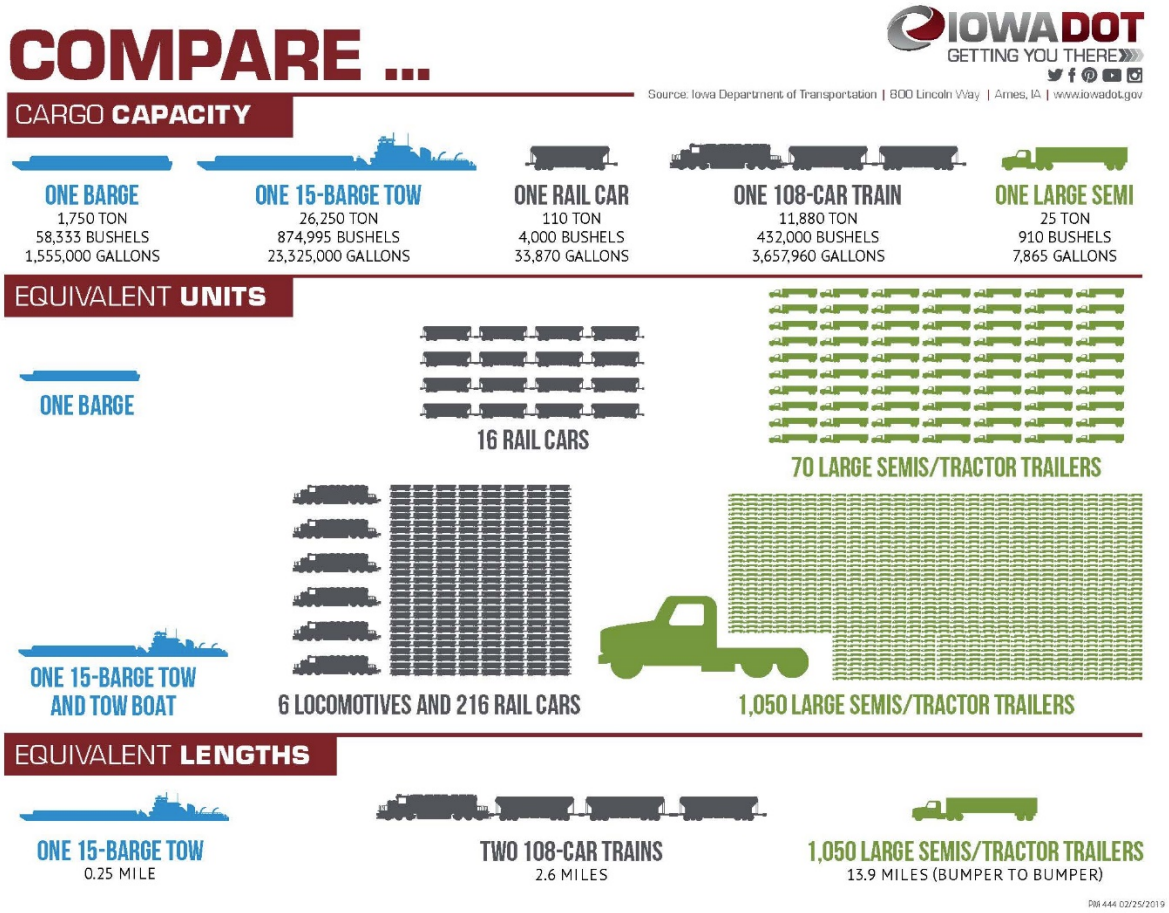
Chapter 7: Rail, Air and Pipelines

Rail transportation is more efficient at moving heavy and bulk goods over long distances than other modes. Railroads are three times more fuel efficient as semi-trucks at moving goods, as a result the use of a railroad for shipping may be able to provide a reduced cost for a business. Because it is more fuel efficient, railroads are also more environmentally friendly than shipping by truck and pollute less.



Air Transportation can move people and goods more quickly over long distances than other modes of transportation. As a result of this feature, airports can serve as transportation hubs and economic drivers where people and goods are drawn to and other transportation infrastructure and business is focused.

Pipelines are often not considered part of transportation but are used for the transport and delivery of oil, natural gas, and other products.

Railroads

The rail network in Iowa consists of 3,851 miles of track. The majority of this is owned by one of five Class 1 carriers: BNSF Railway, Canadian National Railway, Canadian Pacific Railway, Norfolk Southern Railway and the Union Pacific Railroad. In 2013 freight railroads carried 290 million tons of freight in Iowa, this is expected to increase to 442 million tons by 2040.

In addition to the freight railroads passenger rail service is provided by Amtrak on two routes; the California Zephyr and the Southwest Chief. In 2014, there were 57,000 passenger boardings at the six stations served by Amtrak.

The Iowa Department of Transportation is responsible for regulating rail transportation and for planning; this includes developing rail policy and legislation, advocacy and communications, administering funding programs for rail safety and improvement projects, performing track inspections. To assist with this the state has developed a State Rail Plan which was completed in 2017, the goals identified in the plan are:

- Enhance the Safety and Security of the Rail System.
- Maintain the Rail Infrastructure.
- Provide Access and Connectivity.
- Improve Efficiency.
- Ensure Economic Competitiveness and Development.
- Sustain the Environment.

Rail Lines and Rail Traffic Density

Four Class I railroads serve RPA 15. The Ottumwa Subdivision of the BNSF Railway (BNSF) runs east-west through Jefferson and Wapello Counties. The Norfolk Southern (NS) has trackage rights over the BNSF through the region. The Ottumwa and Laredo Subdivisions of the Canadian Pacific Railway (CP) run northeast-southwest through Keokuk and Wapello Counties. The Oskaloosa Subdivision of the Union Pacific Railroad (UP) runs north-south through Mahaska County. Rail lines are shown on Map 7.1.

A CP train hauls freight north of Ottumwa.

In addition to the Class I routes, the Burlington Junction Railway (BJRY) operates a transload facility near downtown Ottumwa and serves several customers each weekday in Ottumwa's Iowa Ave. industrial corridor. The BJRY interchanges with the BNSF.

The BNSF route running east and west through Jefferson and Wapello Counties is the most heavily used of the three rail lines as shown in figure 7.1. Each year an average of over 100 million gross tons per mile are moved through the region on the track. This is also the third most heavily used route within the state after the UP route that goes through Ames and the route through Fort Madison. The CP route, while having lower tonnage than the BNSF, also shows a higher density in Keokuk County than near Blakesburg. This is due to some eastbound coal trains transferring from the BNSF to the CP at Ottumwa. Also, there is a tank farm (Quest Liner) west of Ottumwa along the CP where some goods may be unloaded.

Figure 7.1: Rail Density in Million Gross Tons per Mile

Railroad	Line Segment	2010	2012	2013	2015	2016
BNSF	E of Jefferson Co	117.00	106.00	109.00	115.00	109.00
BNSF	Wapello Co near Chillocothe	117.00	107.00	113.00	123.00	109.00
CP	Keokuk Co	11.80	10.81	14.30	18.49	16.11
CP	Wapello Co near Blakesburg	10.00	9.41	9.80	11.18	10.43
UP	Mahaska Co between Beacon and Eddyville	2.20	1.23	0.98	0.99	1.04

Source: Iowa DOT Rail Tonnage Maps

Passenger Rail Service

The region is served by Amtrak's California Zephyr line that runs from Chicago, Illinois to Oakland, California with stops in Omaha, Denver and Salt Lake City. The California Zephyr makes use of BNSF tracks while traveling through Iowa. The station in Ottumwa is along this route and is served by two passenger trains per day, the eastbound train stops in Ottumwa at 9:09am daily and the westbound train stops at 6:57pm daily. In 2018 there were a total of 11,043 instances of boarding and alighting in Ottumwa, this is a decrease from 2017 when there were 12,209 instances of boarding and alighting. The instances of boarding and alighting in 2016 was similar to 2017 with 12,155 passengers using the station.

Base fares from Ottumwa to other major cities along the routes and travel times are shown in figure 7.2. These prices are for a coach seat on a one-way trip, upgrades for a superliner roomette or a private bedroom increase the price. Also, base tickets do not include meals or drinks, while roomettes and private bedrooms do include meals, bottled water and other amenities.

Figure 7.2: AMTRAK Ticket Costs and Travel Times on the California Zephyr from Ottumwa			
Direction	Destination	Cost Per Ticket	Travel Time (hours)
East	Chicago, IL	$48	6
West	Denver, CO	$155	14
West	Salt Lake City, UT	$141	30
West	Oakland, CA	$246	49
Source: Amtrak.com Accessed: January 4th, 2019			

Amtrak's California Zephyr stops at the Ottumwa station.

Amtrak offers comparable travel times for trips from Ottumwa to Chicago or Denver. It has the advantage over driving of allowing passengers to relax or engage in other activities. The problem is that travel times and arrival times can be longer and later than estimated. This is due to the passenger service having to share track in almost ¾ of the areas it operates with freight traffic and being subject to operating decisions made by other railroads. Another advantage of Amtrak over other modes of transportation is that the stations are located in the downtown or the center of the city, so they are near the attractions. However, an issue is that Amtrak stations may offer less amenities and services compared to an airport.

Another Amtrak route, the Southwest Chief, operates from Chicago, Illinois to Los Angeles, California and stops in Kansas City, Albuquerque and Flagstaff. While the Southwest Chief does not stop within the region, there is a station approximately two hours away in Fort Madison. Similar to the California Zephyr, two trains per day operate on this route, the eastbound train stops in Fort Madison at 10:49am daily and the westbound train stops at 6:30pm daily. Also similar to the Zephyr, the Southwest Chief operates on BNSF tracks in Iowa.

Rail Crossing Location and Type

There are 162 rail crossings within the region, of these 111 are at-grade crossings while the remaining fifty-one are grade-separated. A majority (61) of the at-grade crossings have passive warning devices (i.e. crossbucks). These crossings are located on low

traffic volume roads. Twenty-four of the crossings have crossbucks and flashing lights, and 40 crossings have crossbucks, flashing lights and gates. The crossings with gates are more likely in a city or on high volume roads. Map 7.2 shows the location of the at-grade crossings and the type of crossing.

In 2018 there were zero rail crossing crashes in the region. Rail crossing safety and rail safety in general will be discussed in more detail in Chapter 8: Safety and Security. There are issues with delays at two crossings on the Canadian Pacific rail line on the east side of Ottumwa at crossings on Quincy Avenue and at 163rd Avenue. This is due to trains stopping and blocking the crossings during switchings, changing crews or other operations. There are also delays on the CP line south of Blakesburg at the crossing on County Road T7J (Monroe-Wapello Road) due to a switch.

Proposed Improvements

Ottumwa Rail Port Relocation

Current arrangement of the BJRY rail port near downtown Ottumwa.

In addition to local switching operations, the BJRY operates a rail port adjacent to the BNSF in Ottumwa on the edge of downtown. Bulk products are transloaded between railcars and tractor-trailers, inducing heavy truck traffic within the downtown district. The recent installation of quiet zone crossing improvements has made turning movements more difficult for trucks. An upcoming reconstruction project on E. Main Street will further encumber the movement of truck traffic through downtown. Planning processes that seek to revitalize and redevelop the riverfront area between downtown and the Des Moines River are underway. Intensified commercial and residential land uses would further limit the functionality of the rail port in its current location.

The Ottumwa Economic Development Corporation (OEDC) has secured funding to use as match for a rail port relocation feasibility study as a proactive means to retain the existing business of the facility and identifying expansion potential. It is anticipated that the OEDC will apply for a Rail Port Planning and Development Grant from Iowa DOT's Railroad Revolving Loan and Grant (RRLG) Program to investigate relocating the rail

port out of downtown to a site approximately three-quarters of a mile to the east near Iowa Avenue. As the primary industrial road in Ottumwa, Iowa Avenue was recently reconstructed for heavy truck traffic and has direct connections to all major highways into and out of Ottumwa.

Aviation

Aviation facilities in Iowa consist of public use 117 airports, which include eight commercial and 109 general aviation facilities. In 2008 there were 1.5 million commercial enplanements from commercial airports in the state, this is expected to increase to 3.1 million enplanements by 2030. The the number of based aircraft is anticipated to increase by almost 800 aircraft and aircraft operations are projected to increase over 250,000 operations.

Location of Airports and Level of Service

Aviation facilities within the region include four airports shown on map 7.3. These include two enhanced service airports; located outside Ottumwa and Fairfield, a general service airport in Mahaska County, and a local service airport in Keosauqua. There are also plans to develop a new regional airport for Oskaloosa and Pella northwest of Oskaloosa dependent on funding. If this airport is developed the current Oskaloosa airport will be closed.

Enhanced Service airports have runways that are 5,000 feet or greater in length, full time staffing during business hours and FBO staffing 24 hours a day. Enhanced Service facilities can accommodate all types of general aviation activity and most business jets. General service airports have runways that are 4,000 feet in length or greater and staffing during normal business hours. General Service facilities can support most general aviation operations and small to medium sized business jets. Local Service airports have turf runways and provide little or no services. Local service facilities support local aviation and are unable to support any other roles.

Distance to Commercial Service Airports

In order to use commercial air service, residents of the region must travel between ninety minutes and six hours. Commercial air service airports around the region and their time distance away are identified in figure 7.3.

Figure 7.3: Distance to Commercial Service Airports			
Airport	Travel Time	Airport	Travel Time
Burlington	90 minutes	Kansas City	4 hours
Cedar Rapids	2 hours	St. Louis	5 hours
Des Moines	2 hours	Minneapolis	5 hours
Moline	2 1/2 hours	Chicago	6 hours
Omaha	4 hours		

Prior to 2002 Ottumwa's airport offered commercial flights through Great Lakes Airlines (United Express). This service operated under the Essential Air Service program, which subsidized the cost of the service and controlled ticket prices. During this time period, Ottumwa had flights to Chicago, however the service ended due to low usage. This was due to a lack of promotion and flights frequently being cancelled or rescheduled. Cancellations and rescheduling occurred due to too few passengers using the service and the cost of the flight being too high. This is due to the Essential Air Service program having a cap on the maximum per passenger cost. With few passengers using the service, the cost often exceeded the allowed amount, and Ottumwa often struggled to keep passenger costs within EAS limits to maintain commercial air service.

Since the loss of Great Lake Airlines in 2002 the City of Ottumwa had solicited proposals to provide commercial air service on multiple occasions however none of these have been acted upon due to their cost to the city. These have included a proposal from Air Exec and a proposal for scheduled service from Angel Air in 2006 using funding from the Small Community Air Service Development Program to get started. Due to the lack of support from the community and surrounding cities and counties neither of these proposals proceeded.

Ottumwa is currently exploring a proposal for commercial air service by Air Choice One to Burlington. From Burlington passengers would be able to fly to Chicago, Mason City, Minneapolis or St. Louis. In order to start this service, it is proposed that the Small Community Air Service Development Program be used to assist with funding for the first year.

Existing Airport Facilities and Proposed Improvements

Fairfield Municipal Airport (FFL)

Aerial view of the Fairfield Municipal Airport.

The Fairfield Municipal Airport is located north of the City of Fairfield along Iowa Highway 1. The airport classified as an Enhanced Service Airport by the Iowa DOT and has a 5,500-foot concrete primary runway. The airport also has a 2,300-foot secondary turf runway, 33 hangar parking spaces and 17 parking locations on the apron. The airport is recognized by the FAA in the National Plan of Integrated Airport Systems as a general aviation airport, and eligible for federal funding. In 2015 the Fairfield airport had 28 based aircraft and saw 7,000 aircraft operations, this is expected to increase to 33 based aircraft and 8,250 aircraft operations by 2030 per the Iowa Aviation System Plan.

Figure 7.4 contains proposed improvements for the Fairfield Municipal Airport from airport's capital improvement plan. The reconstruction of the taxiway to the T-hangars is necessary due to deterioration of the existing pavement and has the potential to cause foreign object damage due to the spalled concrete. The taxiway will also be widened during reconstruction to meet current FAA standards. A new fuel tank farm is necessary to meet the demand of increased jet and agricultural aviation traffic that the airport is seeing.

Figure 7.4: Fairfield Municipal Airport Projects

Year	Project	Total Cost	Federal Funding	State Funding
2020	Airfield Pavement Rehab Phase 3: Reconstruct Taxiways to T-Hangars	$590,000	$531,000	$0
2022	Replace Fuel Farm	$900,000	$0	$765,000
2024	Airfield Pavement Joint Sealing	$110,000	$99,000	$0
2025	Snow Removal Equipment	$200,000	$180,000	$0
2026	Construct Taxiway	$150,000	$135,000	$0
2027	Construct T-Hangar	$725,000	$652,000	$0
2028	Site work, Auto parking apron extension for corporate hangar	$150,000	$0	$127,500
2029	Construct Corporate Hangar	$600,000	$540,000	$0

Source: Fairfield Municipal Airport 2020-2024 Capital Improvement Program

Keosauqua Municipal Airport (6K9)

Keosauqua Municipal Airport is east of the City of Keosauqua on County Road J40. It is classified as a Local Service Airport by the Iowa DOT and has a 2,275 foot turf runway. It also has four hangar parking spaces and four tie-down locations. The FAA does not recognize the airport in the National Plan of Integrated Airport Systems and as a result it is not eligible for federal funding. In 2015 the Keosauqua Airport had one based aircraft and saw 250 aircraft operations, this is expected to hold steady through 2030 according to the Iowa Aviation System Plan.

A new hangar was recently completed at the Keosauqua airport adding space for two additional single engine aircraft to be within hangars. Previously there was only space for two aircraft within a hangar, this doubles the capacity. There are no other capital improvement projects planned for the airport.

Oskaloosa Municipal Airport (OOA)

The Oskaloosa Municipal Airport is located southeast of the City of Oskaloosa along Iowa Highway 23. The airport is classified as a General Service Airport by the Iowa DOT and has a 4,003 foot concrete primary runway. The airport's secondary runway is a 1,925 foot concrete surface, it also has 35 hangar parking spaces and 14 apron parking locations. The airport is included in the FAA's National Plan of Integrated Airport Systems as a general aviation airport and is eligible for federal funding. The Oskaloosa Airport had 37 based aircraft and 12,950 aircraft operations in 2015, according to the 2010 Iowa Aviation System Plan this is projected to increase to 45 based aircraft and 15,750 aircraft operations by 2030.

The Oskaloosa airport updates its capital improvement program each year. The FAA requires that the city maintain the current airport until the new airport is operational. The FAA limits funds to the current airport for maintenance and safety while the new South Central Regional Airport is in development. For 2019, the Oskaloosa airport plans to do pavement patching on the cross runway, the cost of this project is $450,000 and $405,000 would be federal funding. An apron patching project is planned for 2022 to maintain the functionality of the airport until the regional airport is completed. The cost of this project is $400.000. Other projects though, such as reconstructing the primary runway, the taxiway, the apron, constructing new hangars or a new fuel farm will not happen unless the new regional airport is delayed or cancelled. When the new airport opens, the Oskaloosa airport will be closed and the funds from the sale of the property will be invested into the new regional airport.

Ottumwa Regional Airport (OTM)

Single engine aircraft on the apron at the Ottumwa Regional Airport.

The Ottumwa Regional Airport is location north of Ottumwa along Iowa Highway 163. The Iowa DOT classifies the airport as an Enhanced Service Airport as it has a 5,885 foot primary runway. The airport also has a 4,600 foot secondary runway, hangar space for 48 aircraft and apron parking for 29 aircraft. The airport is part of the FAA's National Plan of Integrated Airport Systems as a general aviation airport and eligible for federal funding. The Ottumwa airport had 37 based aircraft in 2015 and 12,950 aircraft operations, this is expected to increase to 45 based aircraft and 15,750 aircraft operations by 2030 according to the Iowa Aviation System Plan.

Figure 7.5 identifies proposed improvements for the Ottumwa Regional Airport from the airport's capital improvement plan. In addition to the projects listed in the table, there are two projects not listed that were part of a previous CIP. One is a total reconstruction of the primary runway that would also increase the length from 5,885 feet to 6,001 feet, which would allow any aircraft to land in an emergency. The project includes a new concrete surface that dries faster and new approach and edge lighting. It is scheduled to start in March 2019 and has a total cost of $7 million and 90% federal funding. The second project is an apron reconstruction to replace the current apron that is 70 years old. It is scheduled for late summer 2019 and is estimated to cost $286,000 with 85% state funding.

Figure 7.5: Ottumwa Regional Airport Projects

Year	Project	Total Cost	Federal Funding	State Funding
2019	Apron Improvements	$350,000	$0	$297,500
2020	Runway 4/22 and Taxiway Crack Cleaning and Slurry Sealing	$491,940	$442,746	$0
2021	Apron Improvements	$335,500	$0	$285,175
2022	Apron Rehabilitation	$1,875,000	$1,687,500	$0
2023	3-Box Hangar Construction	$513,830	$462,447	$0

Source: Ottumwa Regional Airport 2019-2023 Capital Improvement Program

South Central Regional Airport

The South Central Regional Airport is being developed northwest of Oskaloosa along Iowa Highway 163 as a 28E agreement between the cities of Oskaloosa and Pella, as well as Mahaska County. The airport is estimated to cost $30 million and is targeted for completion in 2024. Land acquisition is currently in process and is expected to continue for the next three years. Once this is complete the next step will be to start construction, the first part grading and drainage is anticipated to take one year. Once this is complete work can start on paving, lighting and vertical infrastructure, this is anticipated to take another year.

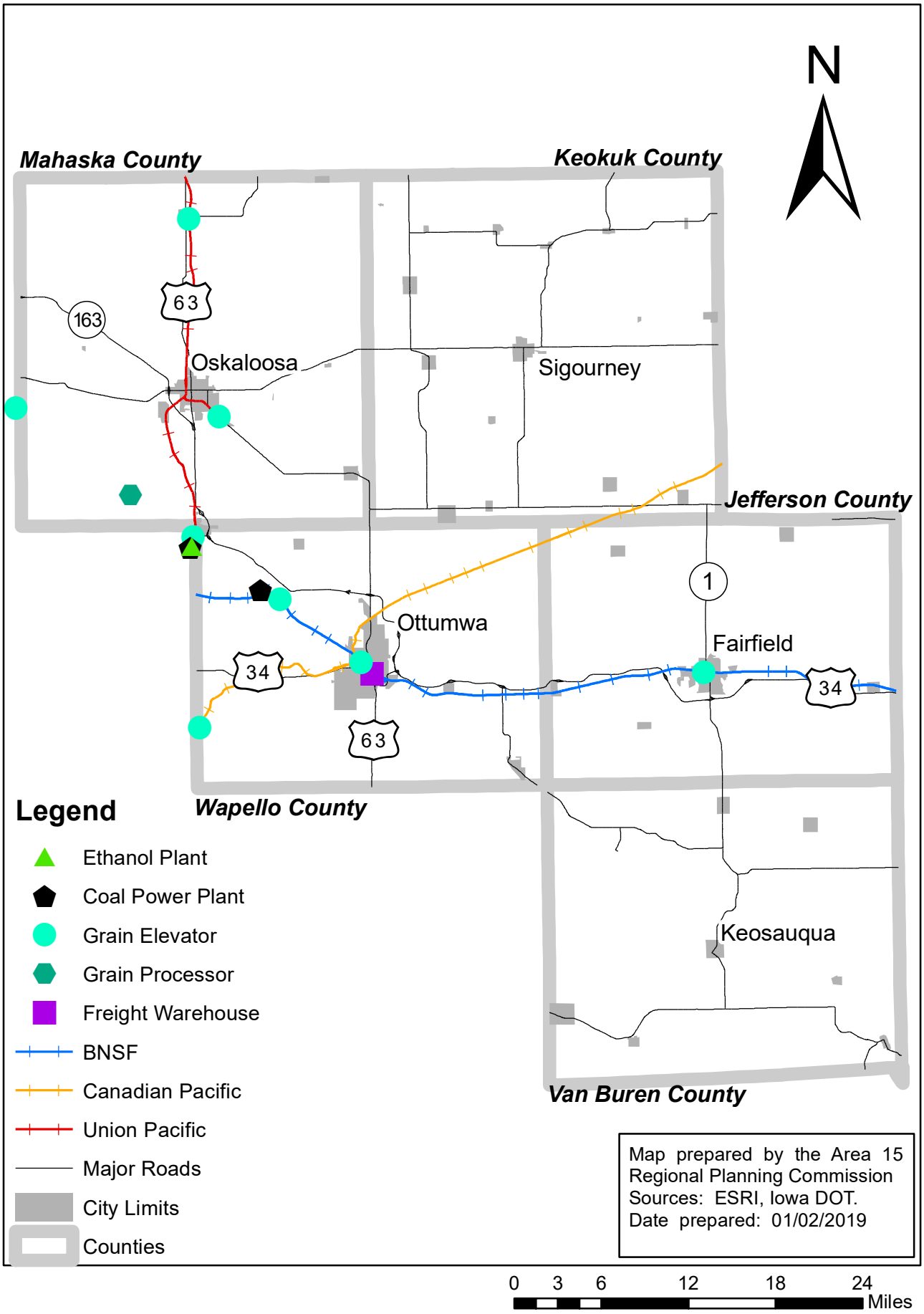
The airport will initially have a 5,500 foot paved primary runway, and ultimately will be extended to 6,700 feet. It will provide storage for 50 aircraft. A second crosswind runway will be added in ten to twenty years. The airport will meet Iowa DOT's classification for an Enhanced Service Airport and will serve as a general aviation airport. The airport is forecast to have 72 based aircraft in a horizon year of 2040, total yearly aircraft operations are forecast to increase from 14,700 in the first year of operation to 21,102 in the 2040. Consolidating services to a single airport will be more effective for Oskaloosa and Pella to maintain and improve aviation services. It will also reduce the environmental footprint by only having one airport operating as the older airports are shut down and sold off.

Pipelines

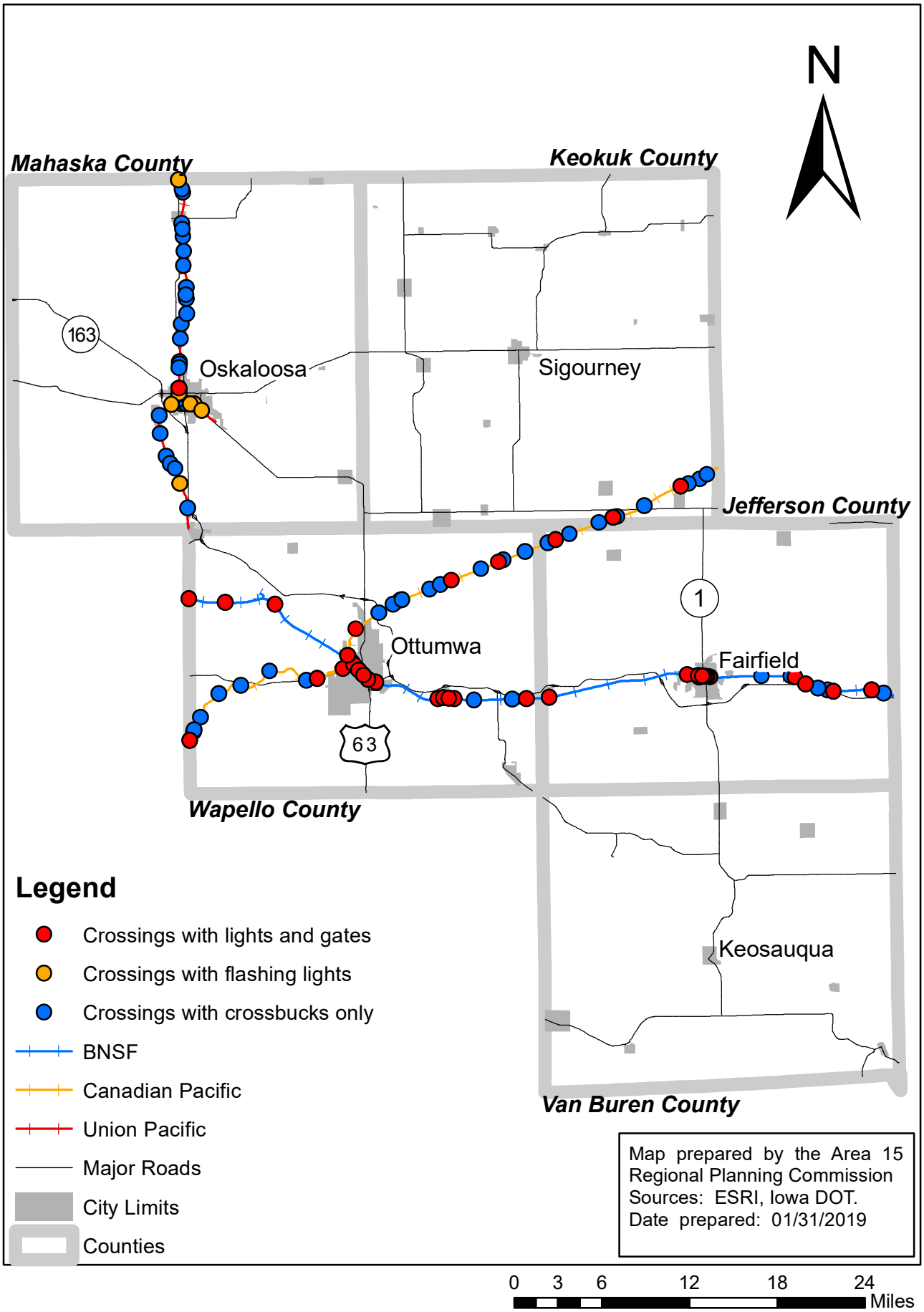
Pipelines are an unseen mode of freight transportation but are still important, they carry natural gas, oil, and other gas and liquid products. In Iowa, there are a total of 13,075 miles of transmission pipelines. These are used for carrying gas or liquid products over long distances. There are also many thousands more miles of distribution pipeline that are used for carrying products to businesses or homes. Figure 7.6 shows the mileage of transmission pipelines within the state by product. The general locations of transmission pipelines within the region are shown on map 7.4. All pipelines within the region are privately owned and maintained. It is important to be aware of a pipeline's location and product from both a planning and safety perspective, and a preparedness to deal with a pipeline incident if one should occur.

Figure 7.6: Miles of Transmission Pipeline in Iowa, 2017		
Type of Pipeline	Mileage	Percent of Mileage
Natural Gas	8,341	64%
Crude Oil	743	6%
Refined Petroleum Products	1,748	13%
HVL Flamm Toxic	2,243	17%
Total Mileage	13,075	
Source: US DOT PHMSA, www.phmsa.dot.gov		
Accessed: January 11th, 2019		

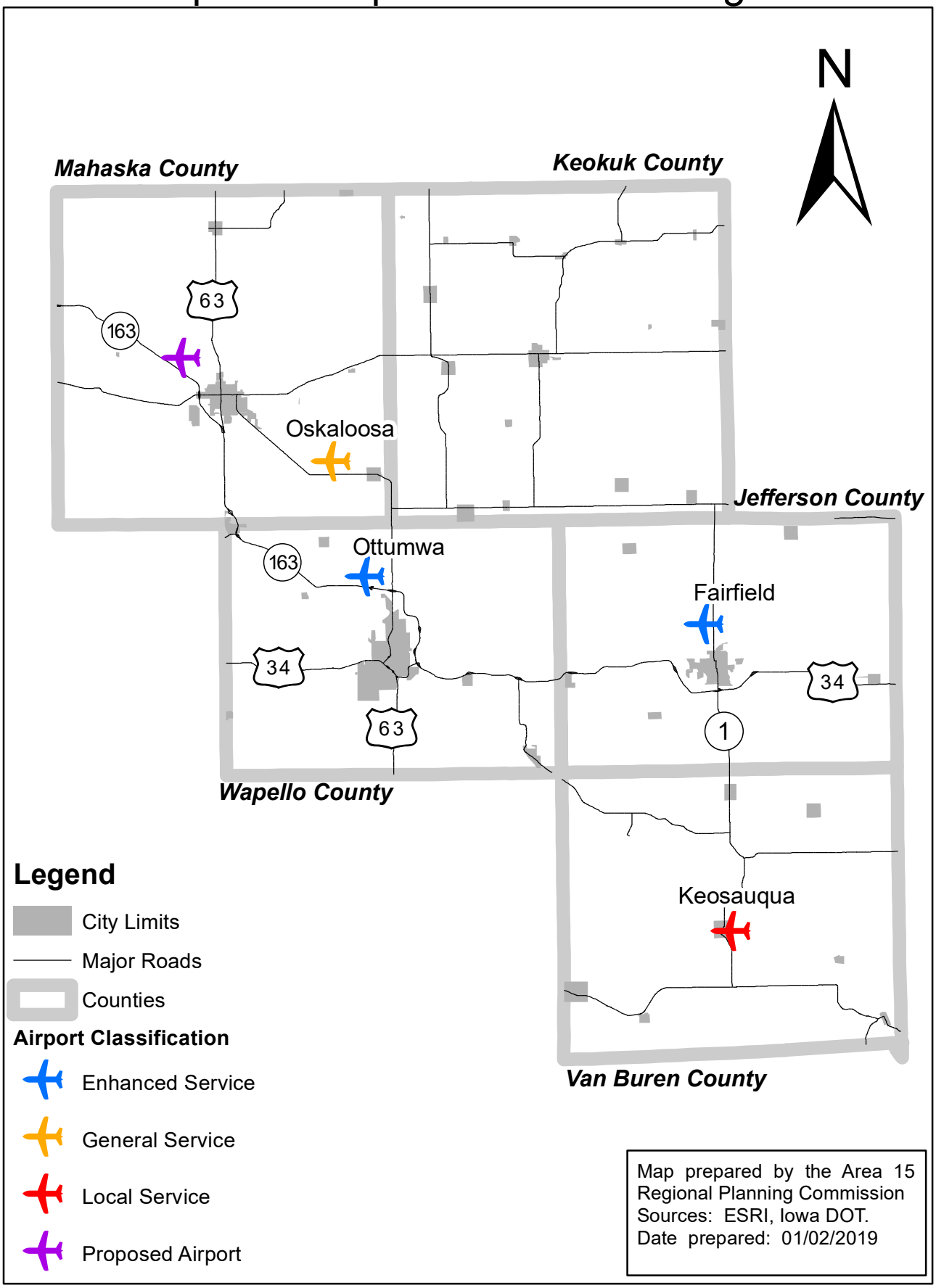
Map 7.1: Rail Lines and Freight Generators in the Region



Map 7.2: Rail Crossings and Type of Crossing



Map 7.3: Airports within the Region



Map 7.4: Pipelines within the Region