100***

Source: FRA's Office of Safety Analysis

Blocked crossings

In an emergency, the public expects emergency response vehicles to reach the scene of an incident as quickly as possible. In everyday commuting, drivers have expectations about travel times between origins and destinations. A blocked railroad crossing can frustrate these expectations.

Iowa Code makes Iowa better managed than states without regulations, but in the area of emergency response, these regulations can still pose a problem. Local jurisdictions may pass ordinances further limiting this time if it can be shown that there are public health, safety or convenience justifications. The Iowa DOT should work with local communities to address the issue of blocked crossings on emergency response routes.

Iowa Code (§ 327G.32) explains that trains may not block a crossing for more than 10 minutes unless the following conditions apply.

- When it is necessary to comply with signals affecting the safe movement of trains;
- When it is necessary to avoid striking an object or person on the track;
- When the train is disabled; or
- When it is necessary to comply with government safety regulations, including, but not limited to, speed ordinances and regulations.

Quiet zones

One emerging community issue is the creation of "quiet zones." This issue deals with the effects on nearby residents from trains that blow their horns for grade crossings. The FRA recently released the "Final Rule on the Use of Locomotive Horns at Highway-Rail Grade Crossings," which explains the requirements for communities wishing to have "no-horn zones" in their areas or for communities needing to upgrade in order to maintain pre-existing "whistle bans." By law, a train must blow its whistle when approaching an at-grade crossing. Exceptions to this rule are available at crossings that meet a standard of safety measures for preventing collisions without a whistle. These measures include improved signing and lighting to notify drivers visually and barriers, such as gates and curbs (so drivers cannot drive around gates), to prevent collisions physically.