

IOWA IN MOTION



STATE TRANSPORTATION PLAN



Iowa Department
of Transportation

State Transportation Plan

Adopted by the Iowa Transportation Commission
July 15, 1997

This State Transportation Plan contains specific transportation investment directions, improvements and their estimated costs. However, the outlining of potential improvements in this State Transportation Plan does not imply the projects are approved or have received any funding commitments from the Iowa Department of Transportation. Any future improvements are subject to approval by the Iowa Transportation Commission.

Table of Contents

Introduction	1
Iowa's Changing Transportation Needs	3
Public Participation	15
Future Investment Direction	17
Overall Themes.....	17
Future Modal System Actions	19
Aviation	21
Bicycle and Pedestrian	29
Highway	35
Intermodal	57
Pipeline	61
Rail	63
Transit	69
Waterway	75
Other Investments	77
Investment Summary	81
Implementation Direction.....	83

List of Tables

Table 1	Total Freight Tonnage Movement by Mode	11
Table 2	U.S. Passenger Trip Purpose Trends	12
Table 3	Investment Summary - Aviation	27
Table 4	Investment Summary - Bicycle and Pedestrian	32
Table 5	1996-2020 Improvement Summary	48
Table 6	Potential New Location Improvements	51
Table 7	Potential Capacity Improvements	52
Table 8	Investment Summary - Highway	53
Table 9	Investment Summary - Intermodal.....	59
Table 10	Investment Summary - Rail.....	67
Table 11	Investment Summary - Transit.....	73
Table 12	Investment Summary - Other Investments	80
Table 13	Investment Summary - All Systems	81

List of Figures

Figure 1	Iowa Population	3
Figure 2	Iowa Population by Age Group	4
Figure 3	Iowa Urban/Rural Population	4
Figure 4	Iowa Employment	5
Figure 5	Iowa Employment by Sector	5
Figure 6	Iowa Urban/Rural Job Growth	6
Figure 7	Iowa Vehicle Miles of Travel	7
Figure 8	Iowa Primary Road Vehicle Miles of Travel	8
Figure 9	Iowa Licensed Drivers	8
Figure 10	Iowa Motor Vehicle Registrations	9
Figure 11	Iowa Motor Fuel Consumption	10
Figure 12	Average Miles Per Gallon for All Vehicles	10
Figure 13	Meeting Sites	15
Figure 14	Constant vs. Inflated Dollars	19
Figure 15	Commercial Service Airports	22
Figure 16	Top 10 Destinations From Iowa by Air in 1992	23
Figure 17	1995 Enplanements From Iowa's Commercial Service Airports ...	23
Figure 18	General Aviation Airports	25
Figure 19	Concentration of Operations at General Aviation Airports	25
Figure 20	Iowa's Existing AWOS Locations	26
Figure 21	Investment Summary - Aviation	28
Figure 22	Proposed American Discovery Trail Route Through Iowa	31
Figure 23	Investment Summary - Bicycle and Pedestrian	32
Figure 24	Potential Improvements to the Interstate Highway System	39
Figure 25	Potential Improvements to the CIN	41
Figure 26	Rail/Highway At-Grade Crossings to be Evaluated on the CIN ...	43
Figure 27	Potential Improvements to Other Primary Highways	45
Figure 28	Pavement Width Less Than 24 Feet	49
Figure 29	Investment Summary - Highway	54
Figure 30	Investment Summary - Intermodal	59
Figure 31	Rail Lines Unable to Handle 286,000-Pound Cars	64
Figure 32	Midwest Regional Passenger Rail System Study Area	65
Figure 33	Investment Summary - Rail	68
Figure 34	Intercity Bus Routes	71
Figure 35	Urban Area Commuting Patterns	72
Figure 36	Investment Summary - Transit	74
Figure 37	Investment Summary - Other Investments	80
Figure 38	Investment Summary - All Systems	82

Introduction

What is *Iowa in Motion*?

The Iowa Department of Transportation is continuing the journey to develop Iowa's future transportation system. This ongoing planning process, known as *Iowa in Motion*, was developed in response to the Intermodal Surface Transportation Efficiency Act (ISTEA) and Iowa's changing transportation needs. The completion of Parts I, II and III of *Iowa in Motion* has led to development of this State Transportation Plan. Part IV includes activities, both current and future, to support the plan.

This State Transportation Plan represents the thoughts and concerns of thousands of Iowans. Individuals, metropolitan planning organizations (MPOs), regional planning affiliations (RPAs), associations and organizations have become involved and have made recommendations concerning which direction should be followed regarding transportation investments. This plan represents their extensive input into the *Iowa in Motion* process and consensus building as we moved towards adoption of this State Transportation Plan.

The adopted plan serves as a guide for development of transportation policies, goals, objectives, initiatives and investment decisions through the year 2020.

What has been accomplished?

Part I: The journey began with a discussion of Iowa's current investment strategy, took a brief look into the future through existing trends and conditions, and included a summary of issues and concerns raised by Iowans through a public participation process. Throughout this process, Iowans were asked to help develop characteristics that would describe what Iowa would look like in the year 2020. From these characteristics, the following future scenarios were prepared as a starting point for discussion and consideration. These were identified and fully discussed in Part I.

- The Two Iowas Scenario -- present trends continue
- The Rural Revitalization Scenario
- The Metro Explosion Scenario

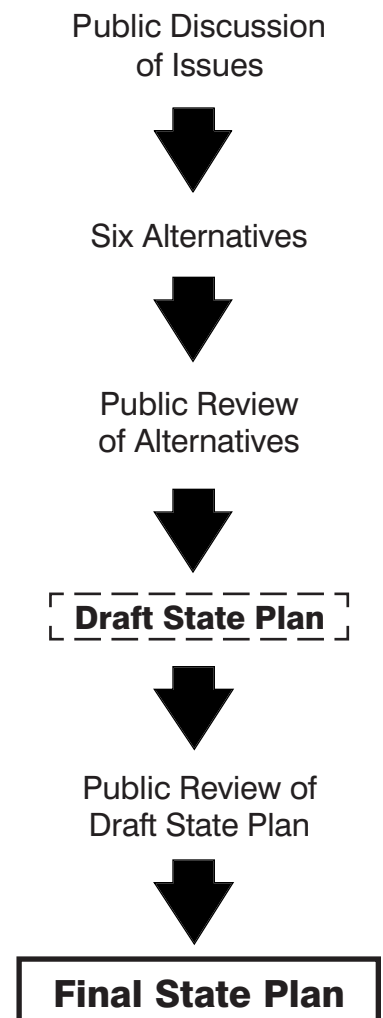
Based on these scenarios, a number of issues were identified from various sources through Iowa's public participation process. Examples of these issues, not in priority order, are:

- adequately maintain and preserve the existing road and bridge system;
- provide four-lane improvements on specific corridors;
- finance recreational trails with non-road use tax funds;
- continue development of regional and national trails;
- maintain and expand rail service;

Iowa in Motion

- Decision-making tool
- Ongoing planning process
- Investment guide

Plan Development Process



- aid commuting from rural to urban areas;
- focus on rural transit needs for the elderly and disabled;
- improve intermodal services; and
- develop regional airports.

Part II: Based on the issues derived from the futuristic scenarios in Part I, six investment approaches were developed for Iowa's transportation system over the next 25 years. The six alternatives are listed below:

- Benchmark (Existing);
- Reduced Spending;
- Resource Conservation;
- Expansion/Development;
- Economic/Urban Focus; and
- Rural Focus.

Each alternative included a discussion of the theme, investment summary, estimated annual investment, expectations and impacts/futuristic ideas. Some of the futuristic ideas provided to the public to solicit input included free public transit, high-speed rail, state ownership of rail and airport facilities, and four-laning the entire Commercial and Industrial Network (CIN) of highways.

Part III: This portion of the process included an extensive public input campaign to review the six alternatives, an analysis of that input, and development of a preferred alternative (draft State Transportation Plan) based on the public input. The Iowa Transportation Commission approved the draft plan for additional public review, and an analysis of the public input was conducted. The commission formally adopted this plan document on July 15, 1997.

What happens next?

Part IV: The *Iowa in Motion* process will not end with adoption of the State Transportation Plan. Current and future activities that will support the plan include:

- developing a financial plan to implement the investment actions;
- updating and integrating individual modal implementation plans;
- continuing development and implementation of management systems;
- establishing performance measures;
- continuing coordination of the regional and metropolitan planning process; and
- periodic reviewing and updating of the adopted plan.

The journey will continue, and the public will again be invited to participate.

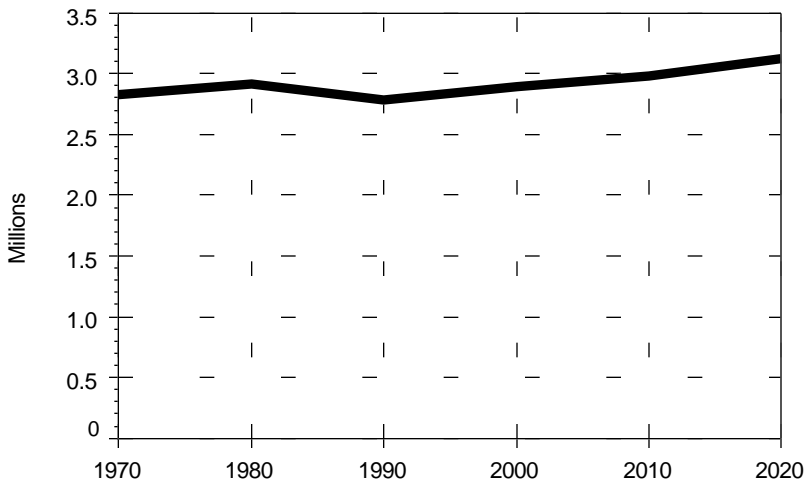
Iowa's Changing Transportation Needs

As described in detail in Part I of *Iowa in Motion*, Iowa will undergo many social, economic, demographic and technological changes between now and the year 2020. All of these changes were important considerations in the development of the State Transportation Plan. The demand for transportation infrastructure and services will be affected by these changes. Iowa's economy, its quality of life, and its ability to meet the challenges of the future require a transportation system developed with these changes in mind.

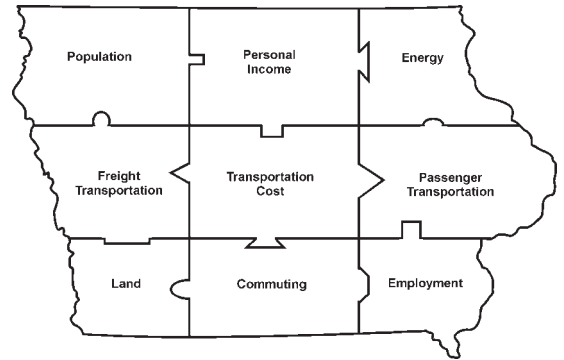
Population

It is projected that Iowa's population will increase from 2.8 million in 1995 to 3.1 million in 2020 (Figure 1), an increase of 10.7 percent. While some segments of Iowa's population will decline, the number of Iowa's elderly, age 65 and older, is expected to increase. The most significant increase will be in the age group 85 and over.

Figure 1
Iowa Population
1970 - 1990 and Projected to 2020



Source: Iowa Department of Transportation, based on 1993 Woods and Poole Economics, Inc. forecast

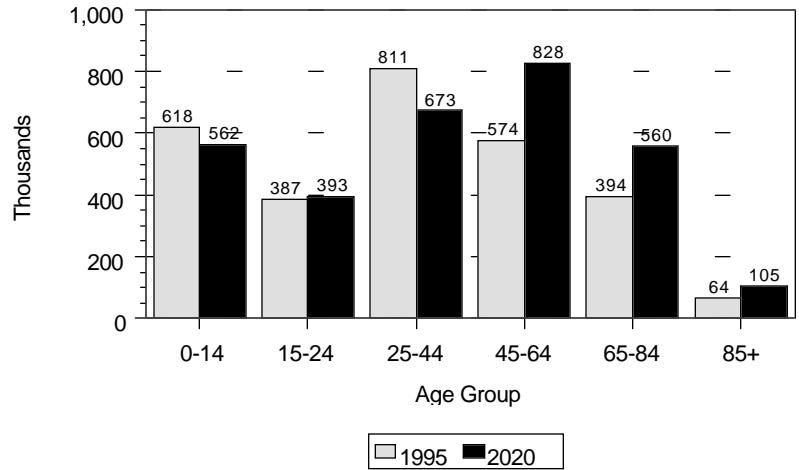


- Iowa's population will continue to increase.

There will be different transportation needs as Iowa's population ages (Figure 2) and becomes more urban (Figure 3).

- The number of elderly Iowans will increase.

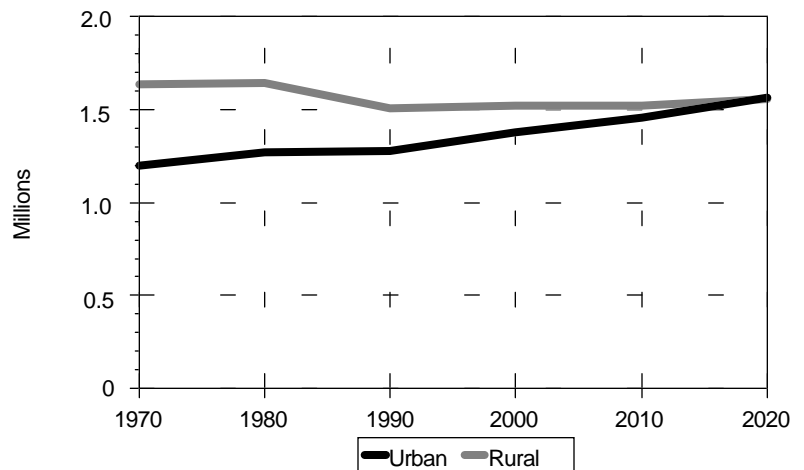
Figure 2
Iowa Population by Age Group
1995 and 2020



Source: Iowa Department of Transportation, based on 1993 Woods and Poole Economics, Inc. for

- Iowans will continue to move to urban areas.

Figure 3
Iowa Urban/Rural Population*
1970 - 1990 and Projected to 2020



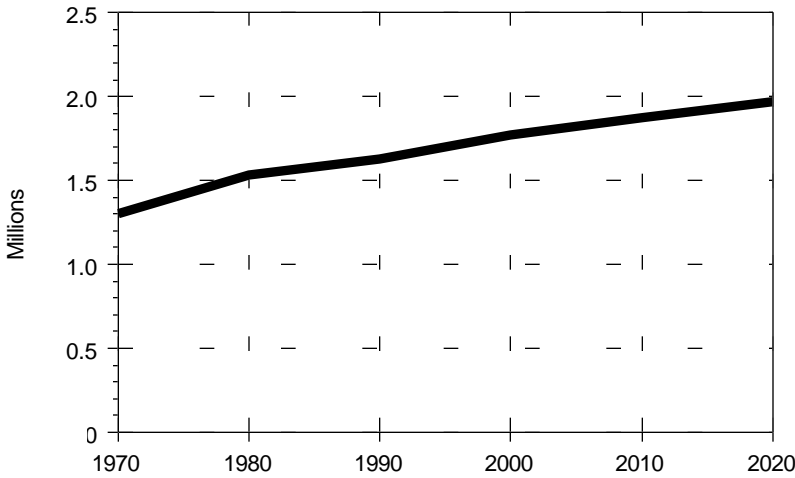
* Urban includes the counties of Black Hawk, Dallas, Dubuque, Johnson, Linn, Polk, Pottawattamie, Sci Story, Warren and Woodbury.

Source: Iowa Department of Transportation, based on 1993 Woods and Poole Economics, Inc. forecast

Employment

Total Iowa employment is expected to increase over the next 25 years (Figure 4). Iowa is a state generally known for farming since fertile land is its most productive and abundant physical resource. However, farm employment in Iowa is projected to decrease, manufacturing employment will remain stable, and employment in other areas--such as services--will increase (Figure 5).

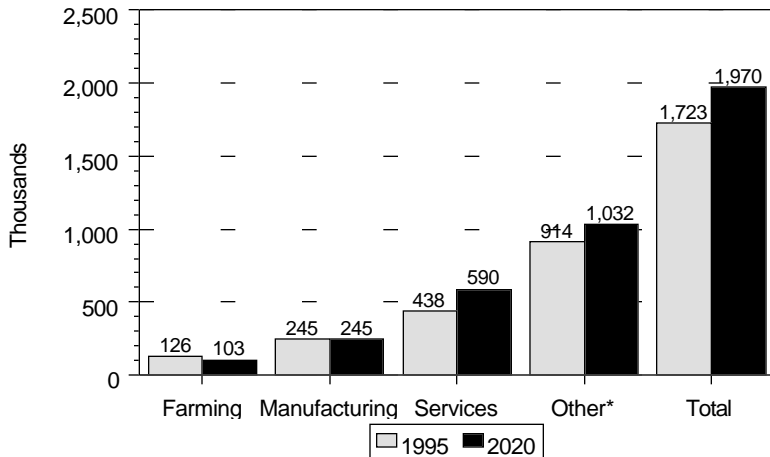
Figure 4
Iowa Employment
1970 - 1990 and Projected to 2020



Source: Iowa Department of Transportation, based on 1993 U.S. Bureau of Economic Analysis forecast

- Iowa's employment will continue to increase.

Figure 5
Iowa Employment by Sector
1995 and 2020



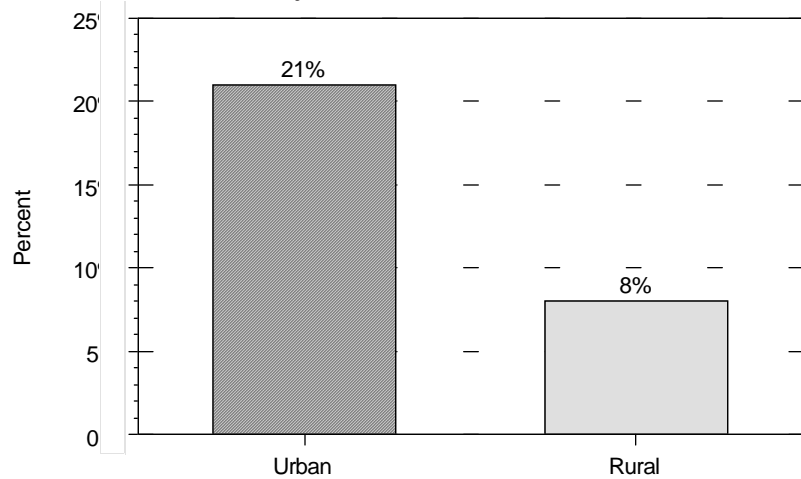
* Includes construction, finance, government, insurance, retail, etc.

Source: Iowa Department of Transportation, based on 1993 U.S. Bureau of Economic Analysis forecast

- Jobs will decrease in farming.
- Jobs will increase in areas such as services.

Projected job growth will continue to be highest in Iowa's urban areas (Figure 6), where personal income is also higher.

Figure 6
Iowa Urban/Rural Job Growth*
Projected from 1995 to 2020



* Urban includes the counties of Black Hawk, Dallas, Dubuque, Johnson, Linn, Polk, Pottawattamie, Scott, Story, Warren, and Woodbury.

Source: Iowa Department of Transportation, based on 1993 Woods and Poole Economics, Inc. forecasts

- **Job growth will be higher in urban areas.**

Travel

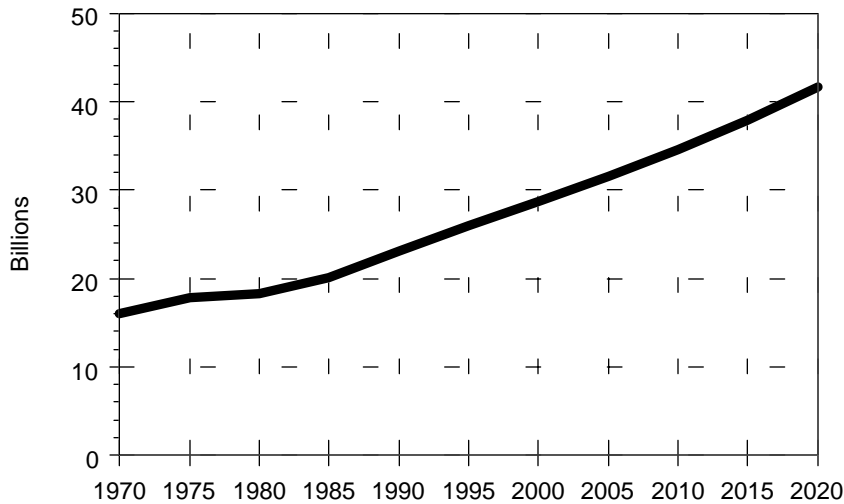
More Iowans are commuting outside their counties of residence than ever before, and thus travel times are longer. Many commute to jobs in urban areas. The number of persons who carpool and use public transportation has decreased, while those driving alone has increased. These patterns reflect statewide and national trends, and are expected to continue. A reversal of these trends will be difficult without higher vehicle operating costs or changes in both urban and rural land use and/or regulatory mandates. Thus, as indicated through the public participation process, it is expected that Iowans will continue to depend on automobiles.

- **Iowans will continue to depend on automobiles to commute to jobs outside their counties of residence.**

Vehicle Miles of Travel (VMT)

Total annual vehicle miles of travel (VMT) is expected to increase from 27 billion miles in 1995 to more than 41 billion miles by the year 2020 (Figure 7), an increase of 52 percent. Iowa's growth in VMT is moderate compared to growth in other states and the U.S. as a whole.

Figure 7
Iowa Vehicle Miles of Travel
1970 - 1995 and Projected to 2020



Source: Iowa Department of Transportation, forecasts based on historical trends

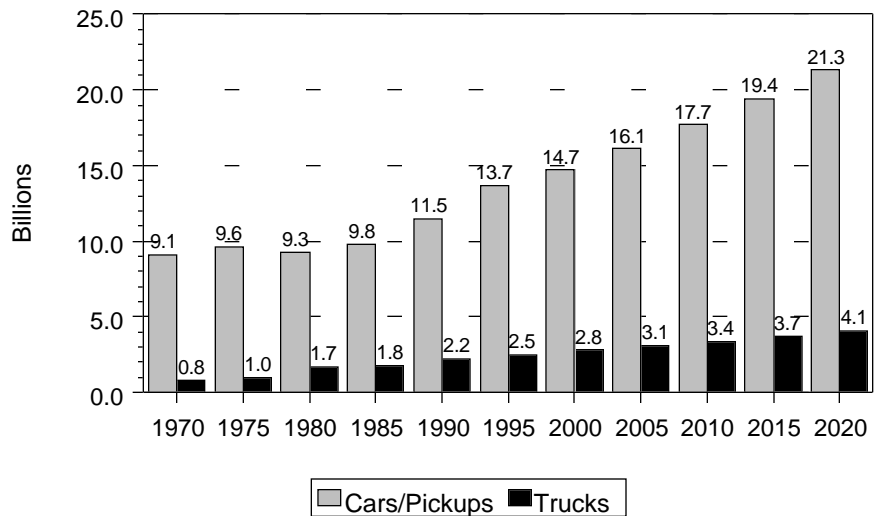
Much of the growth in travel has been due to changes in demographics, economics and lifestyles. These types of changes are expected to continue--Iowa's population and the number of drivers will increase; Iowans will get older; and the elderly will continue to take trips, even more so than today. Trip lengths will increase for all age groups due to changes in lifestyles, land use patterns and economics. All of this implies that total vehicle travel will continue to grow, much as it has in the past, but most of the growth will be on Iowa's primary highway system.

- **VMT growth is related to:**
 - **Population**
 - **Economics**
 - **Lifestyles**

As shown in Figure 8, it is projected that from 1995 to 2020 annual VMT on Iowa's primary highways will increase for cars/pickups by 55 percent and for trucks by 64 percent.

- The number of vehicle miles traveled on primary highways will continue to increase for cars/pickups and trucks.

Figure 8
Iowa Primary Road Vehicle Miles of Travel
1970 - 1995 and Projected to 2020

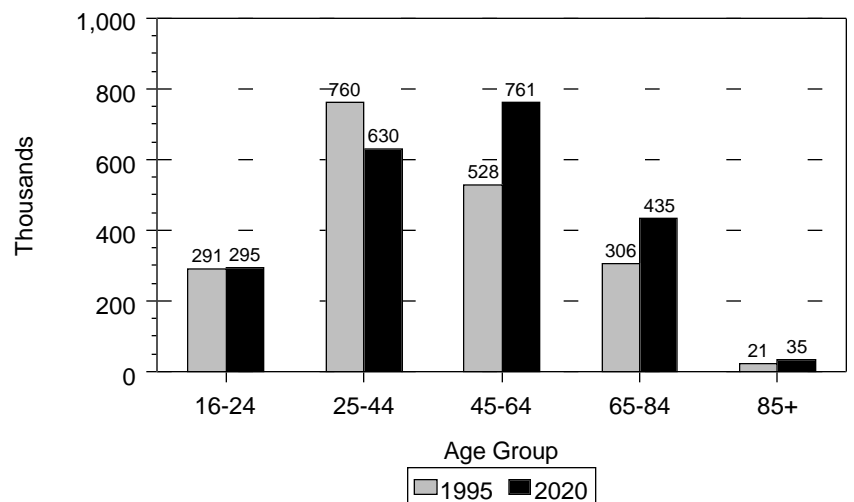


Source: Iowa Department of Transportation, forecasts based on historical trends

Licensed Drivers

Currently, 67 percent of all Iowans have a driver's license. By the year 2020, that figure is expected to increase to 69 percent, with a significant increase in the number of drivers from ages 45 to 84 (Figure 9).

Figure 9
Iowa Licensed Drivers
1995 and 2020

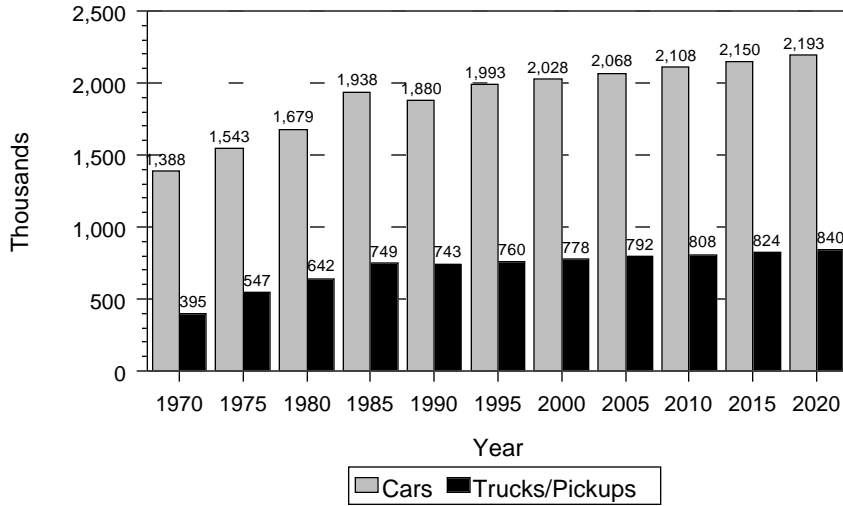


Source: Iowa Department of Transportation, forecasts based on historical trends

Vehicle Registrations

During the next 25-year period, the number of motor vehicle registrations is projected to increase by 10 percent (Figure 10). Currently, the number of vehicles per licensed driver is 1.4, and this is expected to remain basically unchanged.

Figure 10
Iowa Motor Vehicle Registrations
1970 - 1995 and Projected to 2020

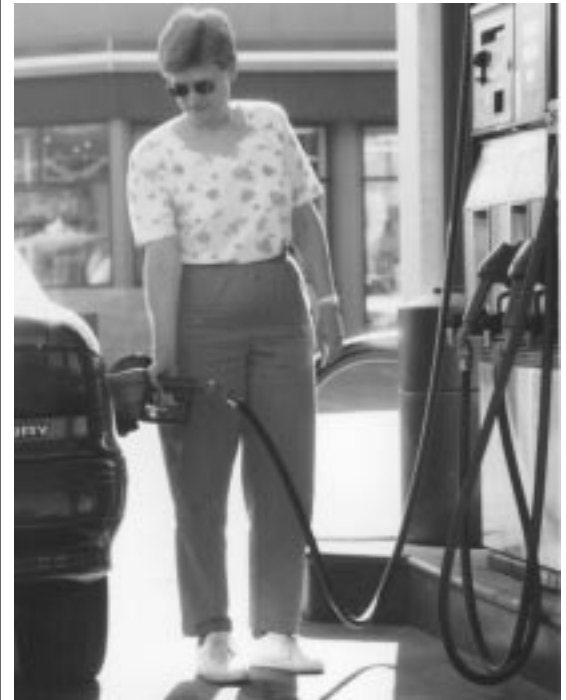


Source: Iowa Department of Transportation, forecasts based on historical trends

Fuel Usage

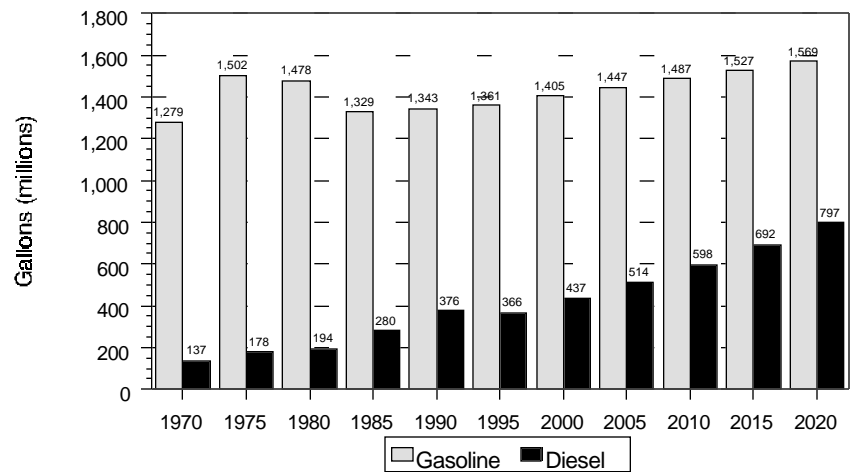
During the next 25 years, motor fuel consumption is expected to grow from 1,727 million gallons in 1995 to 2,366 million gallons by the year 2020 (Figure 11). This 37 percent increase is largely due to the projected 52 percent growth in vehicle miles of travel, as shown previously in Figure 7. However, the fuel consumption increase resulting from higher VMT will be somewhat offset by the projected increase in vehicle fuel economy from 15.1 to 17.6 miles per gallon, as shown in Figure 12. The projected increase in fuel efficiency is only 17 percent because of the trend toward purchasing larger, less fuel-efficient vehicles.

Iowans are purchasing more multipurpose vehicles and fewer small and large cars than in the past. The number of multipurpose vehicle registrations for each model year since 1984 has increased from the previous model year. The opposite is true for



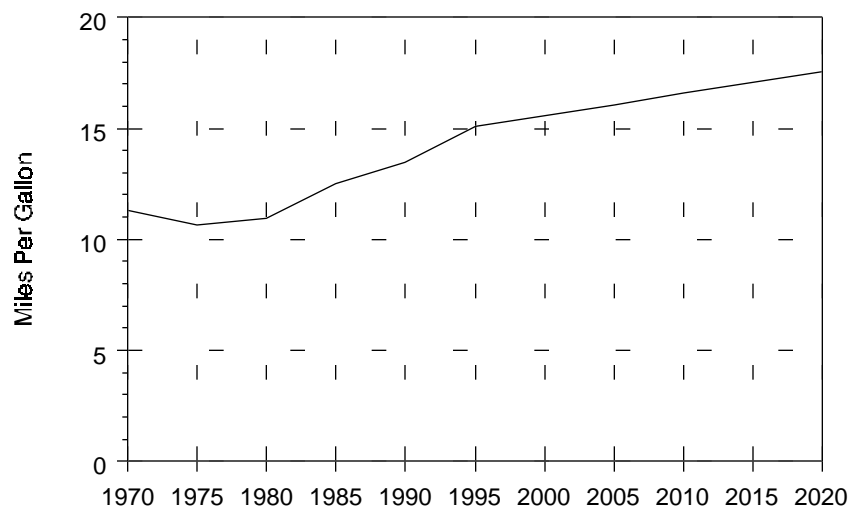
small and large cars. There has been a decrease in the number of registered large cars since the 1989 model year, while the number of registered small cars has been on the decline since the 1988 model year. All of these trends contribute toward the expected increases in motor fuel consumption and average miles per gallon for all vehicles.

Figure 11
Iowa Motor Fuel Consumption
1970 - 1995 and Projected to 2020



Source: Iowa Department of Transportation, forecasts based on historical trends

Figure 12
Average Miles Per Gallon for All Vehicles
1970 - 1995 and Projected to 2020



Source: Iowa Department of Transportation, forecasts based on historical trends

Transportation Services

As Iowa's population, employment and personal income increase, so will the need for transportation services. More efficient transportation services and intermodal connections will contribute to better economic prospects. Intermodal transportation services, which are generally more cost-effective because they benefit from the integrated use of two or more modes, will also increase. From an intermodal perspective, the roadway system is the key element connecting all transportation infrastructure since almost all freight and passenger movements use the roadway system at some point between origin and destination. In the future, advanced technology systems will assist both freight and passenger transportation services through the use of satellite communications, and fleet and cargo tracking systems.

Freight

Trucking will continue to be the primary mode of hauling all types of goods (Table 1) due to its desirable business characteristics such as customized service, high reliability, ability to handle smaller shipments, and flexibility. Trucks play a key role in the movement of agricultural commodities from Iowa farms to the marketplace. Just-in-time manufacturing processes also depend on reliable truck service. Freight transportation issues, such as highway truck size and weight limits, will continue to be evaluated, as well as the effects of international trade agreements, such as the North American Free Trade Agreement (NAFTA). Therefore, the condition of Iowa's roadway system will continue to be a key factor in the movement of Iowa products to regional, national and international markets. Strategic investment in the highway system will result in improved truck freight services. Increased use of advanced technology will reduce truck operating costs and improve energy use by:

- automatically billing fuel taxes and tolls;
- requiring only one permit for traveling from state to state; and
- reducing the need to stop at weigh stations.

- **Trucks will continue to haul the most freight in Iowa.**



Table 1
Total Freight Tonnage Movement by Mode
(thousands)

	1987		1997		1987-1997 % Tonnage Increase
	Tonnage	% Modal Share	Tonnage	% Modal Share	
Rail	63,269	42	73,285	36	16
Truck	74,204	49	110,747	55	49
Water	13,103	9	17,479	9	33
Air	7	*	10	*	43
Total	150,583		201,521		34

Source: Reebie Associates

* Less than .01 percent

- **Iowans will continue to rely on automobiles for the majority of their travel.**



As an agricultural and manufacturing state, Iowa demands dependable, efficient and economical rail service, as well as highway access to all parts of the state. Investment in efficient rail branchlines, rail economic development opportunities, and safety improvements will improve rail freight services. Shipping by rail and water will continue to be the lowest-cost methods of moving Iowa's bulk commodities to distant markets. There will be an increasing demand for overnight express and air freight, as well as improved and expanded air intermodal services. There is a potential for increased intermodal freight transportation in Iowa, even though it is only a small part of all movements of manufactured goods.

Passenger

The automobile will continue to be the predominant mode of passenger travel due to its convenience and flexibility. This is especially true as more Iowans commute to jobs outside their counties of residence and choose to live in fringe urban areas. As illustrated in Table 2, there will continue to be an increase in non-work trip purposes. Almost every age group has increased the number and length of trips per person, but the largest increases have been among the elderly. The only real change in the travel patterns of the elderly in comparison to younger age groups is the absence of work-related trips. Since the elderly are the fastest growing age group in Iowa, as well as the U.S., their increased travel will continue to impact the transportation system. The need for more passenger services will increase as Iowa's population increases and ages, resulting in a need for additional transportation choices other than the private automobile such as air, rail and transit.

Table 2
U.S. Passenger Trip Purpose Trends

Trip Purpose	1977	1990
Earning a living	34%	22%
Personal/Family	32	41
Social/Recreational	19	25
School/Church/Civic	6	11
Other	9	1

Source: Federal Highway Administration, National Personal Transportation Survey

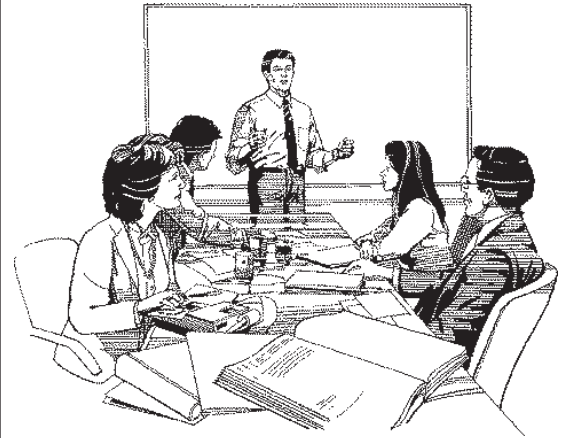
As more Iowans live in and around urban areas, the need for urban transportation services will also increase; however, rural transportation services will still need to be met. These increasing needs for all Iowans will require more cost-effective transportation choices. Additional intermodal transportation services will give Iowans more choices to meet their transportation needs. Some of these choices may include more services for commuters, increased transit services--especially for the elderly and disabled--and increased passenger services for air, rail and intercity bus networks. Some of these services may utilize advanced technology systems. Safety will continue to be the top priority in the development and improvement of passenger services. There will be an increasing need for coordinated intermodal passenger transportation services in all parts of the state. As Iowa's economy continues to grow, passenger services will remain an important element in addressing state, regional, national and international travel needs.

Public Participation

The department has increased its efforts to actively involve the public in planning Iowa's transportation future. The importance of public involvement and input has been significant throughout the entire *Iowa in Motion* process, beginning with Part I. The department provided the public an opportunity to comment on Iowa's current transportation system and what investment directions should be taken to meet Iowa's future transportation needs.

The issues raised by thousands of Iowans resulted in the development of five alternative investment concepts, in addition to the current investment. Input received on the six alternatives was used to develop a draft State Transportation Plan. The public was also given an opportunity to review and comment on the draft plan.

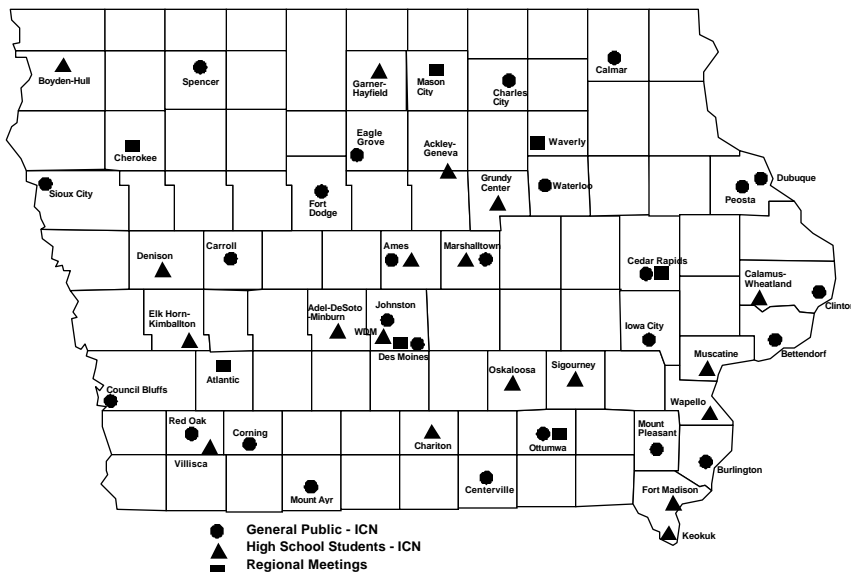
Many methods were utilized to provide information to the public and to gather their opinions to ensure the state's transportation system is responsive to the needs and goals of Iowans. These involved such methods as direct mailings, surveys, meetings with specific groups, and regional public information meetings (Figure 13), including the use of the Iowa Communications Network (ICN). The department also produced both braille and audio versions of the draft plan. The ICN was used for the first time by the department to interactively communicate with the general public throughout Iowa. In addition, the ICN was used to connect 19 high schools across the state. This was the first time the department made a specific effort to involve high school students in the process.



Reaching the Public

- Surveys
- Informational mailings
- Public meetings
- Advisory/focus committees
- Media releases for newspaper, TV and radio use
- Presentations
- Videos
- Display boards
- Newsletter feature articles
- Brochures
- Internet

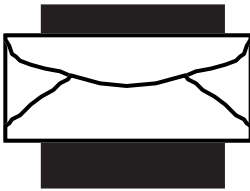
Figure 13
Meeting Sites





In addition to the young people of Iowa, the department also solicited comments from individuals, cities, counties, metropolitan and regional planning organizations, statewide organizations, local service associations, modal advisory committees, and the State Plan Advisory Committee (consisting of transportation officials, business leaders and academic representatives).

Another effective means of soliciting public comments was through surveys dealing with transportation values and perspectives related to the six alternatives. A scientific, random-sample telephone survey was conducted by Iowa State University, in cooperation with the department, and resulted in 1,000 responses. A written survey distributed at public meetings resulted in more than 160 responses.



The overall public participation process resulted in an unprecedented number of responses from all areas of the state. Over 1,000 comments were submitted by a broad representation of Iowans including individuals, businesses, and public and private organizations. Many of the respondents thanked the department for the opportunity to participate and supported the plan development process. The comments received were provided to the Iowa Transportation Commission for their consideration in developing the State Transportation Plan. The overall themes and modal key points obtained from these public comments are discussed in the next section.

Future Investment Direction

Overall Themes

The results of the public participation process provided direction for development of the State Transportation Plan. This plan attempts to address the transportation needs, as well as the public's concerns and desires expressed throughout the entire *Iowa in Motion* process, and future social and economic changes facing Iowa. Many respondents indicated that more proactive planning is needed rather than reactive planning because our population is changing, unexpected events will occur, the Iowa of tomorrow will be different than today, and new technologies are emerging. These social and economic changes, as discussed in the "Iowa's Changing Transportation Needs" section of this document, will continue, and the department must plan with them in mind.

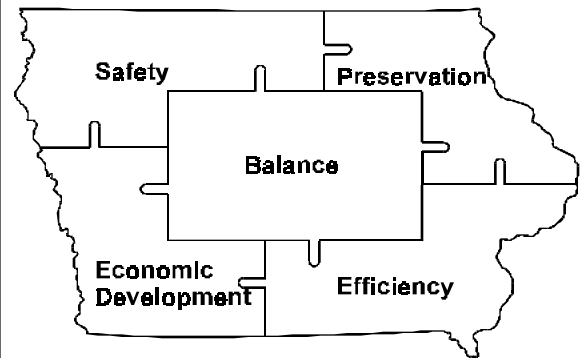
Based on this public input, the following overall themes were developed to complement the department's goal of providing and preserving adequate, safe and efficient transportation services for the public. These themes are safety, preservation, efficiency, economic development and balance. Balance is the overriding consideration for all of these themes.

Safety: Transportation safety continues to be a primary concern throughout transportation system development. It is an integral element in transportation planning, project development and programming. The direct economic benefits of improved safety can greatly exceed costs. In essence, increased transportation safety through the reduction of accidents is the foremost element in an effective and efficient transportation system.

Preservation: Maintaining what we have was a recurring comment which characterizes the preservation theme. Effective and efficient management and preservation of our current transportation system is essential and must be a priority. This means that in order to preserve the system:

- appropriate maintenance is necessary;
- moderate improvements may be necessary; and
- both service and infrastructure improvements may be necessary.

A focus on balancing these elements, along with other needs, is required for a well-managed system.



Modal Key Points

Aviation

- promote regional service
- improve safety and service
- assist economic development
- assist commercial air service development

Bicycle and Pedestrian

- finance recreational trails with non-Road Use Tax Funds
- consider bicycle improvements in highway design and development

Highway

- balance rural and urban needs
- expedite Commercial and Industrial Network development, including Super-2s (described on page 38)
- maintain and preserve existing system
- assist economic development
- improve overall condition
- consider bicycle improvements in highway design and development
- improve narrow roadways

Intermodal/Pipeline/Waterway

- assist intermodal equipment and access improvements
- participate in system planning for pipeline and waterway activities

Rail

- improve crossings
- upgrade branchlines
- assist economic development
- examine rail passenger service

Transit

- support public transportation
- assist the transportation disadvantaged
- assist intercity services
- balance rural and urban services
- purchase buses and vans
- aid commuter services

Efficiency: Transportation system efficiency is a theme upon which the plan was developed. Efficiency implies:

- fiscal responsibility;
- ensuring the system is neither overbuilt nor underbuilt;
- combining modes to improve services and lower costs of transportation;
- some regulation and government influence is necessary in the free enterprise transportation marketplace;
- local, state, federal and private coordination, cooperation and financial support is needed in comprehensive transportation planning and development; and
- providing additional capacity when needed.

Combined with the focus on safety and preservation, these elements ensure a safe, efficient and well-managed transportation system.

Economic Development: Iowa's economy and support for further economic development encompass the next theme heard throughout the public review process. Iowans recognize the tie between a well-connected transportation system and the state's economic future. Economic activity spurs the need or demand for transportation services and facilities. Investments to lower the costs of transportation for all Iowans is the best way to foster economic development, rather than investing in improvements to assist speculative economic development.

The public also stated that economic development must consider the social, cultural and environmental values of Iowans. In other words, the value of a transportation facility or service cannot be measured only in "economic" terms, but should also be based upon its full impact to the "quality of life." Balancing these quality of life values with economic development values leads to an effective transportation system.

Balance: A final theme resulting from the public process is that most Iowans want balance in the provision of transportation systems and services. This implies balance between:

- preservation and expansion;
- urban and rural;
- economic development and quality of life variables;
- benefits and costs; and
- modes.

In essence, determining the appropriate balance of all elements of a transportation system results in a plan which best fits with what Iowans have expressed through the public input process. These elements are highlighted in the box at the side and are summarized as modal key points.

Future Modal System Actions

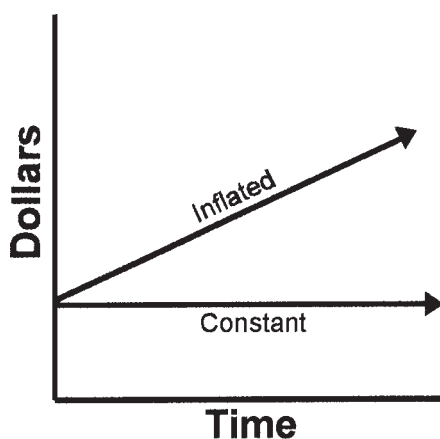
Based on these future investment direction themes, this section discusses how the department plans to invest in transportation infrastructure and services over the next 25 years. The description of future investment actions for each mode includes:

- why those actions are needed;
- how those actions support the five overall investment themes;
- what the future investment actions will accomplish;
- estimated cost to implement each action;
- estimated available funds; and
- implementation directions and options for funding shortfalls.

Also included is an investment summary table for each mode which shows the estimated plan costs, available funds and shortfalls for specific time periods. The financing options are presented as ideas only and will be more fully developed in the financial plan.

The plan costs are calculated in 1995 constant dollars. The available funds to offset the plan costs have been adjusted to reflect the expected decline in buying power. For example, one dollar will buy less 10 years from now than one dollar will buy today (Figure 14). The assumed inflation factor to adjust inflated dollars to constant dollars was 3 percent per year.

Figure 14
Constant vs. Inflated Dollars



Aviation

Iowa's system of publicly owned airports provides a variety of passenger and air cargo services. These airports serve local, regional and national markets, and play an important role in attracting business and industry to the state. An efficient system of commercial service and general aviation (GA) airports is essential for Iowa's economy to remain competitive in a rapidly expanding global marketplace.

Through the public input process it was determined Iowans want more and better commercial air service, more focus on regional GA airport development, and more safety improvements. As a result, the following investment guidelines which support the plan's overall themes have been developed for Iowa's aviation system.

Safety: Enhance safety by investments in system-wide safety activities such as windsocks, Automated Weather Observation System (AWOS) locations and lighting improvements.

Preservation: Focus on preservation by investing in GA airports to adequately maintain existing facilities.

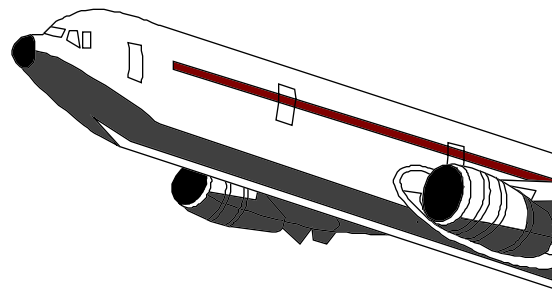
Efficiency: Foster efficiency through development of a top-quality regional airport system that serves all Iowans.

Economic Development: Enhance economic development by increasing support for promotion and expansion of commercial air service which provides Iowans with access and linkage to all destinations.

Balance: Balancing safety, equity, economic development, and investments in GA and commercial service airports will provide the airport system Iowans need and desire.

The *Iowa in Motion* public input process indicated the department, as an investment partner with federal agencies and local governments, should focus on supporting an effective system of regional GA and commercial service airports while ensuring the preservation of efficient service and safety at all airports.

The regional GA airports (defined by geography, service area, and jurisdictional control and management), in conjunction with the commercial service airports, would aid economic development on a broad basis by ensuring all areas of the state have top-quality airport facilities and access to services. Promoting this



1995 Aviation Facts

Number of Airports	
Commercial Service	10
General Aviation	104
Total	114
Number of Airports	
With 4,000-foot Runways	38
With 5,000-foot Runways	22
With Automated Weather Observation Systems	47
Number of Based Aircraft	2,225
Number of Registered Pilots	6,523
Takeoffs/Landings	
Commercial Service	521,000
General Aviation	609,000
Commercial Service Enplanements	1.6 million
Tons of Air Cargo Handled	179,400



system of airports and the linkages they provide to all parts of the nation ensures a sound basis for Iowa's aviation future. Investments in these airports and the state's other GA airports will focus on the following actions.

Commercial Air Service

Invest in programs that aid or improve infrastructure of commercial service airports.

Iowa's commercial service airports (Figure 15) have relied on funding from federal grants, federal entitlement funds, income from airport operations, and, in some cases, local government support for infrastructure improvements. Little state funding support has been provided in the past because there was little or no need for state involvement. However, today and in the future, state involvement in developing air services and assisting communities in securing and providing air services may be needed. The department will invest in activities that aid in improving commercial air service which may include providing adequate roadway access to airports. The department will continue to rely on federal funds (approximately \$9.0 million annually), provided directly to the commercial service airports, for infrastructure support.

Figure 15
Commercial Service Airports

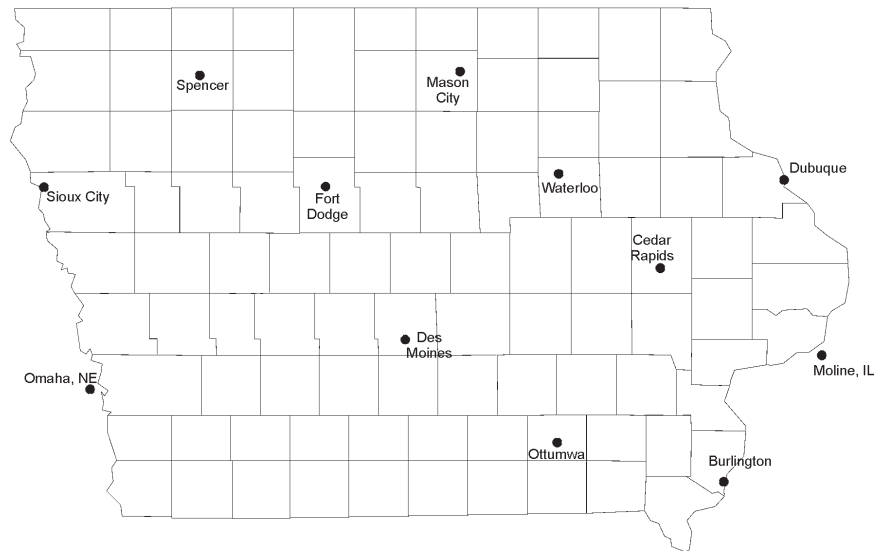


Figure 16 shows the top 10 destinations from Iowa by air in 1992. The 1995 enplanements from Iowa's commercial service airports are shown in Figure 17.

Figure 16
Top 10 Destinations From Iowa
by Air in 1992

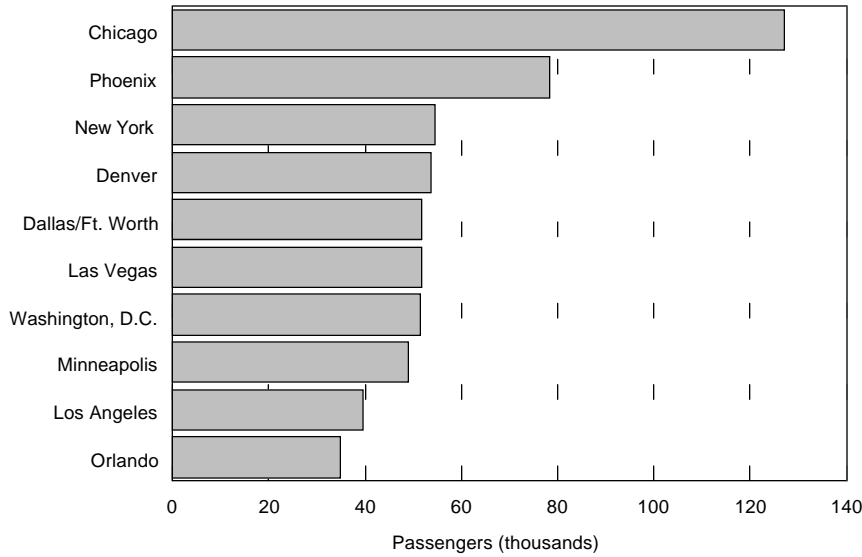
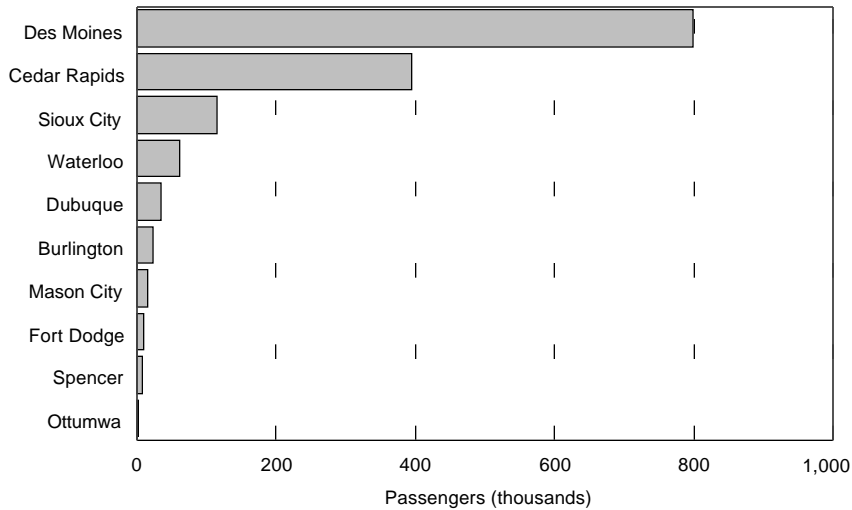


Figure 17
1995 Enplanements From
Iowa's Commercial Service Airports



Invest in programs that aid or improve intercity passenger commercial air service.

Improvement of commercial air passenger service provides the state with economic development opportunities and lowers transportation costs. The department will assist in research, marketing, education and other activities which help promote and improve commercial air service in Iowa.

Potential Commercial Service Programs

- Intrastate air links
- Route subsidy
- Carrier subsidy
- Marketing and promotion
- Intermodal connections
- Others

What will this investment accomplish by the year 2020?

- A top-quality regional GA airport system with the following design:
 - Runway Dimensions
Primary: 5,500' x 100'
(1,676 m x 30 m)
Crosswind: 4,400' x 75'
(1,341 m x 23 m)
 - Taxiway
Full parallel 50' wide (15 m)
 - Approach
Precision
 - Airport Services
Weather-AWOS
Full-service airport terminal
Adequate hangar space
Full-service fixed base operator
Fuel and maintenance

In 1990 the department conducted an interim study at the request of the Iowa Legislature, called the Iowa AirLink Study, concerning the development of improved air service in Iowa. The results and recommendations of that study need to be revisited, and, if necessary, commercial air service programs developed. These programs may include research on route studies, market analysis, economic development opportunities, intermodal connections, support of direct route/carrier subsidies, and the role aviation might have in an intercity passenger service system. The department will analyze commercial air service along with intercity bus and rail to identify the appropriate service levels to meet intercity travel needs.

General Aviation (GA) Airports

Invest in both airside and landside improvements, and actively promote a core system of regional GA airports.

The department will invest in airside improvements at a core system of regional GA airports. The number, criteria and location of airports will be determined during the process of updating the Aviation System Plan. The regional GA service provided by commercial service airports will be considered when establishing the core system. The criteria used to designate these airports may include service area population, number and type of based aircraft, airfield development potential, and geographic dispersion.

Eligible airside projects will include runways, taxiways, aprons, lighting and navigation aids. Projects related to safety will receive the highest priority, followed by projects related to preservation, design standards and expansion. These types of projects will be financed by cost-sharing grants between the state and local airport sponsors.

In addition, the department will investigate options to participate in landside development projects such as airport terminals and hangars within the core system.

Invest in preservation and safety improvements at all GA airports.

All of the publicly owned GA airports (Figure 18) will be eligible for airside safety and preservation projects, which is the current policy. However, improvements for expansion at non-regional GA airports will not be funded. The preservation of pavements and other airport infrastructure at GA airports ensures safe runways for the continuation of localized service. Safety improvements at all airports will be given priority and will be evaluated based on need, airport demand and use.

Figure 18
General Aviation Airports

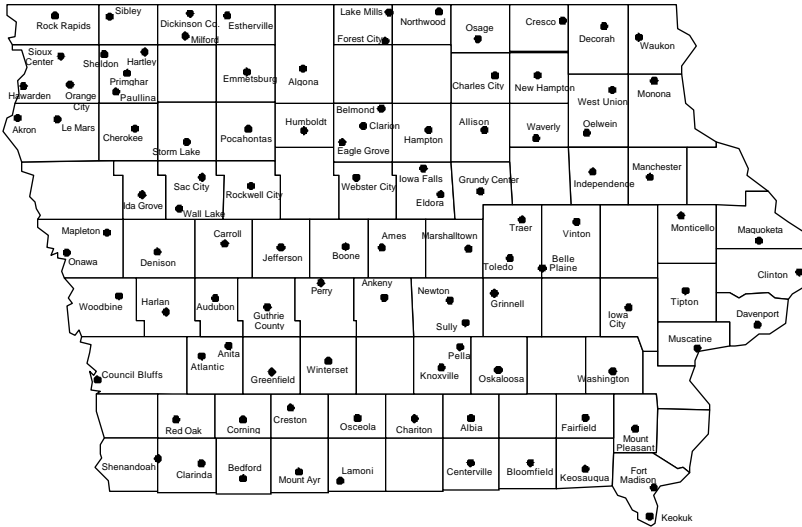
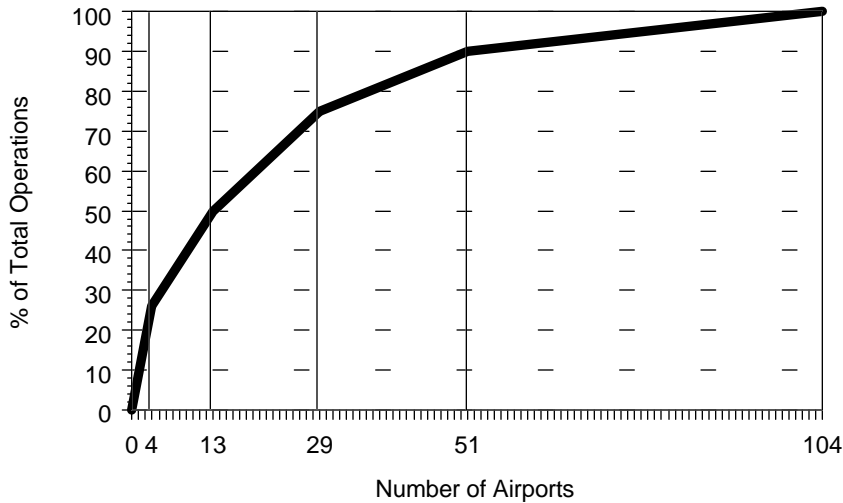


Figure 19 shows the concentration of operations at Iowa's GA airports based on the latest available data.

Figure 19
Concentration of Operations
at General Aviation Airports



Examine the potential of establishing an economic development program for airports.

In order to take advantage of economic development opportunities, the department will analyze the development of an aviation program similar to the highway Revitalize Iowa's Sound Economy (RISE) program. In general, this type of program would fund

airport projects which enhance economic development such as assisting communities to attract new industry or to help expand and/or retain existing industry.

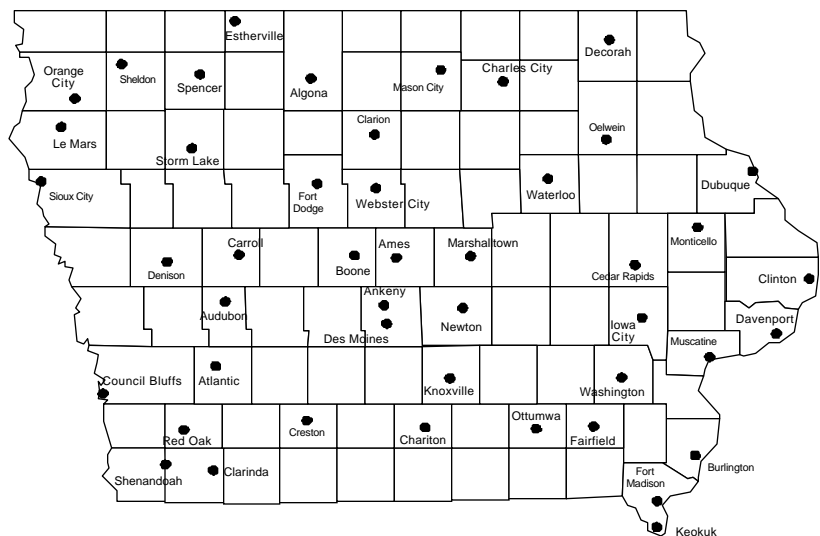
System Safety

Invest in operations that improve aviation safety.



Overall system safety has been and will continue to be an important investment element. Investment in the development and maintenance of AWOS locations (Figure 20), landing systems and other safety systems will be focused primarily on the regional airports. Other investments for safety, such as windssocks and runway pavement markings, will be provided to all GA airports on both a scheduled and emergency basis.

Figure 20
Iowa's Existing AWOS Locations



Conclusions

Aviation programs should continue as in the past, with an increase in funding for commercial service and regional GA airports to provide better service.

As noted in Table 3, implementation of the investment actions to support commercial service, general aviation and system safety is estimated to cost an average of \$15.9 million per year in 1995 dollars.

Available funds to cover the aviation investment actions are estimated to decrease from \$13.7 million annually in the first five years to \$8.2 million annually in the last ten years resulting from federal and state funds not keeping pace with inflation.

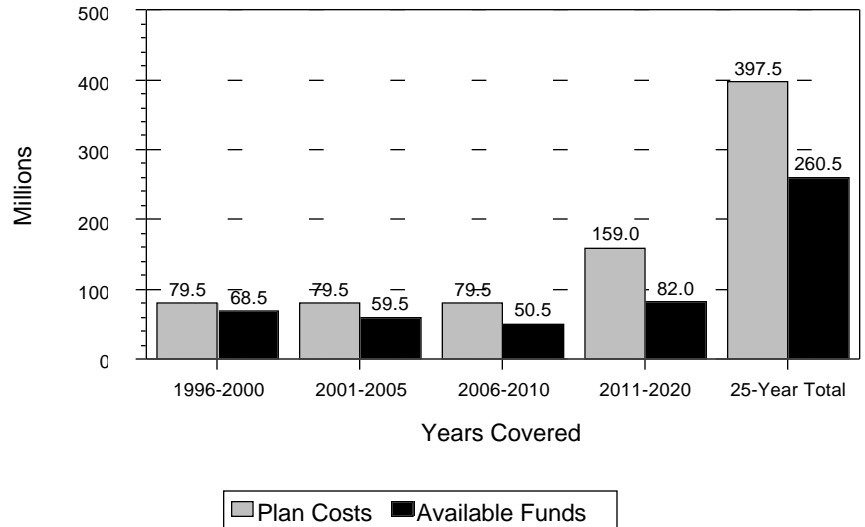
The anticipated federal and state funds to invest in aviation are less than the estimated costs. In the first five-year time period, the estimated shortfall averages \$2.2 million per year. For the time period 2011 to 2020, the amount needed to offset the estimated shortfall will increase to \$7.7 million per year. The increase in the shortfall between available funds and plan costs is due to the fact that funding is not tied to inflation.

Table 3
Investment Summary - Aviation
Average Annual Constant 1995 Dollars
in Millions

ESTIMATED PLAN COSTS				
INVESTMENT ELEMENT	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Commercial Air Service				
Infrastructure	\$ 9.0	\$ 9.0	\$ 9.0	\$ 9.0
Intercity Service	\$ 1.1	\$ 1.1	\$ 1.1	\$ 1.1
General Aviation Infrastructure				
Regional Airports	\$ 4.9	\$ 4.9	\$ 4.9	\$ 4.9
Other Airports	\$ 0.4	\$ 0.4	\$ 0.4	\$ 0.4
System Safety	\$ 0.5	\$ 0.5	\$ 0.5	\$ 0.5
TOTAL INVESTMENTS	\$15.9	\$15.9	\$15.9	\$15.9
ESTIMATED AVAILABLE FUNDS				
FUNDS ELEMENT	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Commercial Air Service				
Federal Sources	\$ 8.2	\$ 7.1	\$ 6.1	\$ 4.9
State Sources	\$ 0.2	\$ 0.2	\$ 0.1	\$ 0.1
General Aviation Infrastructure				
Federal Sources	\$ 3.2	\$ 2.8	\$ 2.4	\$ 1.9
State Sources	\$ 1.6	\$ 1.4	\$ 1.2	\$ 1.0
System Safety				
Federal Sources	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
State Sources	\$ 0.5	\$ 0.4	\$ 0.3	\$ 0.3
TOTAL FUNDS	\$13.7	\$11.9	\$10.1	\$ 8.2
FUNDS Excess or (Shortfall)	(\$ 2.2)	(\$ 4.0)	(\$ 5.8)	(\$ 7.7)

A comparison of the total plan costs and available funds is shown in Figure 21. Anticipated funds will cover 66 percent of the estimated aviation investment cost. The shortfall (difference between total plan costs and available funds) is expected to total nearly \$137 million over the 25-year period.

Figure 21
Investment Summary - Aviation
 Plan Costs and Funding Comparison
 Constant 1995 Dollars



Future Activities

The following activities will be addressed in the future as part of the ongoing *Iowa in Motion* planning process to implement the aviation investment actions.

- Develop financial plan
 - index for inflation impacts
 - funding options
 - potential decline in federal funds
- Update aviation implementation plan
 - stratification and identification of regional system
 - priority process
 - match ratios
 - needs analysis
- Develop commercial air service programs

Development of the financial plan will include the analysis of possible funding options for financing the aviation shortfall. Several of these options are shown at the side and will be addressed more fully in the development of the financial plan. The results of the financial plan, along with the aviation implementation plan, will guide the development of the overall aviation program.

Options for Financing Aviation Shortfall

- State General Fund
- Establish aviation trust fund
 - Adjust fees

Bicycle and Pedestrian

Most of the existing bicycle and pedestrian facilities in Iowa do not serve explicit transportation purposes because they do not link major traffic generators to one another, and they are designed to serve mostly recreational trips. Even so, interest in bicycling in Iowa has grown significantly in past years and is expected to continue to grow. Bicycle and pedestrian facilities provide a number of benefits to Iowans, including the promotion of healthy lifestyles, an enhanced quality of life, increased tourism, and as a tool for economic development. These bicycle and pedestrian facilities are needed to provide users with direct routes to recreational and non-recreational destinations, serve commuter needs, satisfy other travel desires, and provide an alternative means of travel.

Bicyclists carry the same rights and responsibilities as motor vehicle drivers and are legal on virtually all public roadways in Iowa, with the exception of the interstate system. Through the public input process it was determined Iowans want consideration of on-road improvements in highway and bridge design and development, and continued financing of recreational trails with non-road use tax funds. As a result, the following investment guidelines which support the plan's overall themes have been developed for Iowa's bicycle and pedestrian system.

Safety: Enhance safety by considering all users, including bicycle and pedestrian, in highway and bridge design and development. This would also include statutory authority to prohibit bicycle travel on some portions of the primary highway system.

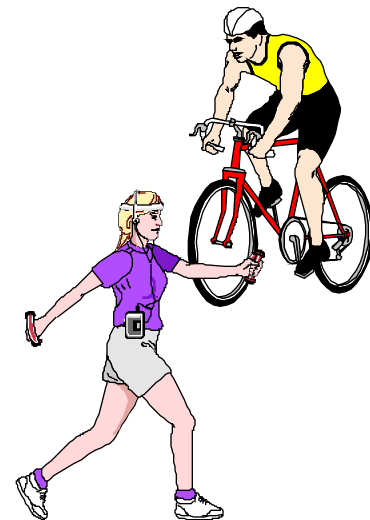
Efficiency: Enhance efficiency by focusing investments where demand for transportation is greatest, usually in or around urban areas.

Preservation: Preserve service and infrastructure through routine maintenance of the highway system, such as surface and shoulder repair and signing.

Economic Development: Foster economic development through scenic multiuse recreational trails which serve as major tourist attractions and state economic development tools. Investments in the state backbone system of recreational trails would also enhance enjoyment of Iowa's natural environment.

Balance: Balance safety and service by addressing both recreational and transportation needs and ensuring Iowans of alternative forms of transportation.

Bicycle and pedestrian investments will focus on the following actions.



- Iowa has over 780 miles (1,255 km) of multiuse recreational trails and off-road paths.

Bicycle Users

- **Advanced Bicyclists**
Experienced riders who can operate under most traffic conditions.
- **Basic Bicyclists**
Casual or new riders who are less confident of their ability to operate in traffic.
- **Children Bicyclists**
Pre-teen riders whose roadway use is initially monitored by parents.



What will this investment accomplish by the year 2020?

- Construct 420 miles (676 km) of multiuse recreational trails.



On-Road Improvements

The safe and convenient accommodation of bicycle and pedestrian transportation will be addressed as part of the construction and reconstruction of the state's primary highway and bridge system.

Impacts on safety, maintenance, and traffic flow for both motor vehicles and bicycles will be considered in evaluating primary highway improvements. Through development of a state bicycle and pedestrian accommodation policy, specific criteria will determine where accommodations are appropriate, and also where bicycle and pedestrian travel should be prohibited due to high traffic volumes, high speeds and/or unsafe conditions. Different criteria may exist for urban and rural areas. Investments to more safely accommodate bicycles and pedestrians, mainly design considerations such as marked bicycle lanes, intersection improvements, appropriate placement of rumble strips, and signalization and signing are discussed in the highway section of this document on page 47. However, it should be noted that Iowa's primary highway system accounts for less than 10 percent of the total miles available for bicycle and pedestrian use. The majority of roadway facilities are the jurisdictional responsibility of the counties and cities. In order to promote safer and more amenable bicycle service, the department will also focus on coordination and cooperation with local governments to develop plans and programs that consider bicycle and pedestrian needs, including commuter routes.

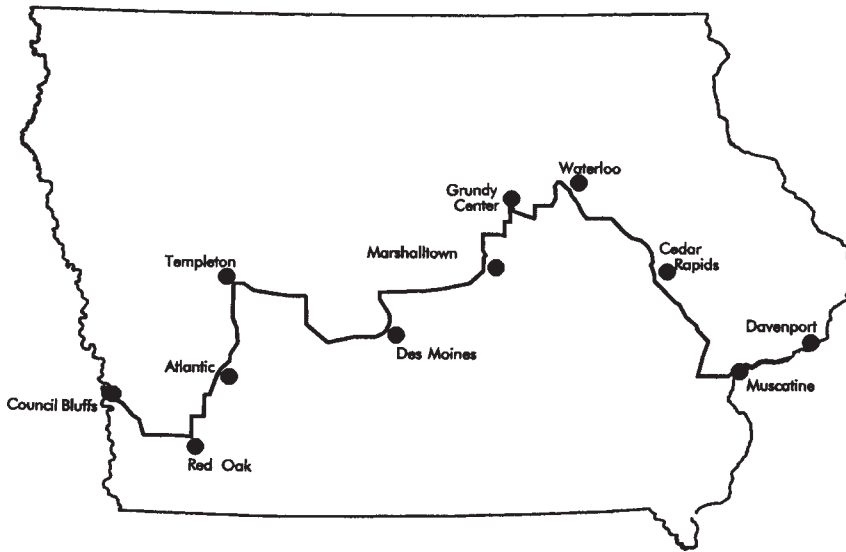
Off-Road Multiuse Recreational Trails

Invest in the development of Iowa's backbone system of recreational trails.

Iowa's 1990 Statewide Recreational Trails Plan identified a backbone network of multiuse recreational trails to enhance enjoyment of Iowa's natural environment, and as a tool for economic development. The completion of this backbone network was established as a state legislative goal. To date, about 780 miles (1,255 km) of this system have been constructed.

As part of an update of the Recreational Trails Plan, consideration will be given to include the proposed American Discovery Trail through Iowa as part of the state's backbone network of trails. This route is a nationally designated continuous coast-to-coast trail. Incorporating the American Discovery Trail as part of the statewide backbone network could strengthen Iowa's ability to complete its network of trails in a more timely manner. Figure 22 shows the proposed route through Iowa.

Figure 22
Proposed American Discovery Trail Route
Through Iowa



Conclusions

The bicycle and pedestrian program will focus on both on-road and off-road facilities, with the on-road improvements discussed in the highway section.

As noted in Table 4, implementation of the investment actions to support bicycle and pedestrian transportation is estimated to cost an average of \$2.0 million per year in 1995 dollars.

Available funds from state sources to cover the bicycle and pedestrian investment actions are estimated to decrease from \$0.9 million to \$0.5 million during the 25-year plan period. These funds come from the General Fund appropriations and are not tied to general price increases due to inflation. As a result, the annual allocation decreases in buying power throughout the plan period.

It should be noted, however, that for fiscal years 1998 and 1999, \$2 million per year has been appropriated from the rebuild Iowa infrastructure fund for trails development (an increase of \$1 million per year). Future funding at this increased level, however, is uncertain.

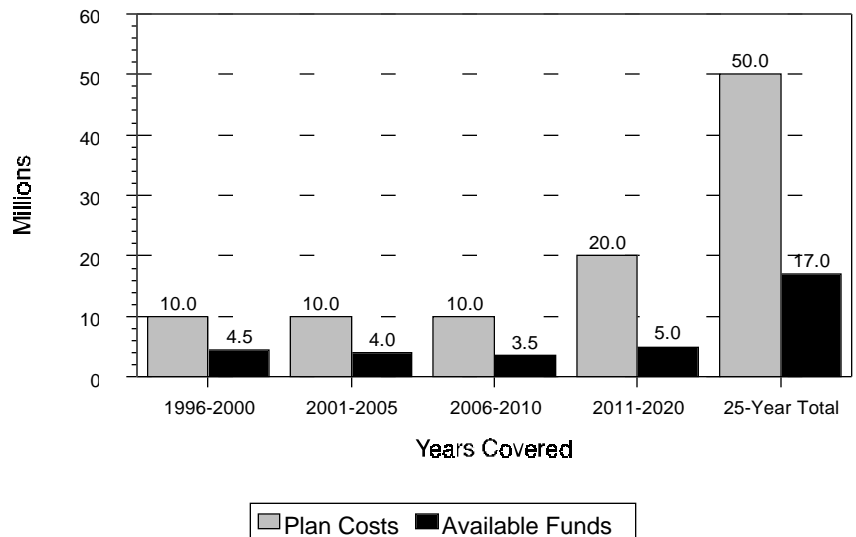
The anticipated state funds to invest in bicycle and pedestrian improvements are less than the estimated costs. In the first five-year time period, the estimated shortfall averages \$1.1 million per year. For the time period 2011 to 2020, the amount needed to offset the estimated shortfall will increase to \$1.5 million per year.

Table 4
Investment Summary - Bicycle and Pedestrian
 Average Annual Constant 1995 Dollars
 in Millions

ESTIMATED PLAN COSTS				
INVESTMENT ELEMENT	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Recreational Trails	\$2.0	\$2.0	\$2.0	\$2.0
TOTAL INVESTMENTS	\$2.0	\$2.0	\$2.0	\$2.0
ESTIMATED AVAILABLE FUNDS				
FUNDS ELEMENT	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Recreational Trails				
State Sources	\$0.9	\$0.8	\$0.7	\$0.5
TOTAL FUNDS	\$0.9	\$0.8	\$0.7	\$0.5
FUNDS Excess or (Shortfall)	(\$1.1)	(\$1.2)	(\$1.3)	(\$1.5)

A comparison of the total plan costs and available funds is shown in Figure 23. Anticipated funds will cover 34 percent of the bicycle and pedestrian investment cost. The shortfall (difference between total plan costs and available funds) is expected to total \$33.0 million over the 25-year period.

Figure 23
Investment Summary - Bicycle and Pedestrian
 Plan Costs and Funding Comparison
 Constant 1995 Dollars



Future Activities

The following activities will be addressed in the future as part of the ongoing *Iowa in Motion* planning process to implement the bicycle and pedestrian investment actions.

- Develop financial plan
 - index for inflation impacts
 - funding options
 - other trails funding

- Develop bicycle and pedestrian implementation plan
 - trails plan update
 - on-road facilities
 - promotion
 - commuter needs
 - pedestrian considerations
 - coordination/cooperation
 - design policies
 - safety analysis
 - prohibition criteria

Development of the financial plan will include the analysis of possible funding options for financing the bicycle and pedestrian shortfall. Several of these options are shown at the side and will be addressed more fully in the development of the financial plan. The results of the financial plan, along with the bicycle and pedestrian implementation plan, will guide the development of the overall bicycle and pedestrian program.

Options for Financing Bicycle and Pedestrian Shortfall

- **Fee assessed on purchase of bicycles and equipment**
- **State General Fund**
- **Recreational trails user fee**
- **Bicycle registration fee**

Highway

Iowa's highway network is the backbone of the state transportation system and accounts for the vast majority of investments. During 1995 there were nearly 27 billion vehicle miles of travel on Iowa's highways, county roads and municipal streets. Over 16 billion vehicle miles of travel in Iowa occurred on the interstates and other primary highways. When looking only at truck travel, 78 percent was on the interstates and other primary highways.

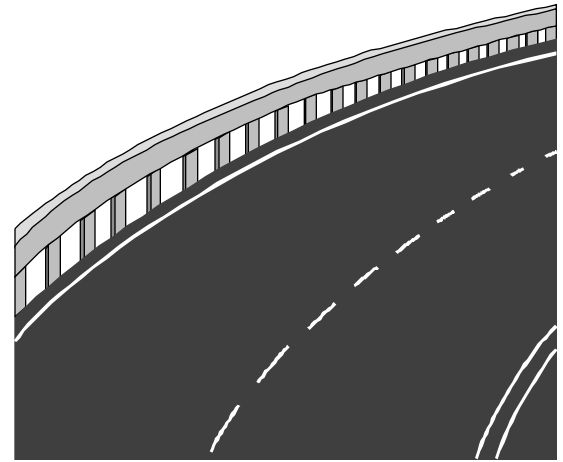
Trucks carry over 65 percent of all freight originating and terminating in Iowa, and over 51 percent of all freight carried in or through the state. The primary highway system is critical to the passenger, freight and intermodal transportation movements throughout the state. Ensuring safe travel on these routes is crucial.

While there will continue to be more cars and trucks on Iowa's primary highways, other vehicles such as buses, motorcycles and bicycles are also using the highways for transportation. Development of the highway system must include safe and efficient accommodations for all roadway users.

There is an increased emphasis on developing solutions to improve the safety and efficiency of the existing transportation system. Many of the solutions lie in technological advances, such as intelligent transportation systems (ITS). Both rural and urban areas of the state will benefit from implementing ITS technologies. An ITS plan is underway to guide the testing and deployment of ITS across the state for all modes. (See additional discussion on page 77).

Iowa's interstate system, both north-south and east-west, will continue to play a critical role in national and international trade. Already, Interstate Highways 35 and 29 through Iowa have been designated as key routes on the Canada-to-Mexico corridor as a result of the North American Free Trade Agreement (NAFTA). Iowa's primary highway system, particularly the interstates and the Commercial and Industrial Network (CIN), must meet the challenges of providing safe and efficient travel for international trade.

ISTEA legislation required the designation of a National Highway System (NHS) to provide an interconnected highway system to serve major population centers, transportation facilities, and interstate and regional travel. Under the NHS requirements, each state designated a very limited portion (a total of 4 percent nationally) of its highway system as NHS roadways.



1995 Highway Facts

Miles of Roadway (excluding ramps)	
Interstate	782
CIN	2,275
Other Primary	6,637
Total	9,694

Roadway Condition (Sufficiency)	
Interstate	88
CIN	64
Other Primary	64
Average	66

Number of Bridges	
Interstate	995
CIN	997
Other Primary	1,938
Total	3,930

Bridge Condition Rating	
Interstate	80
CIN	77
Other Primary	73
Average	76

Number of Licensed Drivers	
16 to 24 years old	291,000
25 to 44 years old	760,000
45 to 64 years old	528,000
65 to 84 years old	306,000
over 84 years old	21,000
Total	1,906,000

Motor Vehicle Registrations	
Cars	1,993,000
Trucks/Pickups	760,000
Total	2,753,000

Vehicle Miles of Travel (millions)		
	Cars/Pickups	Trucks
Interstate	4,440	1,350
CIN	3,680	539
Other Primary	5,608	593
Total	13,728	2,482

Iowa's non-interstate NHS is 2,431 miles (3,912 km), while its CIN mileage is 2,275 miles (3,661 km). The primary difference in mileage is because the criteria for designating the NHS resulted in more non-interstate NHS mileage within metropolitan areas than are included in the CIN. It is the department's intent to coordinate both systems so that the CIN corresponds to the non-interstate NHS.

Iowa's primary highway system is divided into five planning classifications according to priority:

- interstates;
- CIN;
- area development routes;
- access routes; and
- local service routes.

For the purpose of this plan, the highway system will be discussed in three levels--interstates, CIN, and other primary highways (includes area development routes, access routes and local service routes).

Through the public input process it was determined Iowans want a highway system that is maintained and preserved, balanced between both rural and urban needs, and fosters economic development. As a result, the following investment guidelines which support the plan's overall themes have been developed for Iowa's highway system.



Safety: Enhance safety by providing adequate pavements which may include improved design such as Super-2s (described on page 38) and adequate widths that will accommodate all users.

Preservation: Focus on preservation to protect past infrastructure investments and to ensure adequate service to all areas of the state.

Efficiency: Improve efficiency by focusing improvements on high-demand routes and facilities through higher design standards, and by adding capacity in appropriate locations.

Economic Development: Aid economic development by improving the interstates and the CIN. Through these improvements, benefits such as improved traffic flow and reductions in travel time, accidents and vehicle operating costs will be achieved which help foster economic development.

Balance: Provide a balanced system through a focus on enhancing rural access and service by improving narrow and unsafe pavements, adding capacity improvements on the CIN, and increasing urban mobility through investments in high-demand corridors.

Highway investments will focus on the following actions.

Interstates

Invest in maintaining, preserving and rebuilding the interstate highway and bridge system.

The interstate highway system will have the highest priority and be assured of adequate funding. The oldest segments of the interstate highway system are now reaching the end of their useful life. Maintaining, preserving and, where necessary, rebuilding the interstate system is critical to maintain safe travel on the system and connect Iowa to regional, national and international markets, resulting in further economic development. An average of 28 miles (46 km) of interstate will be preserved or rebuilt each year (Figure 24 on page 39).

Selected capacity improvements will also be made on the interstate system. These capacity improvements will be based on need and will be on the most heavily traveled routes, usually in or around urban areas. An average of just under three miles (five km) will be improved per year; however, this amount will vary significantly each year.

An average of 40 bridges and culverts will be repaired or replaced per year on the interstate system, with the majority of these being done in conjunction with other highway improvements. This schedule will ensure that any bridge that is structurally deficient will be improved during the 25-year period. Bridge condition will be the primary factor in determining priorities, as guided by the department's bridge management system.

Interstate investments in rest areas, weigh stations, welcome centers and roadside management will also be accomplished, with priorities determined on an as-needed basis.

Summary of Interstate Accomplishments by the Year 2020

- Preserve 252 miles (406 km)
- Rebuild 458 miles (737 km)
- Capacity/operational improvements - 71 miles (114 km)
- Repair or replace 1,000 bridges and culverts

	1995	2020
• Sufficiency Rating	88	85
• Vehicles Miles of Travel (millions)	5,790	9,384

What will this investment accomplish by the year 2020?

- **Preserve 252 miles (406 km) and rebuild 458 miles (737 km) of interstate.**
- **Repair or replace 1,000 interstate bridges and culverts.**

Commercial and Industrial Network (CIN)

Invest in maintaining, preserving and rebuilding the CIN highway and bridge system.

What will this investment accomplish by the year 2020?

- Preserve 483 miles (777 km) and rebuild 113 miles (182 km) of CIN.
- Construct 566 miles (911 km) of CIN to four-lane and 969 miles (1,559 km) to Super-2, and build 376 miles (606 km) on new location.
- As part of Super-2 construction, 39 miles (63 km) of narrow pavement will be widened on the CIN.
- The CIN will have a minimum standard of Super-2 design.

Possible Super-2 design features include:

- minimum 12-foot lanes
- 10-foot shoulders
- limited access
- climbing and/or passing lanes
- left- and right-turn lanes
- acceleration lanes
- higher posted speed limit
- buffer zone

The CIN is comprised of 2,275 miles (3,661 km) of existing primary highways identified by the state legislature to enhance opportunities for the development and diversification of the state's economy. Current investment strategies on the CIN will continue, except for:

- implementing minimum Super-2 design;
- accommodating and/or prohibiting bicycle travel on CIN segments; and
- separating rail/highway crossings as appropriate.

The CIN will be developed to a minimum standard of Super-2 design. Specific design standards for the Super-2 are being developed. Super-2 design will improve the safety of the roadway, resulting in lower accident rates. Accident rates for Super-2s are significantly lower than for a standard two-lane highway. Costs of Super-2s are lower than for standard four-lane highways (usually 1/2 to 2/3 of the costs) while still providing most of the benefits of a four-lane, including generally uninterrupted flow of through traffic; wider shoulders for safety; accommodations for slower traffic, where necessary; and potentially higher speed limits. In addition, construction of Super-2s will eliminate 39 miles (63 km) of narrow pavement less than 24 feet wide (7.3 meters) on the CIN.

The department will seek authority to prohibit bicycle travel on portions of the CIN and other primary highways where bicycles cannot be accommodated for safety reasons. The development of the CIN to Super-2 design, which accommodates higher truck traffic and a potential increase in speed limits, may make bicycle use on certain segments unsafe. The department will examine options to accommodate bicycles in other ways along these segments.

In order to comply with the ACCESS-Iowa legislation, 1,313 miles of the CIN have been designated as ACCESS-Iowa highways. In accordance with the legislative direction, the development of ACCESS-Iowa highways will be programmed in an accelerated and expeditious manner. Also, by February 1, 1998, the Iowa Transportation Commission will make a presentation to the Iowa Legislature regarding the effect of ACCESS-Iowa on the CIN and other highway programs.

Where current and future traffic levels warrant, four-lane capacity improvements will be made on segments of the CIN. The higher minimum standards may aid economic development in both rural and urban areas. Capacity improvements on some high-use routes (Figure 25 on page 41) will improve safety, as well as provide economic development opportunities.

Figure 24 - Potential Improvements to the Interstate Highway System

Potential Improvements to the Interstate Highway System

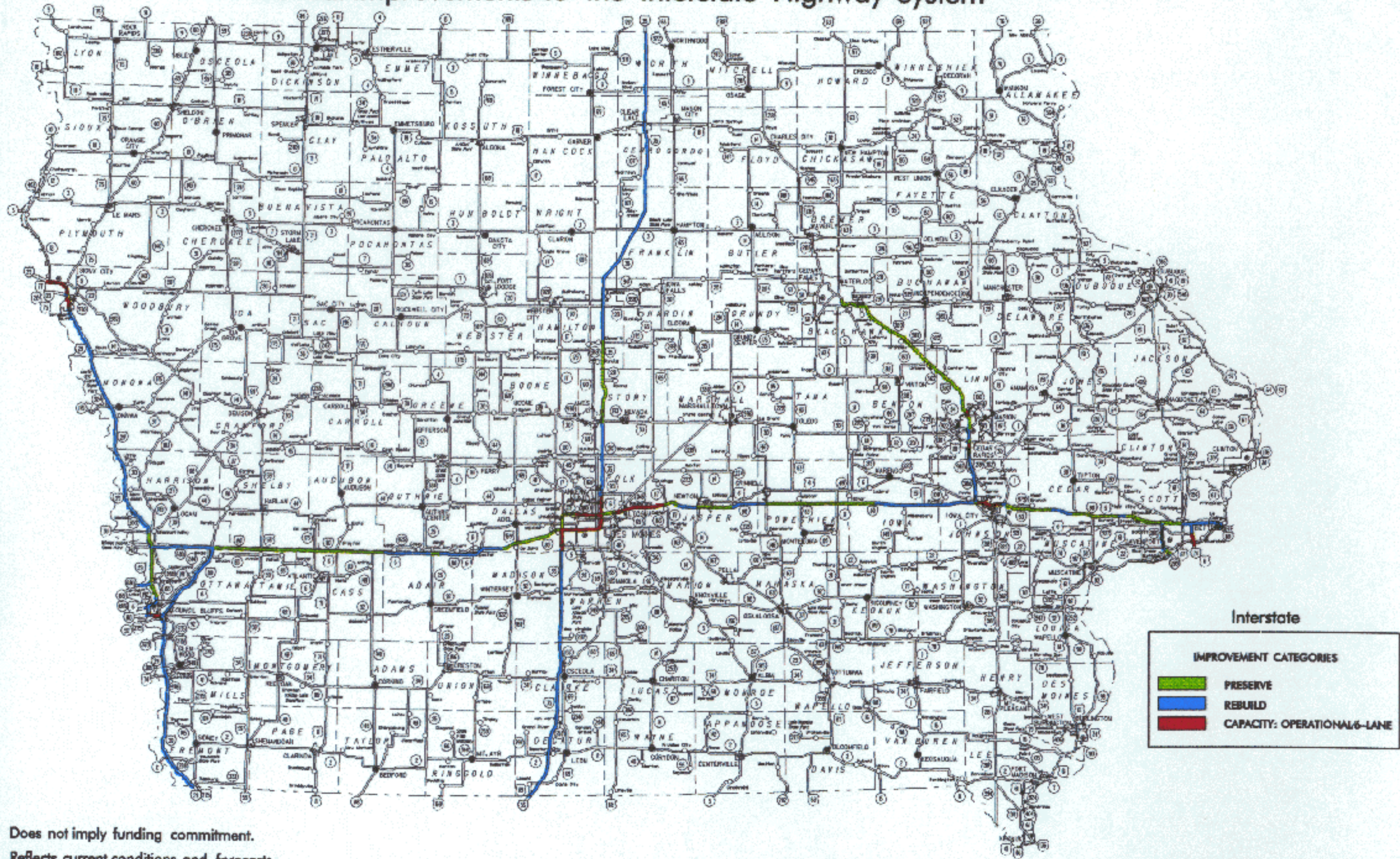


Figure 25 - Potential Improvements to the CIN

Potential Improvements to the CIN



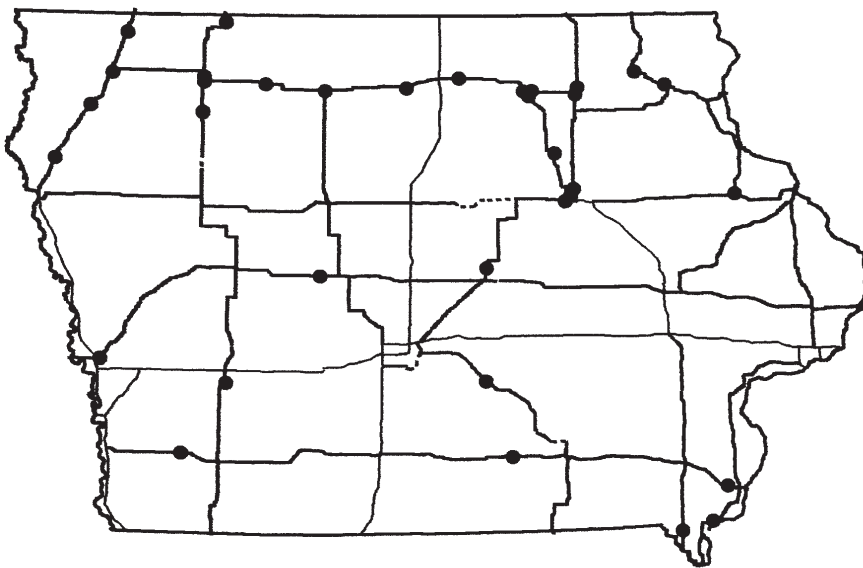
- Does not imply funding commitment.
- Reflects current conditions and forecasts that may change over time.

Investment priorities on the CIN will be based on minimum standards, roadway conditions and benefits vs. costs. Accident rates, traffic volumes and other factors may also be considered.

An average of 80 bridges and culverts will be repaired or replaced per year. This schedule will ensure that any bridge that is structurally deficient will be improved during the 25-year period. Bridge condition will be the primary factor in determining priorities, as guided by the department's bridge management system.

Rail/highway at-grade crossings on the CIN will be evaluated to determine the need for grade separations. These evaluations will include analysis of highway and rail traffic volumes, land use and conflict points. Grade separations will be constructed at each of the 34 rail/highway at-grade crossings on the CIN (Figure 26) as appropriate. Where special circumstances exist--such as future community bypasses, track abandonments, or very low rail traffic volumes--grade separations may not be a feasible option. Several of these crossings may be improved during capacity, new location or other highway improvements.

Figure 26
Rail/Highway At-Grade Crossings
to be Evaluated on the CIN



Does not imply funding commitment.

- **Repair or replace 2,000 bridges and culverts on the CIN.**



Summary of CIN Accomplishments by the Year 2020

- Preserve 483 miles (777 km)
- Rebuild 113 miles (182 km)
- Capacity improvements
 - Four-lane 566 miles (911 km)
 - Super-2 969 miles (1,559 km)
- New location improvements - 376 miles (606 km)
- Repair or replace 2,000 bridges and culverts
- Eliminate narrow roadways - 39 miles (63 km)
- Evaluate 34 rail/highway at-grade crossings

	1995	2020
• Sufficiency Rating	64	80
• Vehicle Miles of Travel (millions)	4,219	7,458

Other Primary Highways

Invest in maintaining, preserving and rebuilding the remaining primary highway system.

What will this investment accomplish by the year 2020?

- **Preserve 3,678 miles (5,919 km) and rebuild 1,157 miles (1,862 km) of other primary highways.**
- **Construct 70 miles (112 km) of other primary highways to four-lane and 80 miles (128 km) to Super-2.**

The remaining primary highway system of 6,637 miles (10,680 km) is comprised of area development routes, access routes and local service routes. Investment improvements on these routes will provide safer roadway conditions, extend the life of the highway, and improve rural access and mobility, which will foster economic development. Preservation work, such as pavement resurfacing, may improve the overall condition and reduce vehicle operating costs, as well as improve overall safety. Rebuilding a highway may include replacement of portions of the pavement. These improvements provide safer travel and reduce user costs.

Roadway condition will be the primary factor in determining priorities, as guided by the department's pavement management system. Capacity improvements include additional lanes or Super-2 designs, generally on commuting routes near large urban areas. One criteria for considering Super-2 design is when traffic reaches 80 to 90 percent of capacity, causing average travel speeds to drop to 50 miles per hour. Other improvement options, such as technological developments, will be examined before major capacity improvements are made. There will be an average of six miles (10 km) of capacity improvements completed each year. Additional capacity improvements will be evaluated using the department's congestion management system (Figure 27 on page 45).

- **Repair or replace 3,750 other primary highway bridges and culverts.**

An average of 150 bridges and culverts will be repaired or replaced per year. This schedule will ensure that any bridge that is structurally deficient will be improved during the 25-year period.

Figure 27 - Potential Improvements to Other Primary Highways

Potential Improvements to Other Primary Highways



- Does not imply funding commitment.
- Reflects current conditions and forecasts that may change over time.

Bridge condition will be the primary factor in determining priorities, as guided by the department's bridge management system.

Improve narrow roadways on other primary routes where feasible.

Narrow roadways on Iowa's other primary routes will be evaluated for widening and improvements to promote safety, rural mobility and economic development. Currently 1,871 miles (3,011 km) of other primary routes are less than 24 feet wide (7.3 meters). All narrow roadway improvements will be evaluated and prioritized according to pavement condition, width of roadway, hills, curves, traffic volume and safety. The majority of narrow roadway improvements will be made in conjunction with other roadway improvements (Figure 28 on page 49).

Consider improvements to other primary highways to more safely accommodate bicycle and pedestrian transportation.

The department will consider improvements on other primary highways, where warranted, to more safely accommodate bicycles and pedestrians. The safe and convenient accommodation of bicycle and pedestrian transportation will be considered in the design and development of future highway and bridge projects. Impacts on safety, maintenance, and traffic flow for both motor vehicles and bicycles will be considered in evaluating primary highway improvements. Criteria will be established to determine how bicycles may best be accommodated and/or where they should be prohibited along other primary highways. The department may consider accommodations on wider shoulders or in the highway right-of-way where other options are not feasible. The department's bicycle and pedestrian accommodation policy is being developed.

Invest in intermodal primary highway improvements to increase efficiency and safety.

On primary highways, including the CIN, the department will invest in access improvements, where appropriate, to provide better connections to intermodal facilities. Intermodal access will be considered in the design and development of all highway projects. The department's intermodal management system will be used to assist in identifying access improvement needs.

The department will also consider accommodations to support safe and convenient public transportation in the planning and development of urban primary street projects. Impacts on safety and traffic flow for all motor vehicles, including buses, will be considered. Improvements may involve constructing bus turnouts, expanding the turning radius at intersections, increasing pavement strength, considering bus shelter locations, and utilizing

- **Evaluate and improve, as needed, 1,871 miles (3,011 km) of narrow primary highways.**

- **Bicycle and pedestrian transportation will be considered in the development of other primary highways.**



advanced technology systems. The department will coordinate and cooperate with local jurisdictions and transit providers when considering these types of improvements.

Summary of Other Primary Highway Accomplishments by the Year 2020

- Preserve 3,678 miles (5,919 km)
- Rebuild 1,157 miles (1,862 km)
- Capacity improvements
 - Four-lane 70 miles (112 km)
 - Super-2 80 miles (128 km)
- New location improvements - 31 miles (50 km)
- Repair or replace 3,750 bridges and culverts
- Evaluate narrow roadways - 1,871 miles (3,011 km)

	1995	2020
• Sufficiency Rating	64	63
• Vehicle Miles of Travel (millions)	6,201	8,794

Improvements for the interstate, CIN and other primary highways are summarized in Table 5.

Table 5
1996 - 2020 Improvement Summary

Distance Summary - miles (kilometers)

Planning Classification	Preserve	Rebuild	Capacity		New Location #/distance	No Improvement	Total
			Super-2	Other*			
Interstate	252 (406)	458 (737)	--	71 (114)	--	--	782 (1,258)
CIN	483 (777)	113 (182)	969 (1,559)	566 (911)	49/376 (606)	145 (234)	2,275 (3,661)
Other Primary	3,678 (5,919)	1,157 (1,862)	80 (128)	70 (112)	7/31 (50)	1,653 (2,660)	6,637 (10,679)
Total	4,413 (7,102)	1,728 (2,781)	1,049 (1,687)	707 (1,137)	56/407 (656)	1,798 (2,894)	9,694 (15,598)

Average Annual Construction Cost (thousands - constant 1995 dollars)

Planning Classification	Preserve	Rebuild	Capacity		New Location	Structures	Total
			Super-2	Other*			
Interstate	\$11,911	\$34,758	--	\$21,258	--	\$8,000	\$75,927
CIN	\$7,866	\$8,475	\$28,507	\$35,138	\$36,051	\$25,100	\$141,137
Other Primary	\$22,991	\$34,372	\$1,142	\$4,108	\$3,358	\$27,200	\$93,171
Total	\$42,768	\$77,605	\$29,649	\$60,504	\$39,409	\$60,300	\$310,235

* Other capacity improvements include adding lanes to an existing roadway or rebuilding the existing roadway to provide operational improvements.

Average Annual Total Cost (thousands - constant 1995 dollars)

Planning Classification	Construction	Maintenance	Total*
Interstate	\$75,927	\$20,154	\$96,081
CIN	\$141,137	\$31,874	\$173,011
Other Primary	\$93,171	\$67,730	\$160,901
Total	\$310,235	\$119,758	\$429,993

Condition Summary

Planning Classification	Sufficiency	
	1996	2020
Interstate	88	85
CIN	64	80
Other Primary	64	63
Total	66 (avg)	69 (avg)

* Total cost does not include engineering or administration costs.

Tables 6 and 7 on pages 51 and 52 show potential new location improvements and potential capacity improvements on Iowa's primary highway system.

Figure 28 - Pavement Width Less Than 24 Feet

Pavement Width Less Than 24 Feet

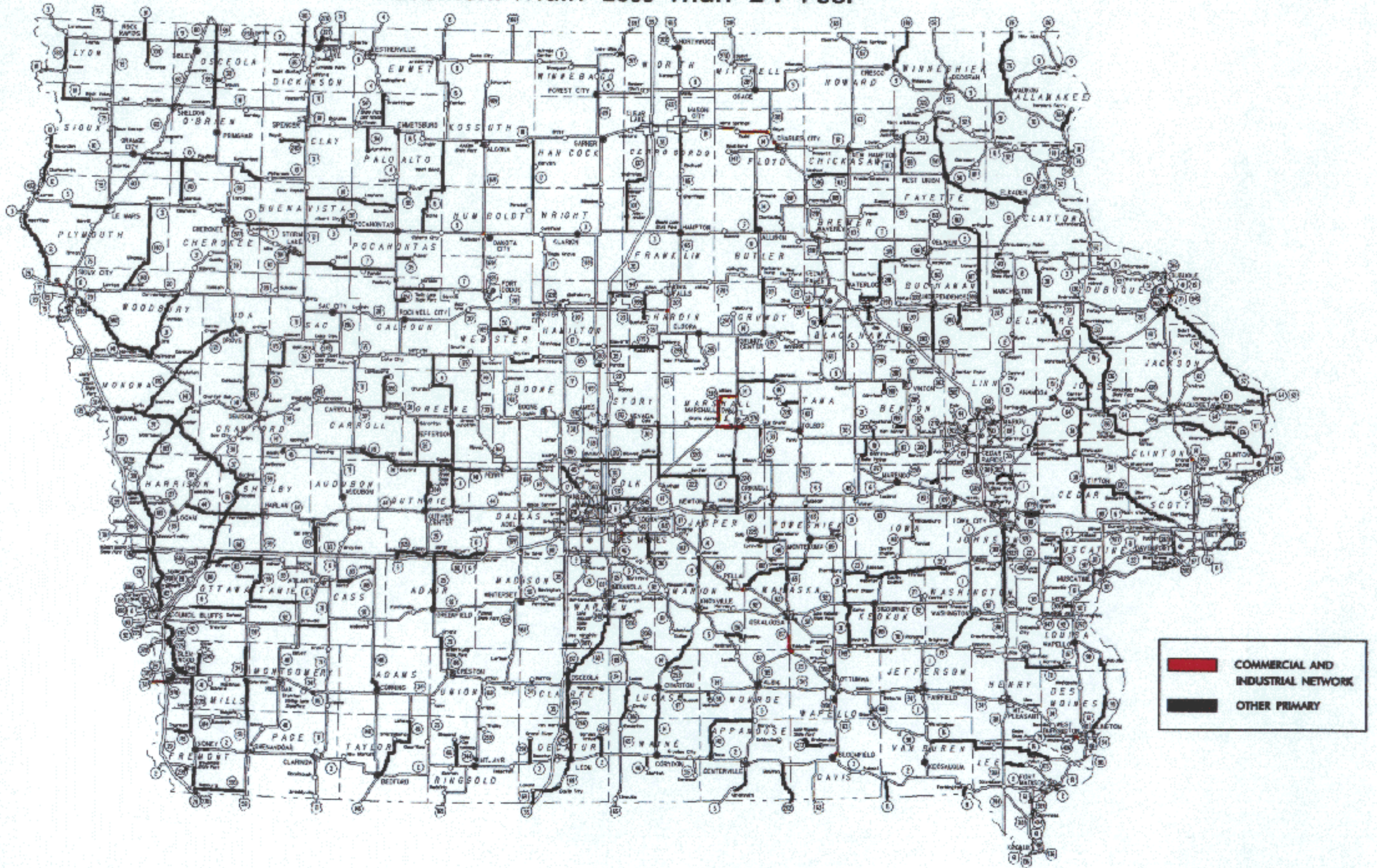


Table 6
Potential New Location Improvements

Route #	Planning Classification	Description	Miles	Kilometers
Included in 1997-2001 Iowa Transportation Improvement Program				
5	2	Relocated IA 5: I-35 to US 65/69	10.7	17.2
18	2	Mason City Bypass: I-35 to Rudd	23.9	38.5
18	2	Charles City Bypass	8.8	14.2
20	2	Relocated US 20: US 65 to Divided Section	37.2	59.9
23	2	Relocated IA 23: North of Ottumwa	5.7	9.2
30	2	Marshalltown Bypass	9.6	15.4
30	2	Le Grand Bypass	4.0	6.4
30	2	Tama/Toledo Bypass	4.8	7.7
34	2	Ottumwa Bypass	11.5	18.5
34	2	Batavia Bypass	1.5	2.4
34	2	Mt. Pleasant Bypass (west)	5.6	9.0
34	2	New London Bypass	5.0	8.0
34	2	Danville/Middletown Bypass	9.7	15.6
60	2	Le Mars Bypass	3.7	6.0
60	2	Alton Bypass	4.6	7.4
60	2	Hospers Bypass	3.5	5.6
61	2	Blue Grass Bypass	3.4	5.5
61	2	Welton Bypass	2.0	3.2
63	2	New Hampton Bypass	9.0	14.5
65	2	Relocated US 65: US 65/69 to IA 163	8.3	13.4
71	2	Storm Lake Bypass	9.4	15.1
71	2	Spencer Bypass	9.4	15.1
71	2	Maywood Relocation	1.0	1.6
75	2	Sioux City Bypass: US 20 to US 75	6.6	10.6
137	2	Eddyville Bypass	3.5	5.6
151	2	Monticello Bypass	5.3	8.5
151	2	Cascade Bypass	4.0	6.4
163	2	Prairie City Bypass	4.2	6.8
163	2	Monroe Bypass	5.5	8.8
163	2	Otley Bypass	1.9	3.1
163	2	Oskaloosa Bypass	6.5	10.5
218	2	Mt. Pleasant Bypass	11.4	18.3
218	2	Olds Bypass	5.0	8.0
218	2	Crawfordsville Bypass	1.5	2.4
218	2	Ainsworth Bypass	4.7	7.6
218	2	Waverly Bypass	6.4	10.3
218	2	Plainfield Bypass	2.6	4.2
218	2	Nashua Bypass	3.4	5.5
5	3	Pleasantville Bypass	3.9	6.3
32	3	Dubuque - NW Arterial (JFK Road to US 52)	1.9	3.1
100	3	Marion Bypass	5.2	8.4
Not included in 1997-2001 Iowa Transportation Improvement Program				
20	2	Relocated US 20: Early to Moorland	50.0	80.5
30	2	Missouri Valley Bypass	4.9	7.9
30	2	Carroll Bypass	8.8	14.2
30	2	Lisbon/Mt Vernon Bypass	4.0	6.4
34	2	Relocated US 34: Missouri River to I-29	3.5	5.6
34	2	Fairfield Bypass	10.5	16.9
61	2	Fort Madison Bypass	10.5	16.9
63	2	Bloomfield Bypass	2.8	4.5
71	2	Spirit Lake - Lakes Bypass	10.7	17.2
218	2	Donnellson Bypass	4.0	6.4
330	2	Albion Bypass	2.2	3.5
MLK	3	CBD Loop in Des Moines	3.7	6.0
2	3	Sidney Bypass	4.5	7.2
32	3	Dubuque - SW Arterial	4.6	7.4
100	3	US 30 to Edgewood Road	7.0	11.3

Note: Does not imply funding commitment. Reflects current conditions and forecasts that may change over time.

Table 7
Potential Capacity Improvements*

Route #	Planning Classification	Description
Included in 1997-2001 Iowa Transportation Improvement Program		
35	1	West of IA 28 to N Jct I-80/235
18	2	Mason City Bypass to Charles City Bypass
18	2	US 63 to New Hampton Bypass
20	2	End Four-Lane near I-35 to US 65
23	2	Eddyville Bypass to Relocated IA 23
30	2	End Four-Lane @ East City Limits of Carroll East Two Miles
30	2	End Four-Lane near Nevada to Colo
30	2	Marshalltown Bypass to Tama/Toledo Bypass
30	2	W Jct US 218 to IA 201
30	2	US 151/IA 13 to West of IA 1
34	2	Fairfield Bypass to Danville/Middletown Bypass
60	2	Le Mars Bypass to Minnesota State Line
61	2	N Jct US 218 to W Jct IA 2
61	2	End Four-Lane near Wever to Begin Four-Lane near Burlington
61	2	Louisa/Muscatine County Line to Begin Four-Lane near Muscatine
61	2	End Four-Lane near Muscatine to I-280
61	2	IA 956 to Begin Four-Lane near Jct US 151
63	2	IA 3 to S Jct US 18
65	2	End Four-Lane near IA 931 to IA 117/330
71	2	Milford to W Jct IA 9
137	2	Eddyville Bypass to Oskaloosa Bypass
141	2	US 169 to Granger
151	2	US 30 to Begin Four-Lane near Marion
151	2	End Four-Lane near Springville to Begin Four-Lane near US 61
163	2	Prairie City Bypass to Begin Four-Lane near Pella
163	2	End Four-Lane near Pella to Oskaloosa Bypass
218	2	Henry/Lee County Line to IA 92
218	2	Waverly Bypass to Charles City Bypass
330	2	US 65/IA 117 to US 30
394	2	Missouri State Line to US 218
5	3	End Four-Lane near Knoxville to Relocated IA 5
9	3	US 52 to County Road A-52
32	3	US 20 to John F Kennedy Road
67	3	Riverdale to near I-80
6	4	US 169 to Begin Four-Lane near I-35
Not included in 1997-2001 Iowa Transportation Improvement Program		
29	1	E Jct I-80 to 24th St in Council Bluffs
29	1	W Jct I-80 to 23rd Ave in Council Bluffs
29	1	Airport Interchange to South Dakota State Line in Sioux City
35	1	Relocated IA 5 to Begin Six Lane near University Ave in Des Moines
35	1	N Jct I-80/235 to IA 931
74	1	Spruce Hills Dr to Illinois State Line
80	1	E Jct US 65 to IA 117
80	1	West Urban Area Line Iowa City to IA 1
235	1	S Jct I-35/80 to N Jct I-35/80
380	1	Airport Interchange to US 30
380	1	Blairs Ferry Road to Boyson Road in Cedar Rapids Urban Area
30	2	Denison to Carroll Bypass
30	2	Carroll Bypass to IA 286
30	2	W Jct US 169 to Begin Four-Lane near Ogden
30	2	Colo to Marshalltown Bypass
30	2	West of IA 1 to Mechanicsville
30	2	Grand Mound to US 61
34	2	E Jct US 275 to IA 41
34	2	Ottumwa Bypass to Fairfield Bypass
61	2	E Jct US 136 to S Jct US 218
61	2	End Four-Lane near Burlington to Louisa/Muscatine County Line
63	2	Bloomfield Bypass to Ottumwa
218	2	IA 394 to Henry/Lee County Line
1	3	Governor Street in Iowa City to I-80
6	3	Hickman Road to Douglas Avenue on Merle Hay Road in Des Moines
63	3	IA 58 to Begin Four-Lane near US 20 in Waterloo
65	3	Relocated IA 5 to the Des Moines River Bridge
100	3	Center Point Road to IA 922 (1st Avenue) in Cedar Rapids
6	4	Just East of US 61 to I-74 in Davenport
57	4	Union Road to Hudson Road in Cedar Falls
69	4	End Four-Lane near Des Moines to IA 160
69	4	South Urban Area Line of Ames to Begin Four-Lane
69	4	NE 18th Street to NW 118th Avenue in Ankeny

Note: Does not imply funding commitment. Reflects current conditions and forecasts that may change over time.

* Additional lanes to existing roadway or rebuild the existing roadway to provide operational improvements.

Conclusions

The highway program will focus on maintenance and preservation. Specifically, the interstate system will be the top priority; the CIN will be developed to a minimum Super-2 design; narrow roadways will be evaluated for possible widening and improvements; and bicycle travel will be considered on other primary highways where it can be safely accommodated.

As shown in Table 8, investment actions will support all three levels comprising the primary highway system. The average annual cost to implement these investment actions is \$429.9 million in 1995 dollars.

Federal funding is expected to decrease over the 25-year period from an annual average of \$129.0 million to \$68.6 million. Nearly all of this decline is due to inflation. However, state funds are expected to increase from \$274.2 million to \$292.5 million. Available funds from federal and state sources to cover the highway investment actions are estimated to total \$9.6 billion over the 25-year period, averaging \$382.3 million per year.

The anticipated federal and state funds to invest in highways over the entire 25-year period are \$1.2 billion less than the estimated costs. Most of this shortfall is the result of a loss of buying power due to inflation.

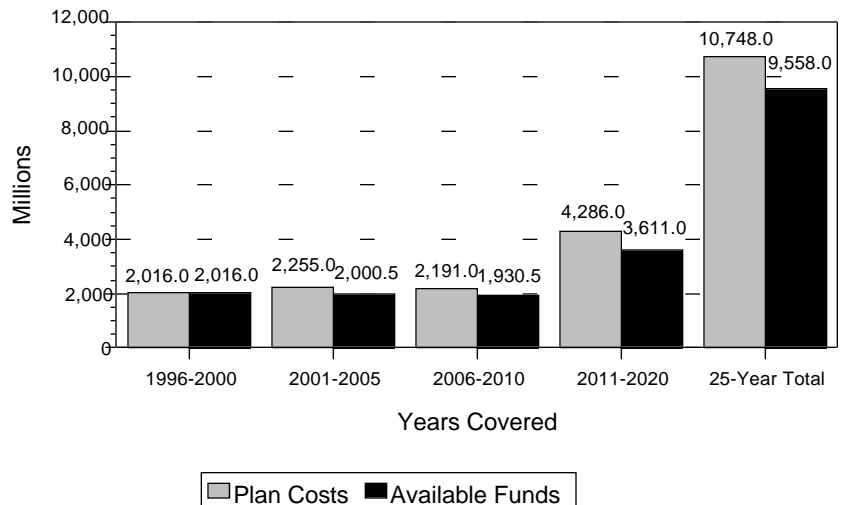
Table 8
Investment Summary - Highway
Average Annual Constant 1995 Dollars
in Millions

ESTIMATED PLAN COSTS				
INVESTMENT ELEMENT	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Interstate System	\$ 44.8	\$ 99.0	\$ 85.0	\$ 75.4
Commercial and Industrial Network	\$176.2	\$146.0	\$136.6	\$123.4
Other Primary System	\$ 75.6	\$ 83.0	\$ 93.6	\$106.8
System Maintenance	\$106.6	\$123.0	\$123.0	\$123.0
TOTAL INVESTMENTS	\$403.2	\$451.0	\$438.2	\$428.6
ESTIMATED AVAILABLE FUNDS				
FUNDS ELEMENT	(Current 5 yr. Program) 1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Interstate System	\$ 44.8			
Commercial and Industrial Network	\$176.2			
Other Primary System	\$ 75.6			
Total Construction Program	\$296.6			
Maintenance	\$106.6			
TOTAL HIGHWAY FUNDING	\$403.2	\$400.1	\$386.1	\$361.1
Federal Sources	\$129.0	\$108.0	\$ 88.8	\$ 68.6
State Sources	\$274.2	\$292.1	\$297.3	\$292.5
FUNDS Excess or (Shortfall)	\$0.0	(\$ 50.9)	(\$52.1)	(\$ 67.5)

In the first five-year period, highway investment actions align with the current five-year improvement program, resulting in revenues equaling costs. The average annual shortfall of \$50.9 million for the second five-year period (2001-2005) will increase to \$67.5 million in the last time period (2011-2020).

A comparison of the total plan costs and available funds is shown in Figure 29. Anticipated funds will cover 89 percent of the estimated highway investment costs. The timing of highway improvements for the three highway levels varies by time period. For example, work on the interstate system increases substantially in the 2001-2005 period over today due to the urgent needs on the overall system, as well as the improvements to I-235. During the same time period, work on the CIN decreases due to the priorities for improvements on the interstate.

Figure 29
Investment Summary - Highway
 Plan Costs and Funding Comparison
 Constant 1995 Dollars



Future Activities

The following activities will be addressed in the future as part of the ongoing *Iowa in Motion* planning process to implement the highway investment actions.

- Develop financial plan
 - index for inflation impacts
 - funding options

- Update highway implementation plan
 - interstate system
 - CIN update
 - other primary highway system
 - Super-2 design policy

- narrow roadway policy
 - bicycle and pedestrian accommodations
 - priority processes
- Review cost allocation

Development of the financial plan will include the analysis of possible funding options for financing the highway shortfall. Several of these options are shown below and will be addressed more fully in the development of the financial plan. The results of the financial plan, along with the highway implementation plan, will guide the development of the overall highway program.

Options for Financing Highway Shortfall

	Estimated Additional Revenue (Millions)
• Change vehicle registration fee for trucks less than 5T to same formula as passenger cars which is: 1% value + (\$0.40 x weight ÷ 100)	\$20.2
• Increase registration fee for all 3T trucks less than 10 years old (current fee is \$65) Example: \$10 flat increase	\$ 3.2
• Increase registration fee for all 3 to 10T trucks (current fee ranges from \$35 to \$235) Example: \$10 flat increase	\$ 6.9
• Establish minimum registration fee of \$45 for autos and trucks	\$26.0
• Add state sales tax to price of all highway fuel (non-taxed portion only)	\$16.9
• Increase state highway fuel excise tax Example: 1 cent/gallon	\$18.9
• Remove state ethanol exemption Example: 1 cent/gallon	\$ 6.5
• Institute bonding	*
• Establish State Infrastructure Bank (SIB)	*
• Establish toll bridges	*

Note: For changes in registration fees, the department would conduct a cost allocation study to determine appropriate levels of fees.

* Amounts will vary depending on level of implementation.

Intermodal

The term intermodal means the use of two or more modes to complete the movement of a shipment of freight or a passenger trip from origin to destination. Intermodal transportation involves a focus on the coordination and connection between modes. Traditionally, Iowa's transportation planning efforts have evolved through an emphasis on individual modal system development and as a reaction to individual modal demands.

The department's current method of assisting freight and passenger intermodal movements is generally through individual modal programs.

Through the public input process and specific discussions with facility operators it was determined Iowans want increased highway and street access improvements and support of public and private facility improvements. As a result, the following investment guidelines which support the plan's overall themes have been developed.

Safety: Enhance safety by eliminating intermodal access barriers; for example, installing left-turn lanes and signals at a busy intersection to decrease accidents.

Preservation: Support preservation of services through congestion reduction, increased efficiencies and removal of barriers.

Efficiency: Foster efficiency through cost reductions by investments in access routes, facilities and equipment to assist both freight and passenger movements.

Economic Development: Foster economic development by multimodal availability and coordination of modes, resulting in lower overall transportation costs.

Balance: Support a balanced system by providing alternative transportation choices.

Freight and passenger intermodal infrastructure investments will focus on the following actions.

Access Improvements

Invest in the elimination of access barriers to intermodal facilities on city streets and county roads (non-primary highway routes) and rail lines.

The main emphasis for the following types of improvements is to increase the efficiency and safety of traveling on local access

Examples of Intermodal Facilities

- Rail trailer-on-flat-car/container-on-flat-car facilities
- Airport terminals
- Barge terminals
- Rail grain terminals
- Truck-to-air facilities
- Amtrak terminals
- Intercity bus terminals
- Pipeline terminals
- Urban transit central transfer points
- Park-and-ride lots

1995 Intermodal Facts

	Number of Key Transfer Facilities
Freight	
Air cargo terminals	2
Barge terminals	79
Pipeline terminals	39
Rail trailer-on-flat-car/container-on-flat-car terminals	10
Rail grain terminals	71
Rail bulk terminals	15
Total	216
Passenger	
Amtrak stations	6
Bicycle facilities with transit connections	1
Commercial service airports	10
Ground transportation centers	3
Intercity bus terminals	11
Park-and-ride lots	30
Urban transit central transfer points	22
Total	83

What will this investment accomplish by the year 2020?

- Access will be improved at 60 intermodal facilities.

routes to intermodal facilities. Some of these improvements may incorporate intelligent transportation systems (ITS) technology. Access improvements on the CIN and other primary highways are discussed in the highway section of this document (page 47).

Examples of access improvements include:

- facility location signage;
- improvements to existing roads or building new access roads (not private or internal facility roads);
- traffic signalization;
- intersection improvements;
- increasing railroad structure clearances; and
- improvements to existing rail lines or spur tracks.



Examples of Equipment and Facility Improvements

- Truck-to-rail container loaders
- Intermodal bulk commodity loaders
- Intermodal container chassis
- Bus and Amtrak information kiosks
- Bicycle racks on buses



Equipment and Facility Improvements

Assist in the purchase of intermodal equipment or facility improvements at publicly owned freight and passenger facilities.

Assist in the purchase of intermodal equipment for privately owned freight and passenger facilities.

The main emphasis for equipment purchase and facility improvement assistance is to increase the efficiency of freight and passenger intermodal facilities. This in turn supports economic development through lower shipping costs, shorter travel times, increased facility usage, and so on.

Preliminary annual improvement costs and investment priorities for these improvements have been established through use of the department's intermodal management system. This management system utilized surveys of public and private facility users and owners/operators to assist in identifying needed access and facility improvements to new or existing intermodal facilities. Investments will be in the form of matching grants and loans.

An intermodal facility plan (similar to the individual modal implementation plans) will be developed based on the survey results. It will classify access improvements, provide design standards, and be coordinated with individual modal implementation plans, and will be presented to the Iowa Transportation Commission for approval.

Conclusions

The department will continue to assist freight and passenger intermodal movements through individual modal programs. In addition, \$0.7 million will be invested annually for access, equipment and facility improvements. The department will also develop, for the first time, a comprehensive intermodal facility plan.

As noted in Table 9, implementation of the investment actions to support intermodal activities is estimated to cost an average of \$0.7 million per year in 1995 dollars.

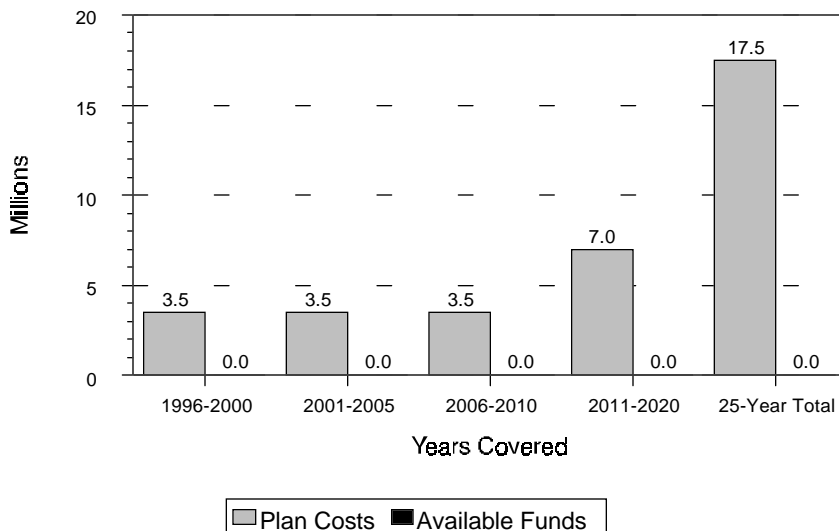
Table 9
Investment Summary - Intermodal
 Average Annual Constant 1995 Dollars
 in Millions

ESTIMATED PLAN COSTS				
INVESTMENT ELEMENT	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Intermodal Access Improvements	\$0.2	\$0.2	\$0.2	\$0.2
Other Intermodal Improvements	\$0.5	\$0.5	\$0.5	\$0.5
TOTAL INVESTMENTS	\$0.7	\$0.7	\$0.7	\$0.7
ESTIMATED AVAILABLE FUNDS				
FUNDS ELEMENT	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Intermodal Funding				
Federal Sources	\$0.0	\$0.0	\$0.0	\$0.0
State Sources	\$0.0	\$0.0	\$0.0	\$0.0
TOTAL FUNDS	\$0.0	\$0.0	\$0.0	\$0.0
FUNDS Excess or (Shortfall)	(\$0.7)	(\$0.7)	(\$0.7)	(\$0.7)

Currently there is no specific funding source for intermodal improvements. In the past, modal programs or special appropriations have provided the funding for intermodal projects.

A comparison of the total plan costs and available funds is shown in Figure 30. There are no anticipated state or federal funds. The shortfall (difference between total plan costs and available funds) is expected to total \$17.5 million over the 25-year period.

Figure 30
Investment Summary - Intermodal
 Plan Costs and Funding Comparison
 Constant 1995 Dollars



Options for Financing Intermodal Shortfall

- **State General Fund**
- **Passenger facility use charge**
- **Freight facility use charge**
- **Public/private partnerships**

Future Activities

The following activities will be addressed in the future as part of the ongoing *Iowa in Motion* planning process to implement the intermodal investment actions.

- Develop financial plan
 - index for inflation impacts
 - funding options
- Develop intermodal facility plan
 - stratification and identification of facilities
 - priority process
 - match ratios
 - needs analysis
- Coordinate with modal implementation plans

Development of the financial plan will include the analysis of possible funding options for financing the intermodal shortfall. Several of these options are shown at the side and will be addressed more fully in the development of the financial plan. The results of the financial plan, along with the intermodal facility plan, will guide the development of the overall intermodal program.

Pipeline

The pipeline network in Iowa, consisting of 12,379 miles (19,806 km) and currently owned and operated by 17 private companies, will continue to provide for the safe and efficient movement of natural gas, petroleum products and anhydrous ammonia to locations throughout the state. Public comments supported the continuation of private sector investments in the pipeline network. As a result, the department's policy is shown below.

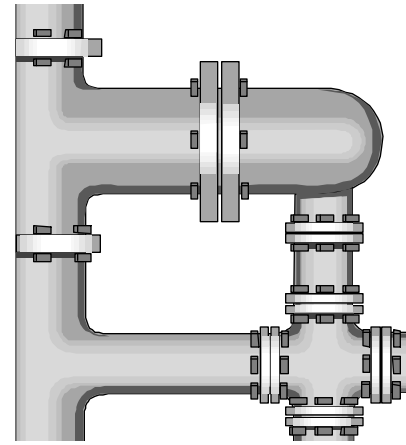
Pipeline Facilities

No investment in the development of Iowa's pipeline network.

Investments in Iowa's pipeline facilities should remain the responsibility of private pipeline companies. This direction will minimize state involvement in private enterprise. However, efficient roadway access to terminals and tank farms will be a factor in controlling user transportation costs associated with products moved in pipelines.

Conclusions

These pipeline safety and access issues are addressed in the highway and intermodal sections of this document (pages 47 and 57). Additionally, transfers from pipeline to truck will be considered in updating the highway implementation plan and development of the intermodal facility plan.



1995 Pipeline Facts

Miles of Pipeline

Natural Gas	7,689
Petroleum	4,033
Anhydrous Ammonia	657
Total	12,379

Number of Carriers

Natural Gas	6
Petroleum	9
Anhydrous Ammonia	2
Total	17

Cubic Feet of Natural Gas Delivered	242.2 billion
Gallons of Petroleum Delivered	2.0 billion

Rail

Iowa's 4,268-mile (6,868-km) rail network is owned and operated by 18 privately held railroad companies. Currently there are 5,889 rail/highway at-grade crossings. The railway network performs an important role in moving bulk commodities produced and consumed in the state. The railroad's ability to haul large volumes as an energy-efficient, environmentally sound network will continue to be a major factor for its use in moving freight and improving the economy of Iowa. Rail passenger service in Iowa is provided by Amtrak which operates daily service over two routes in southern Iowa, stopping at six stations.

The department's role in the development of Iowa's rail system will focus on providing assistance to railroads and shippers for freight service and the continued study of rail passenger corridors. Ownership and operations will remain in the private sector. Through the public input process it was determined Iowans want a rail branchline system that is capable of handling larger cars, assists economic development, and provides safer rail/highway crossings. As a result, the following investment guidelines which support the plan's overall themes have been developed for Iowa's rail system.

Safety: Enhance safety by improving rail/highway at-grade crossings to reduce crossing conflicts, and by upgrading branchlines to reduce train derailments.

Preservation: Support preservation of the existing branchline system by improving rail lines which provide access for shipments of large volumes of bulk commodities.

Efficiency: Focus on efficiency by improving rail lines which result in lower shipping costs.

Economic Development: Foster economic development by assisting rail line improvements which provide rail service to businesses that create and/or retain jobs.

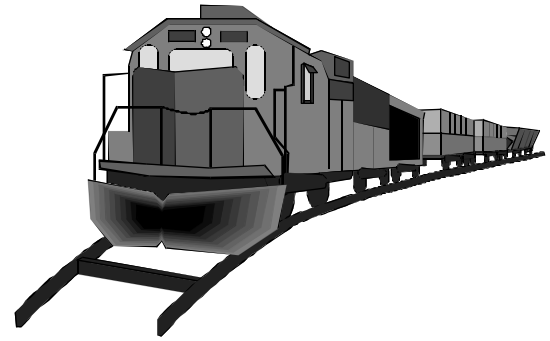
Balance: Ensure balance by assisting the railroads so that rail transportation is a competitive shipping alternative.

Rail investments will focus on the following actions.

Rail Branchlines

Invest in the rehabilitation of branchlines.

The investment in rail branchlines will benefit farmers and other shippers by preserving rail services; reducing rail operating costs



1995 Rail Facts

Number of Carriers

Large (Class 1)	4
Regional/Shortlines	14
Total	18

Miles of Track

Large (Class 1)	3,011
Regional/Shortlines	1,257
Total	4,268

Main Line Miles	2,271
Branchline Miles	1,997
Total	4,268

Number of Rail/Highway Crossings

Separated	772
At Grade with Signals & Gates	616
At Grade with Signals Only	1,019
At Grade with Crossbucks/Other	3,482
Total	5,889

Iowa Freight Movements

Tons Shipped	33.9 million
Tons Received	39.7 million
Tons Passing Through	159.7 million
Gross Ton Miles	60.4 billion

Iowa Rail Passenger Ridership 47,968

What will this investment accomplish by the year 2020?

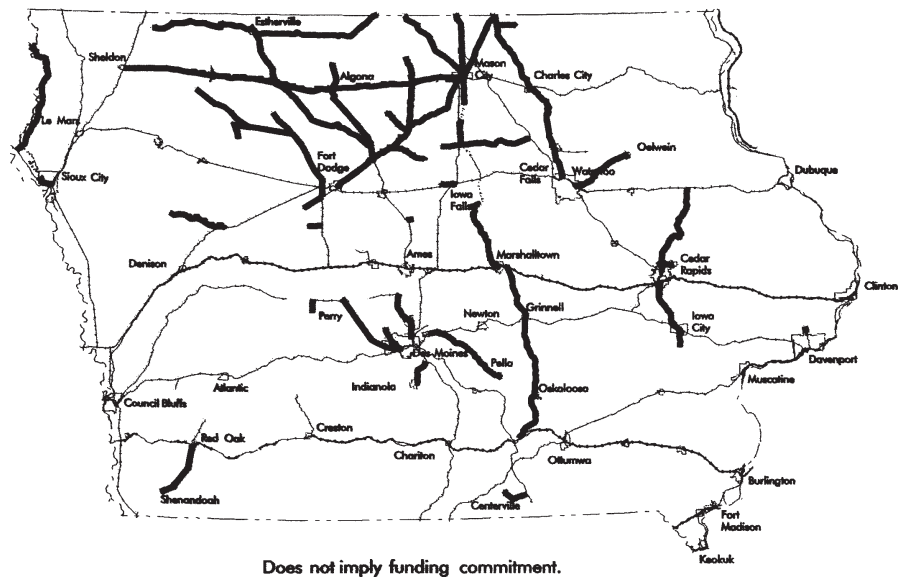
- Upgrade 830 miles (1,328 km) of rail branchlines.

such as derailment, labor and fuel expenditures; and reducing highway maintenance costs by shipping goods by rail rather than truck.

The rail industry is shifting to heavier cars weighing 286,000 pounds (128,700 kilograms) to achieve operating efficiencies. However, many of Iowa's branchlines (Figure 31) are able to handle only 263,000-pound (118,350-kilogram) cars and may require additional improvements.

Investment priorities will be based on the immediacy of need and the benefits derived from the investment. The department will partner with both railroads and shippers to improve branchlines.

Figure 31
Rail Lines Unable to
Handle 286,000-Pound Cars



- Assist in 125 rail economic development projects.

Invest in building or improving spur tracks to new or existing industries that create or retain jobs.

Spur track improvements benefit both state and local economies. Businesses locating in Iowa and using rail service will not only add jobs and income, but will also benefit railroads serving Iowa. The additional rail traffic will increase the revenue desired for continued private railroad operation and investment.

Investment priorities will focus on projects that result in the creation of new jobs and/or the retention of existing jobs and added rail traffic. Spurs to industry locations for speculative purposes will not be eligible.

Rail Crossings

Invest in rail/highway at-grade crossing safety improvements.

Rail/highway at-grade crossings continue to be a major national issue concerning public safety, capital and maintenance costs, and liability for both railroads and public jurisdictions. These improvements will benefit lowans by reducing accidents at existing at-grade crossings, eliminating conflicts at closed or separated crossings, and reducing rail and highway operating costs. In addition, rail/highway at-grade crossings on the CIN are discussed in the highway section (page 43).

Investment priorities will be based on the amount of highway traffic, train traffic and accidents. The department will partner with railroads, cities and counties to make crossing improvements.

Intercity Rail Passenger Service

Continue efforts to analyze rail passenger service needs.

Although there is no direct investment identified for rail passenger services, efforts in monitoring and planning for rail passenger services will continue. One such effort currently underway is the Midwest Rail Initiative. Iowa is participating with eight other midwestern states, Amtrak and the Federal Railroad Administration in a study to determine the feasibility of a midwest rail system (Figure 32). Three Iowa routes between Chicago and Omaha will be analyzed, including the Burlington Northern Santa Fe route in southern Iowa, the Union Pacific route through central Iowa, and the Iowa Interstate route in central Iowa.

Figure 32
Midwest Regional Passenger
Rail System Study Area



- Improve 3,000 rail/highway at-grade crossings.



Another effort will include an intermodal approach to develop an integrated intercity passenger service network. The department will analyze both east-west and north-south rail passenger service, along with commercial air and intercity bus, to identify the appropriate service levels to meet intercity travel needs. Results of these continuing efforts may suggest that investments in rail passenger service are necessary. If this is the outcome, further investments will be recommended and plan modifications will be made.

Conclusions

Rail investments will continue for branchlines, spur tracks and crossing safety projects, but with increased emphasis on branchline improvements to accommodate heavier cars. The plan calls for an increase of \$2.0 million annually for branchline improvements and \$0.5 million for crossing improvements. The department will initiate a study to determine intercity passenger service needs that will include air, bus and rail.

As noted in Table 10, implementation of the investment actions to support rail improvements is estimated to cost an average \$9.4 million per year in 1995 dollars.

Available funds from federal and state sources to cover the rail investment actions are estimated to decrease from \$6.5 million annually in the 1996-to-2000 time period to \$4.7 million annually in the 2011-to-2020 time period. This decrease reflects the loss of buying power resulting from those funds not keeping pace with inflation.

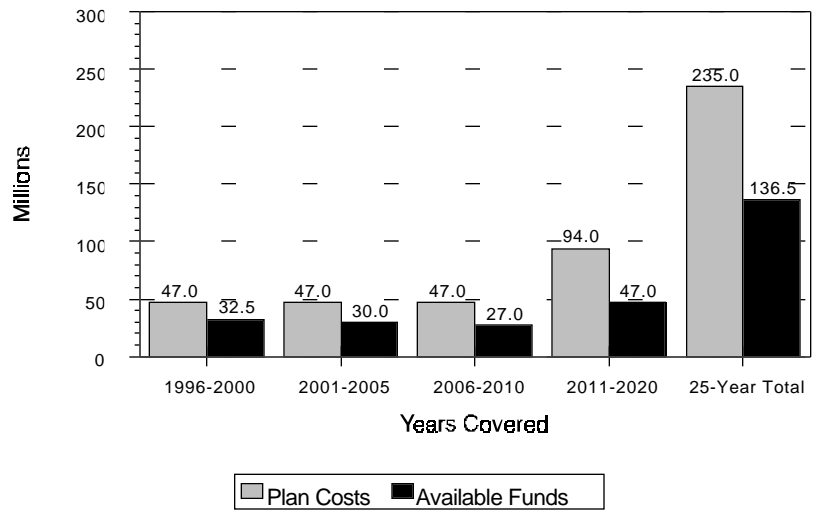
Table 10
Investment Summary - Rail
Average Annual Constant 1995 Dollars
in Millions

ESTIMATED PLAN COSTS				
INVESTMENT ELEMENT	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Rail Branchlines	\$ 4.0	\$ 4.0	\$ 4.0	\$ 4.0
Rail Crossings	\$ 5.4	\$ 5.4	\$ 5.4	\$ 5.4
Intercity Rail Passenger Service	na	na	na	na
TOTAL INVESTMENTS	\$ 9.4	\$ 9.4	\$ 9.4	\$ 9.4
ESTIMATED AVAILABLE FUNDS				
FUNDS ELEMENT	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Rail Branchlines				
Federal Sources	\$0.0	\$0.0	\$0.0	\$0.0
State Sources	\$1.8	\$1.6	\$1.4	\$1.1
Rail Crossings				
Federal Sources	\$3.2	\$3.1	\$2.9	\$2.7
State Sources	\$1.5	\$1.3	\$1.1	\$0.9
Intercity Rail Passenger Service				
Federal Sources	na	na	na	na
State Sources	na	na	na	na
TOTAL FUNDS	\$6.5	\$6.0	\$5.4	\$4.7
FUNDS Excess or (Shortfall)	(\$2.9)	(\$3.4)	(\$4.0)	(\$4.7)

The anticipated federal and state funds to invest in rail are less than the estimated costs. In the first five-year time period, the estimated shortfall averages \$2.9 million per year. For the time period 2011 to 2020, the amount needed to offset the estimated shortfall will increase to \$4.7 million per year. State funds were assumed to remain at their current levels, while federal funds were assumed to increase but not keep pace with inflation.

A comparison of the total plan costs and available funds is shown in Figure 33. Anticipated funds will cover 58 percent of the estimated rail investment costs. The expected shortfall (difference between total plan costs and available funds) is expected to total \$98.5 million over the 25-year period.

Figure 33
Investment Summary - Rail
 Plan Costs and Funding Comparison
 Constant 1995 Dollars



Future Activities

The following activities will be addressed in the future as part of the ongoing *Iowa in Motion* planning process to implement the rail investment actions.

- Develop financial plan
 - index for inflation impacts
 - funding options

- Update rail implementation plan
 - study of rail passenger service
 - priority process
 - match ratios
 - needs analysis

Development of the financial plan will include the analysis of possible funding options for financing the rail shortfall. Several of these options are shown at the side and will be addressed more fully in the development of the financial plan. The results of the financial plan, along with the rail implementation plan, will guide the development of the overall rail program.

Options for Financing Rail Shortfall

- State General Fund
- Establish a tax check-off on grain shipped by rail
- Initiate a revolving loan account

Transit

Transit service is recognized as an important component for providing an alternative transportation choice for Iowans in both rural and urban areas, as well as a cost-effective option for the transportation disadvantaged. As Iowa's population ages, it is necessary to maintain current services and also provide for expanded services. This will help meet the basic transportation needs of the elderly and disabled as their personal mobility options decline.

Iowa's 35 public transit systems are classified as regional, small urban and large urban. In 1995 these systems provided over 22 million rides while traveling nearly 23 million miles.

Through the public input process it was determined Iowans want continued support of all public transit systems between rural and urban areas, and expanded intercity bus and commuter services. As a result, the following guidelines which support the plan's overall themes have been developed for Iowa's transit systems.

Safety: Enhance safety by continued replacement and upgrading of transit vehicles, equipment and facilities.

Preservation: Support preservation of existing services that are essential for the transportation disadvantaged.

Efficiency: Focus on efficiency through the support of coordinated, cost-effective transportation services.

Economic Development: Foster economic development through support of commuter vanpool programs and construction of park-and-ride lots.

Balance: Ensure balance by supporting transit services in both rural and urban areas, as well as providing alternative transportation choices.

Transit needs are basically divided into two major areas--operating and capital--with operating needs accounting for the largest share of the total needs. Iowa's transit needs are funded from three major sources--federal, state and local funds. Federal funds are provided from a variety of programs and are used primarily for capital projects with a limited amount used for operating costs. State transit funds are provided through 1/20 of the first four cents of the motor vehicle use tax and are generally used for operating assistance. Local funding for operating and capital support is provided through local taxes, passenger fares or donations, service contracts (with agencies for client transportation), and



1995 Transit Facts

Public Transit Service

	<u>Number of Systems</u>	<u>Ridership (millions)</u>	<u>Revenue-Miles (millions)</u>
Regional	16	4.0	12.0
Small Urban	8	3.8	2.5
Large Urban	11	14.6	8.4
Total	35	22.4	22.9

Public Transit Equipment

	<u>Vans</u>	<u>Buses</u>	<u>Vehicles</u>
Regional	387	371	46
Small Urban	11	116	4
Large Urban	21	377	22
Total	419	864	72

What will this investment accomplish by the year 2020?

- Annual ridership will increase from 22.4 million to 32.9 million.



- Purchase 145 buses annually.

other miscellaneous sources such as student fees, advertising revenues and interest on deposits.

Assuming federal funding levels remain fairly constant, the transit investments will focus on the following actions.

Operating Assistance

Invest in operating support to Iowa's public transit systems.

Continuing to invest in operating support will help ensure transit services are provided since these services could not exist at current levels without subsidization. These services are primarily designed to accommodate essential trips for the economically disadvantaged, youth, elderly and disabled, while also allowing for the greatest convenience for all riders. Investments will be balanced between rural and urban areas, and between preservation and expansion of services where demand warrants.

Transit services that provide essential trips such as medical and shopping for the elderly and disabled will have the highest priority for state funding. The department will periodically review services provided to these groups to determine if program changes are necessary. Strategies will be developed to identify methods to increase overall coordination, efficiency and productivity of transit systems to better serve customers' needs. Steps will be developed to better inform the public of available transit services. The department has been in the forefront of efforts to mandate coordination of publicly funded passenger transportation. This has been achieved, in part, by channeling all state and federal public transit funding through local transit systems. Agencies using other public funds to purchase or provide transit services must coordinate or consolidate those services to the maximum extent feasible with the designated transit systems. The department will continue to foster improved coordination with human service agencies and school districts.

Capital Assistance

Invest in purchasing vehicles, facilities and equipment to help meet the capital needs of Iowa's public transit systems.

Continuing to invest in the replacement and upgrading of vehicles, facilities and equipment will help preserve the capital assets of Iowa's public transit systems and provide safe and efficient transportation to Iowans.

The department will consider improvements that support safe and convenient public transportation as urban primary street projects

appropriate service levels to meet intercity travel needs. Results of these continuing efforts may suggest that additional investments in intercity bus service are necessary. If this is the case, further investments will be recommended and plan modifications will be made.

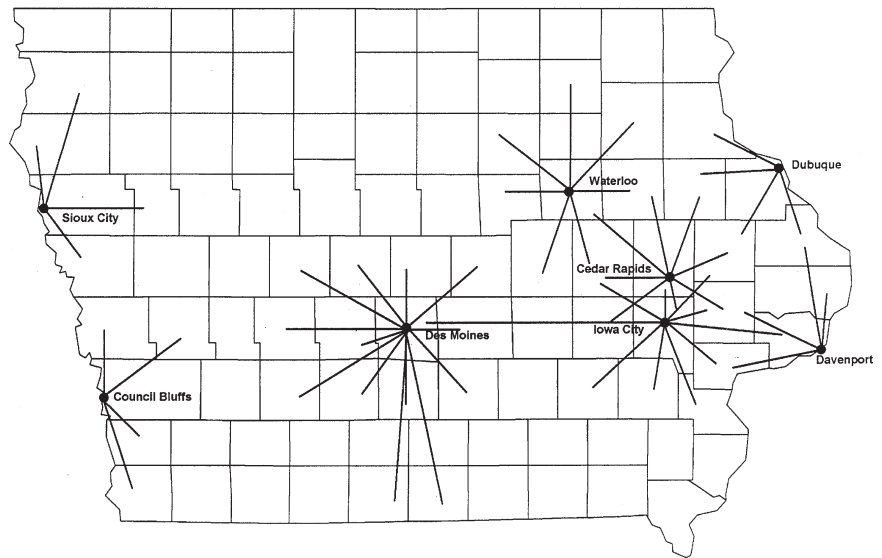


Commuter Services

Emphasize the development of commuter services.

Commuter services include employer vanpool programs, shuttle services, park-and-ride lots, and other services that assist commuters. These programs will be developed in rural and urban areas, where need is demonstrated, to assist in providing transportation for commuters (Figure 35) and in developing intermodal connections. Commuter services will be a key link in moving people to their jobs. Additionally, increased use of commuter services will help alleviate traffic congestion during major urban highway construction projects.

Figure 35
Urban Area Commuting Patterns



Trends in travel patterns indicate longer commutes, which make vanpooling more feasible. Proposed changes in federal programs, such as health care and welfare, may have a significant impact on commuter services. Vanpool programs are aimed at:

- reducing the number of single-occupant vehicles on roadways;
- providing persons increased opportunities for jobs or training through improved access to transportation;
- providing a larger hiring area for employers;
- providing cost-efficient transportation;
- improving the environment; and
- allowing employees more choices in where they live.

The department will support the initial purchase of vehicles to be used for vanpooling. Replacement vehicles and operating expenses will be the responsibility of the users.

The integration of park-and-ride lots is a key element in providing effective intermodal public transit services. The department will support the development of park-and-ride lots in rural and fringe urban areas for commuters who work in major employment centers.

Conclusions

The department will continue to support transit services for all lowans, with an increased focus on providing an alternative to the private automobile, and on serving the needs of the transportation disadvantaged as well as our growing elderly population. The department will address the need for intercity passenger services. The development of commuter services will be emphasized.

As noted in Table 11, implementation of the investment actions to support transit services is estimated to cost an average of \$27.3 million per year in 1995 dollars.

Available funds from federal and state sources to cover the transit investment actions are estimated to total \$474.5 million over the 25-year period, averaging \$19.0 million per year.

Table 11
Investment Summary - Transit
Average Annual Constant 1995 Dollars
in Millions

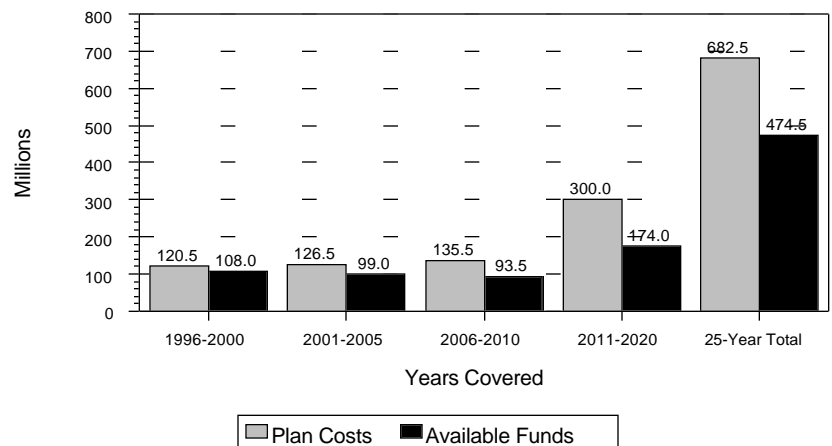
ESTIMATED PLAN COSTS				
INVESTMENT ELEMENT	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Operating Assistance	\$12.4	\$13.9	\$15.6	\$18.2
Capital Assistance	\$11.4	\$11.4	\$11.5	\$11.8
Intercity Passenger	\$ 0.3	na	na	na
TOTAL INVESTMENTS	\$24.1	\$25.3	\$27.1	\$30.0
ESTIMATED AVAILABLE FUNDS				
FUNDS ELEMENT	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Operating Assistance				
Federal Sources	\$ 4.4	\$ 3.8	\$ 3.3	\$ 2.8
State Sources	\$ 6.8	\$ 7.0	\$ 7.2	\$ 7.5
Total	\$11.2	\$10.8	\$10.5	\$10.3
Capital Assistance				
Federal Sources	\$10.1	\$ 9.0	\$ 8.2	\$ 7.1
State Sources	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
Total	\$10.1	\$ 9.0	\$ 8.2	\$ 7.1
Intercity Passenger				
Federal Sources	\$ 0.3	na	na	na
State Sources	\$ 0.0	na	na	na
Total	\$ 0.3	na	na	na
TOTAL FUNDS	\$21.6	\$19.8	\$18.7	\$17.4
FUNDS Excess or (Shortfall)	(\$ 2.5)	(\$ 5.5)	(\$ 8.4)	(\$12.6)

Note: In developing plan costs and available funds, consideration has been given to the \$35 million provided annually through local sources for operating and capital support.

The anticipated funds from federal and state sources available to invest in transit are \$208.0 million less than estimated costs. Both federal and state funds are expected to increase; however, the increase in federal funds will not keep pace with inflation, resulting in the loss of buying power.

A comparison of the total plan costs and available funds is shown in Figure 36. Anticipated funds will cover 70 percent of the estimated transit investment costs.

Figure 36
Investment Summary - Transit
Plan Costs and Funding Comparison
Constant 1995 Dollars



Future Activities

The following activities will be addressed in the future as part of the ongoing *Iowa in Motion* planning process to implement the transit investment actions.

- Develop financial plan
 - index for inflation impacts
 - funding options
 - potential decline in federal funds
- Update transit implementation plan
 - priority process
 - match ratios
 - needs analysis
- Emphasize the development of commuter service programs
- Address intercity passenger needs

Development of the financial plan will include the analysis of possible funding options for financing the transit shortfall. Several of these options are shown at the side and will be addressed more fully in the development of the financial plan. The results of the financial plan, along with the transit implementation plan, will guide the development of the overall transit program.

Options for Financing Transit Operating and Capital Shortfall

- Increase use tax from 1/20 to 1/10 of first four cents
- Iowa's Clean Air Attainment Program (ICAAP) -- dedicated percentage for transit
- Addition of local option tax indexed to price of all highway fuel
- State General Fund
- Transportation head tax -- employers assessed tax for employees using motor vehicles for transportation to and from work

Waterway

Water transportation will continue to play an important role in moving grain and other bulk commodities to and from Iowa. Iowa is served by two navigable rivers, the Mississippi and Missouri, totaling 491 miles (786 km). The U.S. Army Corps of Engineers maintains and improves these rivers. There are 79 barge terminals, owned and operated by private companies, located along these rivers that transfer bulk commodities between barge, rail and truck.

Public comments suggested that preserving the waterway system will provide a safe and efficient way to transport goods to and from Iowa. Investments should be balanced between modes, as well as between preservation and expansion. The public indicated that the responsibility for water improvements should remain with the Corps. As a result, the department's policy is shown below.

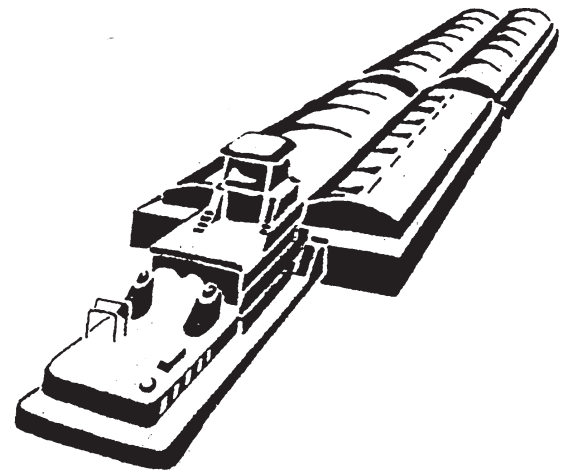
Waterway Facilities

No investment in improvement of the navigation channel.

The development of Iowa's water transportation system will continue to be the responsibility of private companies and the Corps. The department will continue to work with the Corps and shippers to ensure that Iowa's needs are met through improvements that promote efficient use of the waterway system. Currently, the department is participating in the Corps' study to investigate improvements to the Upper Mississippi River locks and dams. The department intends to revisit this investment policy based upon the results of the study.

Conclusions

Although the department will not be investing in navigation improvements, investments in associated rail and roadway improvements will be made. Highway and rail access improvements to barge facilities, as well as transloading equipment improvements and purchases, are addressed in the highway and intermodal sections of this document (pages 47 and 57). Additionally, transfers between barges, trucks and rail will be considered in development of highway, intermodal and rail implementation plans.



1995 Waterway Facts

Navigable Miles Bordering Iowa	
Mississippi River	309
Missouri River	182
Total	491

Number of Mississippi River Locks/ Dams Bordering Iowa	
with 320-foot chamber	2
with 600-foot chamber	10
with 1,200-foot chamber	1
Total	13

Average Age of the Locks/Dams 56

Number of Iowa Barge Terminals	
Mississippi River	66
Missouri River	13
Total	79

Iowa Freight Movements	
Tons Shipped	7.9 million
Tons Received	4.5 million

Other Investments

In addition to the modal investments discussed in the previous sections, the department also administers several application programs and is involved in developing new technologies. These existing programs and investments support the overall themes, particularly safety and economic development.

Through the public input process it was determined Iowans want transportation investments that support clean air, increased economic development, an improved quality of life, better environment, safe transportation facilities, and advanced technology and research. However, some of these investments, in addition to the previous modal investments, may be affected as Congress enacts future federal transportation legislation. These Congressional changes may require a reevaluation of the following investment actions as well as the previous modal actions. In the meantime, the investment actions shown below will be continued or initiated.

Intelligent Transportation Systems (ITS)

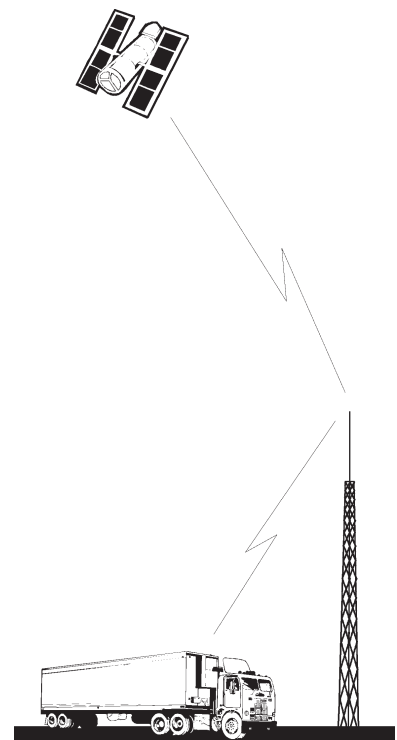
Invest in the development of ITS technology.

A new program will be established to support research, deployment and evaluation of new technology to enhance the safety and efficiency of freight and passenger transportation. Intelligent transportation technologies such as global positioning systems (GPS), fleet and cargo tracking systems, traveler information kiosks, and driver smart cards will streamline the collection of truck fuel taxes, improve the scheduling and operation of transit vehicles, and improve licensing for Iowa's 1.9 million motor vehicle drivers. Technologies which provide for emergency notification and response systems, commercial vehicle permitting and weighing, and increased safety will also be supported.

Iowa's Clean Air Attainment Program (ICAAP)

Invest in transportation improvements which improve air quality or reduce congestion.

To reflect the spirit of Congress in establishing ISTEA and to assist in maintaining Iowa's clean air attainment status, the department implemented Iowa's Clean Air Attainment Program. This program funds projects that maximize emission reduction via traffic flow improvements, reduce vehicle miles of travel, eliminate single-occupant vehicle trips, and support other transportation improvements which improve air quality or reduce congestion.



ICAAP Project Categories

- Traffic Flow Improvements
- Shared-Ride Services
- Transit Improvements
- Demand Management Strategies
- Pedestrian and Bicycle Programs
- Inspection and Maintenance Programs
- Other Projects and Programs
- Transportation Control Measures
- Transportation Activities in State Implementation Plan
- Surface Transportation Program Projects



Living Roadway Trust Fund

Invest in roadside development improvements.

The Living Roadway Trust Fund authorized by the Iowa Legislature was established in 1989. This fund was created to implement integrated roadside vegetation management programs on city, county or state rights-of-way or areas adjacent to traveled roadways. Projects include the purchase of special equipment, roadside inventories, gateway plantings, trees, native grasses and wildflower seeds.

RISE Program Categories

- Immediate Opportunity
- Local Development
- Regional Development



Revitalize Iowa's Sound Economy (RISE) Program

Invest in roadway improvements to promote economic development.

The RISE fund was created by the Iowa Legislature in 1985 to promote economic development in Iowa through construction or improvement of roads, streets and highways. The program is designed to target value-adding activities, provide maximum economic benefit through jobs created and/or retained, emphasize local involvement and initiative, and address situations requiring an immediate response and commitment of funds.

Traffic Safety Improvement Program

Invest in safety improvements throughout the transportation system.

The department currently administers a state Traffic Safety Improvement Program which funds engineering studies for, and infrastructure improvements to, eligible public roadways. This infrastructure program will be expanded to include safety improvements for other modes in addition to highways, and may require additional funding sources.

Enhancement Project Categories

- Trails and Bikeways
- Historical and Archaeological
- Scenic and Natural Resources

Transportation Enhancements

Invest in projects which support transportation enhancement activities.

Federal funding is currently provided for transportation enhancement activities and should be continued. Federal eligibility guidelines and the state program restrict funding to projects directly related to enhancing transportation infrastructure and are intended to go beyond the normal mitigation of transportation improvement projects. Such projects may support activities related to pedestrian and bicycle facilities and trails, scenic and

historic sites, and landscaping and scenic beautification. Transportation enhancements must have a direct relationship to the intermodal transportation system, either as it exists or as it is planned.

Transportation Services -- Education, Research and Training Programs

Invest in various education, research and training programs.

These programs will serve the needs of state and local governments as well as the general public. The department also funds various information, public involvement and technical assistance transportation programs. All of these transportation services are generally incorporated within the department's administrative budget and are not included in Table 12. Examples include:

- Operation Lifesaver;
- seat belt usage campaign;
- maintenance/construction work zone safety;
- Iowa Highway Research Board;
- state university research projects;
- elementary school education partnerships; and
- public involvement efforts.

Communication and coordination with local governments and other state agencies is critical to effectively address safety, economic development and environmental protection issues.

Conclusions

The department will continue to invest in supplemental programs to address specific concerns related to clean air, safety, economic development, technology and research. The plan calls for an increase of \$7.0 million annually for ITS development.

As shown in Table 12, implementation of the investment actions is estimated to cost \$30.6 million annually in 1995 dollars. This will result in a total investment of \$765.0 million over the 25-year period.

Available funds from federal and state funding sources to cover the investment actions to support other investments are estimated to total \$518.5 million over the 25-year period, averaging \$20.7 million per year.

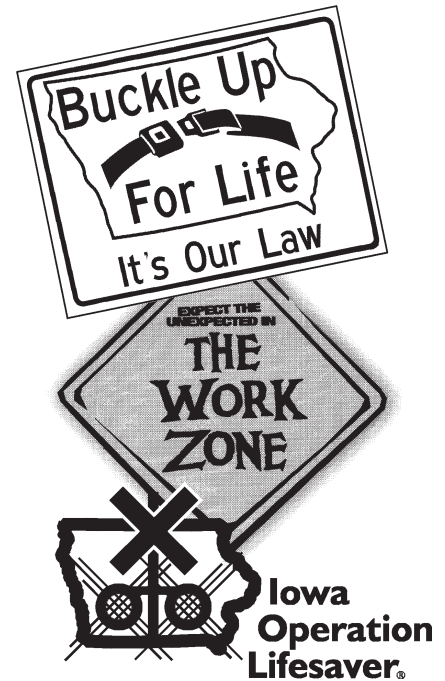
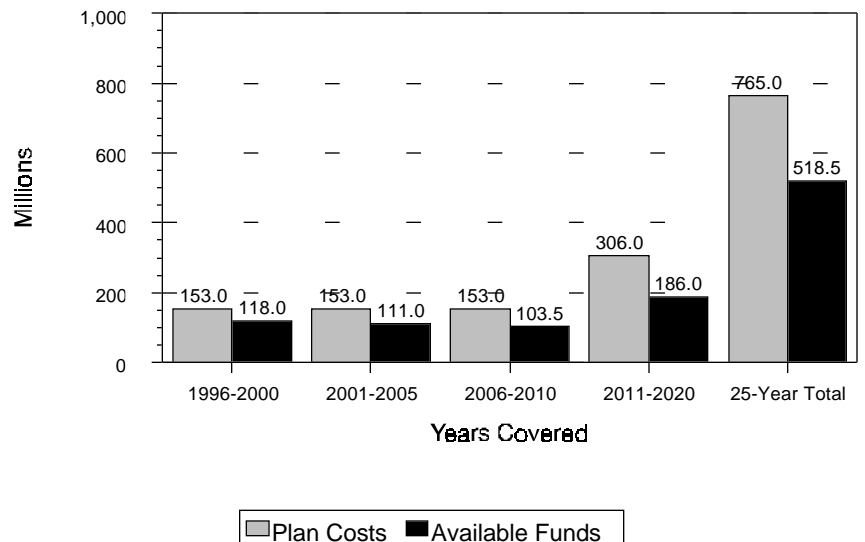


Table 12
Investment Summary - Other Investments
Average Annual Constant 1995 Dollars
in Millions

ESTIMATED PLAN COSTS				
INVESTMENT ELEMENT	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Application Programs	\$23.6	\$23.6	\$23.6	\$23.6
Intelligent Transportation Systems	\$ 7.0	\$ 7.0	\$ 7.0	\$ 7.0
TOTAL INVESTMENTS	\$30.6	\$30.6	\$30.6	\$30.6
ESTIMATED AVAILABLE FUNDS				
FUNDS ELEMENT	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Application Programs	\$23.6	\$22.2	\$20.7	\$18.6
Intelligent Transportation Systems	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
TOTAL FUNDS	\$23.6	\$22.2	\$20.7	\$18.6
FUNDS Excess or (Shortfall)	(\$ 7.0)	(\$ 8.4)	(\$ 9.9)	(\$12.0)

The anticipated federal and state funds to assist in other investments over the entire 25-year period are \$246.5 million less than the estimated costs. A comparison of the total plan costs and available funds is shown in Figure 37. Anticipated funds will cover 68 percent of the estimated costs of other investments. The major portion of this shortfall is due to a lack of funding earmarked for ITS. In addition, the remaining shortfall reflects the loss of buying power resulting from those funds not keeping pace with inflation.

Figure 37
Investment Summary - Other Investments
Plan Costs and Funding Comparison
Constant 1995 Dollars



Options for Financing Other Investments Shortfall

- Increase Road Use Tax Fund
- State General Fund
- Public/private partnerships

Possible options for financing the other investments shortfall are shown at the side. These options will be addressed more fully in development of the financial plan.

Investment Summary

As shown in Table 13, plan costs for all modes are compared with available funds. The average annual cost to implement these investment actions is \$515.8 million in 1995 dollars. This will result in a total investment of \$12.9 billion during the 25-year period.

Available funds from federal and state sources to cover the investment actions are estimated to total \$11.0 billion over the 25-year period, averaging \$438.6 million per year.

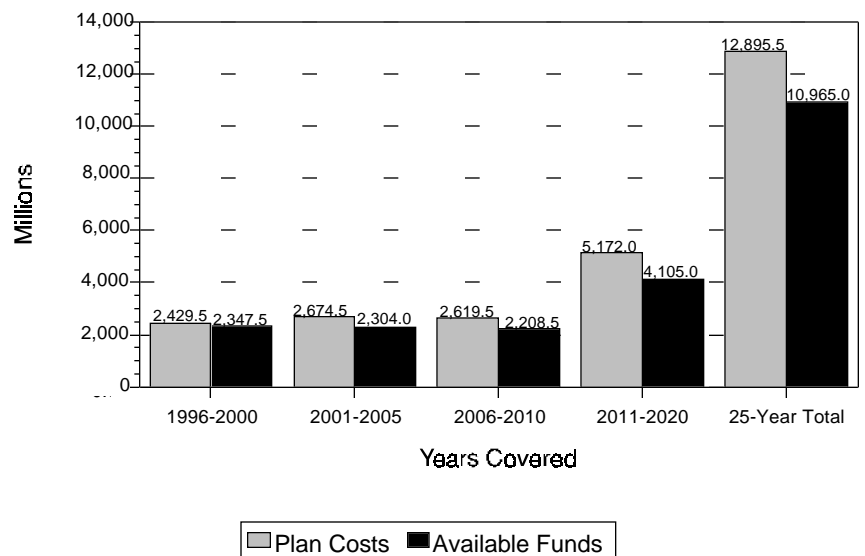
Table 13
Investment Summary - All Systems
Average Annual Constant 1995 Dollars
in Millions

ESTIMATED PLAN COSTS				
INVESTMENT PROGRAMS	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Aviation Programs Total	\$ 15.9	\$ 15.9	\$ 15.9	\$ 15.9
Bicycle and Pedestrian Programs Total	\$ 2.0	\$ 2.0	\$ 2.0	\$ 2.0
Highway Programs Total	\$403.2	\$451.0	\$438.2	\$428.6
Intermodal Programs Total	\$ 0.7	\$ 0.7	\$ 0.7	\$ 0.7
Rail Programs Total	\$ 9.4	\$ 9.4	\$ 9.4	\$ 9.4
Transit Programs Total	\$ 24.1	\$ 25.3	\$ 27.1	\$ 30.0
Pipeline/Waterway Programs Total	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
Other Investments Total	\$ 30.6	\$ 30.6	\$ 30.6	\$ 30.6
TOTAL INVESTMENT PROGRAM	\$485.9	\$534.9	\$523.9	\$517.2
ESTIMATED AVAILABLE FUNDS				
FUNDING AVAILABILITY	1996 - 2000	2001 - 2005	2006 - 2010	2011 - 2020
Aviation Funding	\$ 13.7	\$ 11.9	\$10.1	\$ 8.2
Excess or (Shortfall)	(\$ 2.2)	(\$ 4.0)	(\$ 5.8)	(\$ 7.7)
Bicycle and Pedestrian Funding	\$ 0.9	\$ 0.8	\$ 0.7	\$ 0.5
Excess or (Shortfall)	(\$ 1.1)	(\$ 1.2)	(\$1.3)	(\$ 1.5)
Highway Funding	\$403.2	\$400.1	\$386.1	\$361.1
Excess or (Shortfall)	\$ 0.0	(\$50.9)	(\$52.1)	(\$67.5)
Intermodal Funding	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
Excess or (Shortfall)	(\$ 0.7)	(\$ 0.7)	(\$ 0.7)	(\$ 0.7)
Rail Funding	\$ 6.5	\$ 6.0	\$ 5.4	\$ 4.7
Excess or (Shortfall)	(\$2.9)	(\$ 3.4)	(\$ 4.0)	(\$ 4.7)
Transit Funding	\$ 21.6	\$ 19.8	\$ 18.7	\$ 17.4
Excess or (Shortfall)	(\$ 2.5)	(\$ 5.5)	(\$ 8.4)	(\$12.6)
Pipeline/Waterway Funding	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
Excess or (Shortfall)	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
Other Investments Funding	\$ 23.6	\$ 22.2	\$ 20.7	\$ 18.6
Excess or (Shortfall)	(\$ 7.0)	(\$ 8.4)	(\$ 9.9)	(\$12.0)
TOTAL FUNDING ESTIMATE	\$469.5	\$460.8	\$441.7	\$410.5
TOTAL FUNDS Excess or (Shortfall)	(\$ 16.4)	(\$ 74.1)	(\$ 82.2)	(\$106.7)

The anticipated federal and state funds for the entire 25-year period are \$1.9 billion less than the estimated costs as shown in Figure 38. Anticipated funds will cover 85 percent of the estimated investment costs. The shortfall between available funds and plan costs for all systems is due primarily to those funds not keeping pace with inflation. The majority (\$1.2 billion) of this shortfall is attributed to highway investments, with the remaining shortfall associated with the other modes and programs.

The shortfall to implement all of the action elements outlined in this plan has a significant tie to timing. The shortfall for each of the first five years is \$16.4 million, whereas this increases to \$74.1 million for each year in the second five-year period, \$82.2 million for each year in the third five-year period, and \$106.7 million for each year in the final 10-year period.

Figure 38
Investment Summary - All Systems
 Plan Costs and Funding Comparison
 Constant 1995 Dollars



Implementation Direction

Several essential elements will need to be addressed in the implementation of the adopted State Transportation Plan.

How will the plan be financed?

Implementation of the adopted State Transportation Plan will pose a challenge for Iowans. The gap between transportation investment needs and the level of available revenues was addressed in a general nature in the plan.

A financial plan will be developed to analyze each modal shortfall and determine if realignment or redirection of existing modal revenues could be a viable solution. Potential new sources of revenues listed in the plan will be thoroughly evaluated from the standpoint of advantages and disadvantages of implementation. This will include ease and cost of implementation, timing of increases, magnitude of impact on the public, legislative and regulatory barriers, and a specific structure of how the revenue source would be implemented. This financial plan will involve a proactive public participation process where input and ideas will be solicited.

How will specific program eligibility, criteria and priorities be established?

The plan identifies some program implementation elements such as design policies for Super-2s, bicycles and pedestrians, and narrow pavements. However, the specific program guidelines will be developed in the modal implementation plans. These plans will reflect the themes, policies and investment directions set forth in the State Transportation Plan.

The modal implementation plans will stratify the infrastructure within each mode and establish appropriate design standards. Program specifics such as project eligibility, rating and prioritization will be clearly defined in these plans. For example, the highway project assessment methodology will be addressed in the highway implementation plan.

Each modal implementation plan will involve discussions with advisory committees, participation with local governments through the metropolitan planning organizations (MPOs) and regional planning affiliations (RPAs), and other public participation efforts, as well as formal adoption by the Iowa Transportation Commission.

How will progress be measured?

It is important to monitor the plan's progress to ensure the investment actions are implemented such as through the use of perfor-

- **Financial Plan**

- **Modal Implementation Plans**

- **Performance Measures**

Management Systems

- **Pavement**
- **Bridge**
- **Highway Safety**
- **Traffic Congestion**
- **Public Transportation Facilities and Equipment**
- **Intermodal Transportation Facilities and Systems**
- **Maintenance**
- **Traffic Monitoring**
- **Others**

- **MPO and RPA Plans**

mance measures. These measures are a means to compare plan expectations with actual projects. Some performance measures such as the annual number of regional airport runway extensions built, sufficiency ratings, pavement condition ratings, roadway age, or the number of transit vehicles purchased will be used to make objective decisions regarding the effectiveness of the transportation improvements. Progress reports will be presented periodically to the Iowa Transportation Commission in order to determine how well the goals, themes and investment actions of the plan are being met. If necessary, adjustments will be made to ensure that transportation investments are achieving what is outlined in the plan. The plan will also need to be revisited on a periodic basis to reflect relevant changes in shipping patterns, energy costs, commuting habits, population shifts and new technologies.

In addition, the department's ongoing management systems will develop performance measures. These measures will be used to ensure that the specific programs and priorities outlined in each modal implementation plan are properly implemented.

How will local coordination be achieved?

Local transportation facilities are essential in providing Iowans with a quality transportation system. Iowa's eight MPOs and 18 RPAs, acting on behalf of their constituent cities and counties, have developed or are in the process of developing long-range transportation plans. The department, MPOs and RPAs will now work together to implement a unified vision of continued quality transportation services in a coordinated manner. Continual dialogue is essential for an effective planning process at the state, MPO and RPA levels and will ensure that the best transportation investment decisions are made.

Epilogue

The journey continues. Iowans have indicated the type of transportation system they want for the future, and their ideas and concerns are reflected in this State Transportation Plan. The plan represents a major commitment and takes some bold steps into the future. It is the first time a transportation plan considers investments in aviation, bicycle and pedestrian, intermodal, rail, transit and waterway, along with highway, all in one plan. It also considers the changing transportation needs of Iowans through the year 2020. But most importantly, it is based on the thoughts and concerns of Iowans--including the young and elderly, the disabled and transportation disadvantaged, individuals and businesses, public and private groups, and advisory and focus committees.

The Iowa Department of Transportation wishes to thank everyone who has participated in the development of the plan through the *Iowa in Motion* process. The journey does not stop here. As future activities to implement the adopted plan are initiated, the input of Iowans will be solicited. The effort to develop and implement Iowa's transportation system through the year 2020 will continue.

For additional copies, contact:



**Iowa Department
of Transportation**

Office of Systems Planning
800 Lincoln Way
Ames, IA 50010

Phone: 515-239-1669

Fax: 515-239-1639

Braille and audio formats are available upon request.

The plan is also available on our Web site at:
<http://www.state.ia.us/government/dot>