

3. Planning considerations

There are a wide variety of issues that must be considered as the Iowa DOT plans our future transportation system. While several far-reaching issues are identified in this chapter, these planning considerations do not represent an exhaustive list, and new issues are likely to arise over the life of the Plan.



3.1 Economic vitality

One such consideration critical to the transportation planning process is economic vitality. Throughout Iowa's history, economic growth has occurred along thoroughfares of all forms, from our rivers to our railroads and highways. While, on the surface, the relationship between transportation improvements and economic growth seems rather straightforward, many professionals and academics would argue that it is not yet fully understood. Regardless, it is critical that the potential economic impacts of transportation projects are considered during the planning process.

Within the Iowa DOT, the importance of this consideration is manifested in a number of ways. The Five-Year Program, for example, identifies several transportation policies, the first of which is to promote a system that maximizes economic benefits for Iowa. As part of the programming process, economic development impacts are considered as candidate projects are identified and evaluated. In addition, the Revitalize Iowa's Sound Economy (RISE) Program has funded transportation projects that have supported the creation of nearly 54,000 jobs over the program's 26-year existence. These are just a few illustrations of the value that the Iowa DOT has placed on economic vitality.

Iowa is not alone in these efforts, as many state transportation agencies support economic vitality through various policies and programs. This support can be provided indirectly through policies that recognize economic development as a consideration in funding decisions, or it can be provided more directly through dedicated funding sources for economic development projects. As highlighted in the previous paragraph, the Iowa DOT provides support in both forms through the general programming process and the RISE program.

3.2 Energy

Energy issues are another consideration fresh in the minds of Iowans. In Iowa, energy issues are primarily discussed within the context of fuel supply and cost as well as the impact of the biofuels and wind energy industries.

Fuel supply and cost

Both the supply and cost of fuel can directly impact many facets of the transportation industry. For example, when the cost of fuel fluctuates noticeably, driving behavior can change and create an immediate impact on the transportation system through variations in number of miles driven and changes in mode of travel. Such changes in behavior can also have more far-reaching impacts, as notable increases or decreases in travel can impact transportation-related revenues such as those derived from fuel taxes.

The fuel market can also impact transportation construction costs. In recent years, many state DOTs have experienced unprecedented construction cost increases. The escalation of global fuel prices is one of several factors that has contributed to higher bid prices. As construction cost inflation continues, the buying power for all revenue sources decreases. In fact, cost inflation can even negate the impacts of increased revenue, as was the case with the Road Use Tax Fund (RUTF) in recent years. According to the TIME-21 Funding Analysis, even with a 2.9 percent annual increase in RUTF revenue in FY2008, construction cost inflation resulted in an 11.0 percent decrease in buying power compared with FY2007.

In addition to construction costs, the supply and cost of fuel also impact the operational costs associated with maintaining Iowa's expansive and aging public roadway system. If coupled with extreme weather, such as abnormal winter storms, the impacts of high fuel costs are compounded. Increased unit costs for fuel reduces funding available for maintenance, resulting in further deterioration of the system and loss of useful life.

Biofuels and wind energy industries

As Iowa emerges as a national leader in both the biofuels and wind energy industries, the state must deal with the physical and financial impacts of these industries. An example of these impacts is increased large truck traffic during the construction of a biofuels plant, which remains relatively high after construction to support plant operations. Increased rail traffic is also common on the lines that service these plants. This traffic growth leads to accelerated infrastructure deterioration and increased maintenance costs. It is critical that such issues are considered in the transportation planning process.

A 2010 report from Iowa State University’s Center for Transportation Research and Education titled “Iowa’s Renewable Energy and Infrastructure Impacts” summarized the importance of addressing these issues as follows: “For both the cellulosic biofuels and the wind power industries in Iowa, the need to support the transportation infrastructure should be understood. Even more, it is necessary to ensure that the transportation infrastructure support needs of these industries are addressed in a fiscally sustainable manner.



Otherwise, these industries will not be able to compete in the long run.” The study identified several policy and administrative changes that could be made in order to better plan for the impacts of these industries to the state and local jurisdictions. Three of these proposed changes have direct ties to transportation:

- Consider developing policies or regulations as to where these types of plants may locate, based on the proximity of a paved road system.
- Conduct regular pavement evaluations on a county’s system to help facilitate the comparison of pavement condition before and after a plant’s opening.
- Consider more effective ways to tax (or assess) the industry for appropriate additional costs to the local jurisdiction, such as a tax or fee per bushel of corn, gallon of product, kilowatt-hour, or per axle-weight-mile.

The implications of failing to consider these issues in the transportation planning process could be far-reaching. If the supporting transportation infrastructure is allowed to deteriorate, costs to move the materials and products associated with these industries will increase. As this happens, the state will slowly lose its competitive edge in these growing economies.

3.3 Environmental mitigation

According to 23 CFR 450.214(j), “A long-range statewide transportation plan shall include a discussion of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the long-range statewide transportation plan. The discussion may focus on policies, programs, or strategies, rather than at the project level.”

The relationship between long-range transportation planning and environmental studies has consistently become more integrated with each successive federal transportation reauthorization, beginning with ISTEA in 1991, to TEA-21 in 1997, and SAFETEA-LU in 2005. This connection between transportation and environmental planning is intended to provide a mechanism which allows information, analyses, and products from long-range transportation planning efforts to be incorporated into the National Environmental Policy Act (NEPA) document decision process (see [Figure 3.1](#)).

The following key points serve as the foundation for coordinating transportation and environmental planning on a system-wide basis.

- **Avoidance is the overriding goal.** In concert with federal law, our primary environmental goal in constructing transportation projects is to locate and build these projects without adverse impacts on the environment. Efforts should be undertaken early in the planning process to make adjustments in the location and design of projects in order to avoid harming the environment.
- **Simpler is better.** It is quite easy to become overwhelmed in the environmental arena. It is not necessary to write overly detailed and complicated assessments of environmentally sensitive areas in the early transportation planning process.
- **Straightforward inclusive approach.** Generally, the earlier that the public and regulatory agencies are informed of potential impacts on the environment and possible mitigation efforts, the lower will be the level of conflict. The general public, as well as all appropriate state and federal agencies, should be invited to participate as early as possible in the transportation planning process.

With that in mind, there are two separate levels of transportation and environmental planning and coordination. Level one is mandatory, and should be conducted by all planning agencies regardless of known environmental problems. Level two is only necessary if a potential environmental concern has been identified. These two levels of planning and coordination are described below.

Level one: Mandatory planning and coordination

This level involves the inclusion of environmental resource inventories in the planning process and a comparison of transportation planning inputs and outputs to any environmentally sensitive resources. This is done to determine possible conflicts or benefits. Every planning agency must conduct this work.

Inventories

A key to informed decision-making involves a thorough research of exactly “what is out there”. It is important to develop an inventory of environmentally sensitive resources within the planning area. One

way to display this information visually is to overlay the existing transportation system as well as any planned transportation projects onto these environmental resource inventory maps—a practice commonly used by the Iowa DOT and many transportation planning agencies throughout the state.

Consultation

Possible contacts for some of these environmentally sensitive resources may involve agencies at various levels of government that deal with air quality, hazardous waste, historic and archaeological preservation, noise pollution, threatened and endangered species, water quality, wetlands, woodlands, etc. This is not an exhaustive list of environmental resources to investigate, and other environmental interests in the project area should also be inventoried. All consultation should be documented.

Mitigation discussion at the system-wide level

Transportation plans should include a generalized discussion of environmental mitigation activities at the policy and strategy-level. This discussion should be developed in consultation with resource agencies, land management agencies, and tribal governments. Planning inputs should be thoroughly evaluated to ensure that environmental mitigation opportunities are not limited or eliminated by planned growth. Potential mitigation strategies must be considered in planning for the future, because, as growth occurs, mitigation will likely be required.

Level two: An environmental concern has been identified

This level of planning and coordination is only necessary if a specific environmental concern has been identified in relation to a planned transportation project. Note that if a planning agency is primarily focused on system maintenance, it is less likely that this level of planning will be necessary.

The NEPA purpose and need statement

A sound transportation planning process should be the primary source of the project purpose and need. The transportation planning process provides a potential forum to define a project's purpose and need by framing the scope of the problem to be addressed by a proposed project. Clearly defined and documented goals and objectives within the transportation planning decision-making process establish the basis for developing the project's NEPA purpose and need statement.



Mitigation measures

It is important to clearly outline any policy for mitigating potential impacts and disturbances which may occur. These potential impacts can be identified by comparing a proposed transportation project to the inventory of environmentally sensitive resources. It is important to realize that just because a transportation project crosses into an environmentally sensitive resource area, this does not automatically define the project as “unjustified”. Instead, it alerts stakeholders to a range of possible impacts. The ultimate goal is to make informed transportation planning and project construction decisions while protecting our natural resources.

It is important that early transportation planning be completed in such a manner that it is thoroughly acceptable for inclusion in later environmental compliance documents. For this to successfully occur, a planning agency needs to establish or reinforce a commitment to:

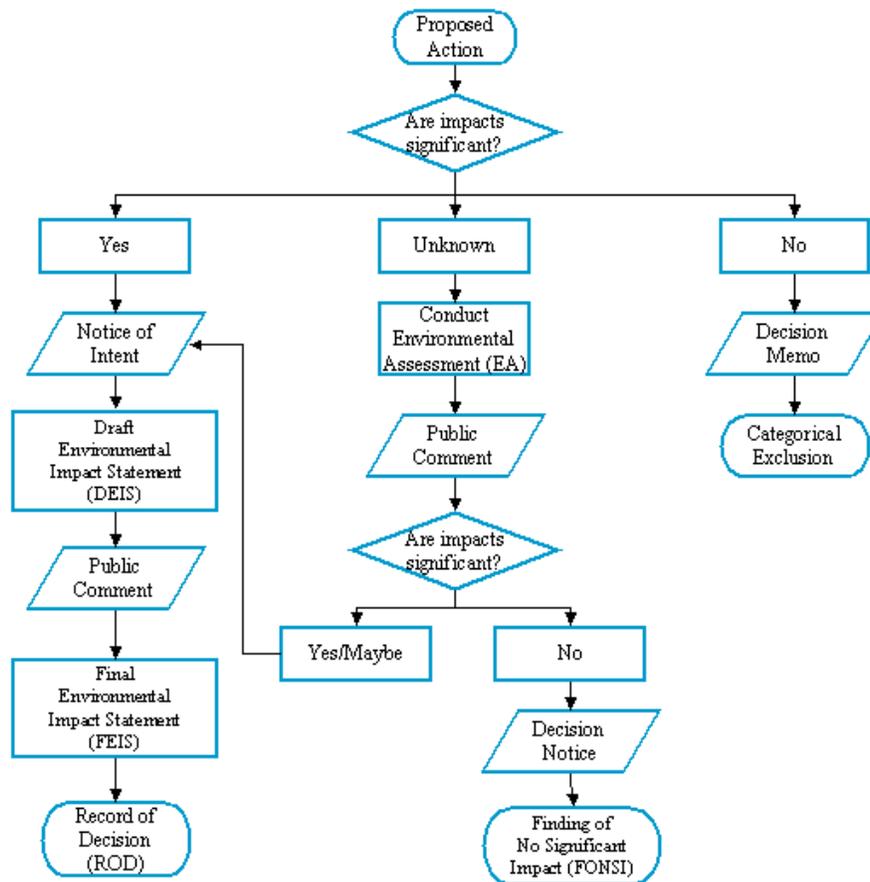
- Avoid damage to the environment. This is the critical first step. If this cannot be achieved, then
- Minimize impacts on the environment. Every reasonable effort possible should be undertaken in order to minimize impacts. Once impacts are minimized, then
- Compensate for impacts to the environment caused by transportation projects.

Some example mitigation activities may include:

- Replace impacted wetlands at a minimum of 1:1 (or 1:1.5) ratio.
- Replacement of parkland at 1:1 ratio or equivalent usage ratio.
- Avoid parking and/or storing construction equipment in the vicinity of potential groundwater contamination.
- Preserve trees along watercourses to protect aquatic life and prevent stream bank erosion.
- Construct noise and/or visual barriers.
- Physically move the impacted resource while maintaining the structural integrity and historic qualities.
- Document the historical nature of a structure prior to demolition.

The mitigation activities highlighted above have the potential to be very costly. However, these expenses should be considered as a cost of doing business, and should be reflected in the overall project cost estimates. Ultimately, the planning and coordination described in this section involves approaching a project area as one functioning ecosystem, which has the potential to be impacted by any planned activity. The Federal Highway Administration encourages this type of holistic approach when addressing environmental mitigation.

Figure 3.1: NEPA Document Decision Process



Source: Environmental Protection Agency

Air quality and climate change

Two issues that are closely tied to the subject of environmental mitigation—air quality and climate change—have received a considerable amount of attention in recent years. Like many agencies throughout the state, the Iowa DOT has been monitoring a number of recent air quality developments, particularly those related to the national ambient air quality standards (NAAQS) for particulate matter and ozone. **The level at which these standards are set will determine whether or not areas of Iowa will be designated as non-attainment, triggering transportation conformity requirements.** Generally speaking, transportation conformity is a method for insuring that federally-funded transportation projects are consistent with an area’s air quality goals.

As Iowa prepares for the possibility of increasing air quality regulation, the state is also experiencing the effects of a changing climate. This has been manifested through higher humidity levels, greater precipitation, and a higher occurrence of extreme weather events. These changes not only affect the

state in areas such as agriculture and public health, but there are also serious implications of climate change on Iowa's transportation infrastructure. According to "Climate Change Impacts on Iowa", a 2010 report by the Iowa Climate Change Impacts Committee, the 2008 flooding in Iowa accounted for \$0.66 billion in infrastructure losses. As we adjust to changes in our climate, it's important to consider how our transportation system can adapt as well.

The committee's report also included several policy recommendations to help combat some of the effects of climate change. For infrastructure, the report's policy recommendation is to "advocate for federal highway construction standards that consider the effects of climate change and encourage the Iowa Department of Transportation to explore interim construction designs that account for trends in Iowa's climate." As Iowa is expected to continue to receive higher levels of precipitation than in the past, some areas of the state have already started implementing elements of "green" infrastructure to better manage storm water runoff, through the use of permeable pavements, bioswales, rain gardens, and more.

Iowa's changing climate and air quality levels have the potential to greatly affect the state's current transportation infrastructure and future project decisions, and it is vital that these issues are considered during the planning process.

3.4 Environmental justice

On February 11, 1994, Executive Order (E.O.) 12898 was signed into law by President Clinton, and required that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States." It was through E.O. 12898 that the policies set forth in the Civil Rights Act of 1964 and Title VI of the National Environmental Policy Act of 1969 are clarified and enforced.

In accordance with E.O. 12898, the Code of Federal Regulations (CFR) 450.3, and United States Department of Transportation (DOT) Order 5610.2, a Metropolitan Planning Organization (MPO) is required by law to incorporate environmental justice (EJ) into their long-range transportation planning practices. A MPO is a federally mandated organization that serves the general purpose of conducting comprehensive, cooperative, and continuous transportation planning for the dissemination of federal highway and transit funds. While federal regulations do not specifically require EJ to be considered in the development and content of a long-range statewide transportation plan, the Iowa DOT believes that the importance of this issue warranted inclusion in the Plan.

EJ defined

According to the Environmental Protection Agency (EPA), EJ is defined as:

"The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies."

Environmental Justice is the phrase used to collectively describe the uneven environmental and social hardships that disadvantaged groups bear. EJ is a broad and multifaceted social welfare issue with the goal of improving the disparate or unequal impacts of growth and development such as crime, hazardous waste sites, and pollution. It also aims to ensure equitable access of physical and social opportunities such as clean air and water, education, food, jobs, and transportation.

EJ and transportation planning

Within the realm of transportation, consideration of EJ is important given that impacts of transportation can be both beneficial (e.g., improved access and mobility) and burdensome (e.g., increased noise and traffic). As a result of the diverse and potentially uneven transportation impacts, it is important that EJ be included throughout the transportation planning process, including short- and long-range planning and public participation outreach efforts. Specifically, by identifying the transportation patterns of socially disadvantaged groups (e.g., minority and low-income) and involving them in the public participation process, the needs of these groups can be determined and assessed to guide transportation investment and ensure impacts are distributed as evenly as possible.

Americans with Disabilities Act compliance

Another issue that is closely tied to environmental justice under the umbrella of civil rights is that of compliance with the Americans with Disabilities Act of 1990 (ADA). Title II of this legislation emphasizes the accessibility of infrastructure within the public right of way, and requires the



Iowa DOT to develop a transition plan to bring facilities into compliance with ADA. As a result, a transition plan was developed that identifies specific steps that the Iowa DOT will take to achieve ADA compliance for pedestrian facilities. These steps are:

1. Identify physical obstacles limiting the accessibility of programs or activities to individuals with disabilities.
2. Describe in detail the methods that will be used to make facilities accessible.
3. Develop a schedule for achieving compliance.
4. Identify the Iowa DOT's ADA coordinator who will be responsible for ADA compliance.
5. Develop a grievance procedure to review complaints.
6. Initiate public involvement and provide community awareness.

The first four steps are the minimum requirements for a transition plan as set forth by 28 CFR 35.150. The remaining steps are additional requirements for achieving ADA compliance as set forth by Title II. In addition to the above steps, the Iowa DOT will track and report on their progress. To ensure ongoing compliance with ADA requirements, the Iowa DOT will perform periodic reviews of the plan and update as necessary.

3.5 Land use and livability

The 2005 federal transportation bill, SAFETEA-LU, emphasized the need to consider land use and quality of life as one of the bill's eight transportation planning factors. This planning factor, which states: "(E) Protect and enhance the environment, promote energy conservation, improve quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns," has been used to guide the following discussion on planning for transportation, land use, and livability in Iowa.

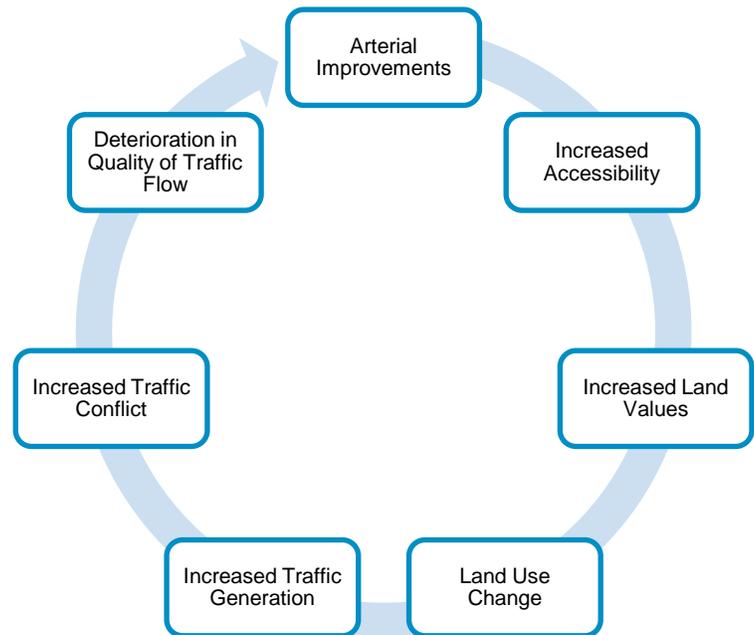
Land use

Land use can be defined as the human management of land. In land use planning, areas are often classified to accommodate a variety of uses, such as residential, commercial, industrial, agricultural, and more. Coordinating land use and transportation planning is essential in creating more sustainable, vibrant, and well-connected communities. Several recent planning initiatives, such as New Urbanism, Smart Growth, Complete Streets, and Transit-Oriented Development (TOD), are only achievable when cooperation between the transportation and land use sectors takes place. In addition to creating healthier, safer, and more efficient communities, sensible land use decisions are essential to Iowa's economy, where urban sprawl can permanently destroy valuable farmland.

The linkage between transportation and land use is also demonstrated through access management, which is the management of vehicular access points to adjacent land parcels. Managing access points increases safety and efficiency for travelers. Common access management techniques include larger spaces between driveways and side streets, increasing the distance between access points and traffic signals, safe turning lanes, median treatments, and right-of-way management.

While policies, principles, and strategies for integrating transportation and land use can be established on the state level, the most visible coordination takes place on the local level. [Figure 3.2](#) illustrates the need to continuously be mindful of present and future land use needs when making transportation investment decisions.

Figure 3.2: Transportation and Land Use Cycle



Source: FHWA

Livability

In June 2009, the U.S. Department of Transportation (DOT), in partnership with the U.S. Department of Housing and Urban Development (HUD) and the Environmental Protection Agency (EPA), announced a new Interagency Partnership for Sustainable Communities. This partnership, which aims to “improve access to affordable housing, provide more transportation options, and lower transportation costs while protecting the environment in communities nationwide,” is founded on the following livability principles:

1. Provide more transportation choices.
2. Promote equitable, affordable housing.
3. Enhance economic competitiveness.
4. Support existing communities.
5. Coordinate policies and leverage investment.
6. Value communities and neighborhoods.



In the transportation planning process, livability is an important consideration in maintaining a community's quality of life. A livable community has a well-connected transportation network with many transportation choices and better facilities, which in turn provides access to quality jobs, housing, schools, and other amenities.

Enhancing livability in Iowa through transportation can be achieved by investing in multiple

transportation modes, maintaining our current road infrastructure, expanding our bicycle and pedestrian facilities, utilizing new technologies, and coordinating new investments with surrounding communities. As Iowa's population grows, it's important to strengthen our communities through valuing and supporting the existing transportation network. By taking these steps to emphasize livability in transportation, the Iowa DOT can make progress toward achieving its long-term goals of safety, efficiency, and quality of life.

3.6 Maintenance and preservation

Routine maintenance refers to the daily functions and activities that provide for an acceptable level of service on our transportation system. Typical highway activities, for example, may address maintenance needs related to potholes, pavement markings, roadway shoulders, snow removal, or traffic signs and signals. Maintenance activities usually address immediate system needs, but they do not address underlying infrastructure deterioration due to time and usage.

In contrast to routine maintenance, preservation strategies appreciably extend the useful life of infrastructure. Preservation strives to use cost-effective and well-timed strategies, such as a surface treatment, to extend the life of system components. Safety and user expectations are important considerations in selecting a specific preservation strategy. Preservation strategies for all modes include a wide variety of improvement categories with specific corrective actions that must be matched to the current age and condition of the candidate component.

In recent years, especially in light of limited funding, the efficient management of Iowa's existing transportation system has been identified as the priority investment path. The citizens of Iowa have overwhelmingly expressed their support of this stewardship and keeping our existing system in a state of good repair before expansion needs are pursued. Some expansion of the existing system is needed,

but will only occur when and where careful planning efforts have identified the need to do so. Yet even with minimal expansion, funding limitations will make maintaining and preserving the existing system at an acceptable level a challenge.

Challenges

The transportation system in Iowa was developed over many decades and involves extensive infrastructure and services. This existing system is the foundation on which future investments will be made, and maintaining and preserving the system faces several challenges. In addition to limited funding, which was identified above, some other notable challenges include:

- Aging infrastructure
- Increasing costs
- Increasing user demand
- Impacts due to system size
- Impacts due to rural nature
- Environmental impacts
- Demographic changes
- Heavy agricultural equipment and oversize loads

Much of Iowa's highway system was built in the 1930s and 1940s, with the Interstate system dating from the 1950s and 1960s. Iowa is also unique with its rural gravel road and farm-to-market system, ranking 13th nationally in total miles of public roadway. The large rural road system also brings with it a large number of bridges, with Iowa ranking fifth nationally in the number of such structures. Iowa has one of the most extensive roadway systems in the nation while ranking just 38th in population density according to the 2010 Census.

With proper maintenance, the lifespan for roadways can be up to 60 years prior to complete reconstruction, while bridges can last up to 75 years. Yet keeping up with current and future replacement needs creates huge financial challenges. The same is true for maintenance and preservation needs. As costs continue to increase, buying power has decreased. With stagnant funding levels, Iowa cannot keep pace with maintenance and preservation needs. This has resulted in project delays and a backlog of much-needed work. As the backlog grows, project costs continue to increase, multiplying the effect on already strained budgets.

Planning efforts are critical

When budgets are tight, planning efforts become even more critical as a means to optimize investment in our existing transportation system. The importance and value of planning for transportation investments was clearly identified with federal legislation requiring the establishment of MPOs. In addition, Iowa has established rural planning agencies or Regional Planning Affiliations (RPAs) to further enhance planning at the local level. The Iowa DOT, MPOs, and RPAs all produce long-range transportation plans to guide future transportation investments.

The planning and programming processes in Iowa utilize many evaluation tools to guide investment decisions. These evaluation tools result in more informed decision-making, which is critical when funding is limited. Some of these evaluation tools include:

- Airport runway condition index
- Bridge structure ratings
- Highway sufficiency ratings
- Level of service ratings
- Ride quality ratings
- Transit fleet management systems

Beyond infrastructure: maintaining and preserving a multi-modal system

It is important to note that maintenance and preservation of the transportation system is about more than highways and the maintenance of those highways. All modes of transportation have critical maintenance and preservation needs. In addition to including all modes, maintenance and preservation also addresses more than just the infrastructure components of these modes.

The transportation system also involves the services and support functions that keep things operational. Examples of these functions include air traffic control, construction materials testing, drivers license renewal, highway patrol duties, intelligent transportation systems, lock and dam operation, planning support, transit fleet dispatching, and weight restriction enforcement. Iowa has a comprehensive transportation system that involves many functions and roles that keep it operational.

Asset management

As defined by the American Association of State Highway and Transportation Officials (AASHTO) Subcommittee on Asset Management, "transportation asset management is a strategic and systematic process of operating, maintaining, upgrading, and expanding physical assets effectively through their life cycle. It focuses on business and engineering practices for resource allocation and utilization, with

the objective of better decision-making based upon quality information and well defined objectives." Given the challenges posed by issues such as aging infrastructure and escalating construction and operating costs, tools such as asset management are increasingly valuable when seeking to balance funding realities with public needs and expectations.

According to the Federal Highway Administration (FHWA), an effective asset management program can:

- Track system condition, needs, and performance.
- Clearly identify costs for maintaining and preserving existing assets.
- Clearly identify public expectations and desires.
- Directly compare needs to available funding, including operating and maintenance costs.
- Define asset conditions so that decisions can be made on how best to manage and maintain assets.
- Determine when to undertake action on an asset such as preservation, rehabilitation, reconstruction, capacity enhancement, or replacement.

Asset management provides insights and tools to help transportation professionals make wise investments that result in improved service and greater cost-effectiveness. Within the context of transportation planning and programming, asset management can positively influence every phase of the process. This influence is illustrated in [Table 3.1](#).



Table 3.1: Influence of Asset Management on Planning and Programming

Common practice	Asset management best practice
Transportation options that are considered in the long-range plan reflect primarily the choices included in the current transportation program.	The long-range plan identifies transportation options broadly in terms of potential modes and intermodal linkages, types of investments, and program or funding alternatives.
Methods, formulas, and criteria to prioritize projects reflect an historical evolution of engineering, financial, and political factors.	Methods, formulas, and criteria to prioritize projects reflect stated policy objectives and performance measures and targets.
Projects are evaluated largely in terms of initial cost and judgment as to potential benefit.	Projects are evaluated in terms of realistic estimates of lifecycle costs, benefits, and performance impacts.
Programming is based mainly on intuitive judgment.	Programming is based to the degree possible on objective information, supported by sound analytical procedures.
Management systems and condition surveys are used as engineering or research tools, but are not applied to program building or budgeting.	Information from condition surveys and management systems directly informs the process that builds the recommended program and budget.
Management systems are used only to rank the condition of assets; needs are programmed based on “worst first.”	Management systems guide the programming of projects based on valid engineering and economic criteria.

Source: AASHTO

The Iowa DOT has begun an effort to develop and implement asset management strategies. The Office of Systems Planning, along with input from several Iowa DOT offices, completed a Self-Assessment from AASHTO’s Transportation Asset Management Guide to determine what needs must be met to put into practice an Asset Management Plan. The Iowa DOT believes asset management is necessary to continue a high level of service for infrastructure users while balancing maintenance and expansion costs of Iowa’s transportation system. The next step for the Iowa DOT is to develop clearly defined strategic goals, as well as performance measures to track progress towards those goals. This will be accomplished through the development of the Asset Management Plan.

3.7 Safety

Safety is a key consideration in this Plan, identified later as one of the document’s three goals. The department emphasizes safety in all efforts including enforcement, education, engineering, and emergency response. Safety is most often thought of in terms of the highway mode, but each modal area is part of an interrelated transportation system and carries equal importance. The overriding goal for all aspects of transportation safety is to reduce injuries and fatalities, thereby reducing personal and economic losses experienced by families, employers and communities and improving Iowa’s quality of life. This can be achieved by educating users, designing safer facilities, and joining with partners in collaborative efforts.

Federal transportation safety legislation

In August 2005, Congress implemented transportation funding legislation that included a comprehensive highway safety approach. This legislation created a new core Highway Safety Improvement Program (HSIP) “to achieve a significant reduction in traffic fatalities and serious injuries on public roads.”

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users

(SAFETEA-LU) legislation also mandated state strategic highway safety plans and required each state’s department of transportation to lead diverse road safety disciplines, such as engineering, education, enforcement, and emergency response services in collaborating to develop their state’s plan. Proposed strategies were required to address safety needs of all public roads, include projects or strategies that are regularly evaluated, and be reported to the Secretary of the U.S. Department of Transportation on an annual basis.



Safety plan development and strategies

According to 23 CFR 450.214(d), “The long-range statewide transportation plan should include a safety element that incorporates or summarizes the priorities, goals, countermeasures, or projects contained in the Strategic Highway Safety Plan...”

Iowa’s version of the strategic highway safety plan, known as the Comprehensive Highway Safety Plan (CHSP), was developed in 2006 through an extensive process involving a diverse group of

stakeholders. Because approximately one-half of Iowa’s roadway fatalities occur on local city and county roads, local organizations were included in the process. The completed plan identified two categories of actionable strategies that had the best potential for safety gains based on available data and proven countermeasures. One category requires policy or legislative action for implementation. The second category identifies strategies that existing programs or collaborating organizations have the capacity to implement. The priority policy and program strategies targeted in Iowa’s CHSP include:

Policy strategies (legislative)

- **Young drivers:** Strengthen minor school license (MSL) and graduated driver's license (GDL) laws with stronger provisions that are proven to reduce specific risks and save lives.
- **Occupant protection:** Require occupant restraints in all automotive vehicle seating positions.
- **Motorcycle safety:** Restore a motorcycle helmet law.
- **Traffic safety enforcement:** Support traffic safety enforcement with adequate resources.
- **Traffic Safety Improvement Program:** Increase Iowa's Traffic Safety Improvement Program (TSIP) funding from a half percent to a full one percent of Iowa’s Road Use Tax Fund.

Program strategies (administrative)

- **Lane departure:** Enhance lane departure related design standards and policies (e.g., paved shoulders, rumble strips, and median cable barriers).
- **Safety corridors:** Identify safety corridors and use multidisciplinary strategies to mitigate specific crash causes such as impairment, speeding, driver inattention, and other factors.
- **Intersections:** Promote innovative intersection designs, such as roundabouts and other configurations.
- **Local roads:** Create local multidisciplinary safety teams to identify and resolve local crash causes.
- **State traffic records:** Enhance data availability and use by all stakeholders.
- **Senior mobility:** Develop a single point of contact to help older persons and their caregivers navigate existing programs regarding changing mobility needs.
- **Safety training and education:** Provide state and local multidisciplinary traffic safety education programs for professionals and the driving public.
- **Unpaved rural roads:** Promote public awareness of the risks of driving on unpaved rural roads.

CHSP goal

In setting a long-term strategic goal, the CHSP stakeholders agreed that the recommended policy strategies have the most potential to save lives (25 annually) and change the culture in Iowa. Additionally, the program strategies could save more lives (20 annually) if fully implemented. A significant decrease in deaths (45 annually) could be achieved if all strategies are implemented. Believing that "one death is one too many", Iowa's highway safety stakeholders are committed to implementing these vital policy and program strategies to meet Iowa's 2015 goal of 400 or fewer average crash fatalities.



Potential program performance measures

The Iowa CHSP is reviewed on an annual basis and progress is reported to FHWA. Some of the performance measures that have been used to track the effectiveness of strategies as they are developed and implemented include:

- **Legislation:** The passage of safety legislation elements detailed in the CHSP.
- **Lane departure:** The number of fatal and serious injury lane departure crashes by system and surface type. The number of lane-departure crashes as a percentage of all crashes.
- **Safety corridors:** The successful development of a safety corridor program. Targeted before and after results on the program corridors.
- **Intersections:** The number of fatal and serious injury crashes at intersections that have higher crash rates than the state average. The fatal and serious injury crashes at intersections on urban local roads. The severity of crashes at intersections.
- **Local roads:** The number of local roads teams developed within Iowa. The number of fatal and serious injury crashes on Iowa's low-volume local roads (less than 400 vehicles per day).
- **State traffic records:** Data availability and its use by all stakeholders.
- **Senior mobility:** Successful creation of a single point of contact to help older persons and their caregivers navigate existing programs regarding changing mobility needs.
- **Safety training and education:** The development and delivery of safety practitioner training. The development and delivery of public education and information efforts.

- **Unpaved rural roads:** The number of fatal and serious injury crashes on Iowa's unpaved local roads. The development and delivery of a public awareness program on the risks of driving on unpaved rural roads.

Accomplishments

Policy Strategies implemented

Iowa's traffic safety stakeholders have collaborated to provide consistent research and data to assist legislators in enacting these measures to improve highway safety:

- All passengers in all seating positions who are age 17 or under must be restrained in a safety belt or appropriate child seat.
- All drivers are prohibited from "texting" while driving.
- Young drivers on provisional licenses are also prohibited from using any electronic devices (including cell phones) while driving.

Program Strategies implemented

- The Iowa DOT has adopted several design standards addressing lane departure (e.g., paved shoulders, rumble strips, and median cable barriers), and these are being implemented both as part of ongoing system renewal and in specific safety-enhancing projects.
- Safety corridor sites have been identified, studied, and prepared for enforcement and public education implementation.
- The department has provided extensive roundabout education and provides free consultant services to local entities interested in solving local intersection safety challenges with roundabouts.

Highway safety status

In the past decade, Iowa has achieved a highway safety record better than national analysts had projected considering Iowa's increasing travel volumes and extensive roadway systems. Iowa's comprehensive, data-driven approach and stakeholder collaboration are credited for this success. Although progress has been made, suffering an average of over 400 preventable deaths per year is not acceptable and represents a serious public health risk for Iowans. Iowa's CHSP continues to promote the belief that "one death is one too many" and will work towards achieving the goal of further reducing highway related deaths.

Safety efforts for all modal areas

As was previously mentioned, safety is most often thought of in terms of the highway mode, yet it is an important component of each mode in the transportation arena.

Aviation safety

Iowa complies with all federal and state safety programs addressing pilot safety education, landing and navigational aids, land acquisition for protection zones, new technologies, maintenance certification of aircraft, airport infrastructure, runway safety training, control operations, and safety management awareness. Private and commercial aviation can have specific and divergent safety criteria, but the overall goals are the same.

Bicycle and pedestrian safety

Bicycle and pedestrian facilities interplay with highway and local street systems and include both shared and separated facilities. Iowa has incorporated many safety strategies and programs to protect those using bicycle and pedestrian facilities, including the Safe Routes to School Program, federal and state recreational trails programs, complete streets design, safety compliance, AASHTO design guidelines, facility compliance, optimization of signal design, and support for bicycle helmet use.

Public transit safety

Safety is integrated throughout every aspect of public transit including planning, design, operations, maintenance, employee training, technology development, and implementation of the Federal Transit Administration's drug and alcohol testing programs. Intelligent technology systems such as in-vehicle cameras and radio communications are incorporated when possible to enhance safety.



Rail safety

Iowa's rail system includes both commercial freight and passenger rail. Due to the large number of rail and highway intersections, rail crossing safety is critical. Several rail crossing safety programs are administered by the Iowa DOT, involving both federal and state funding. Safety programs support projects such as grade separations, track maintenance, and signal upgrades. The Iowa DOT also cooperates with implementation of the National Rail Safety Action Plan and supports Operation Lifesaver, which is a nonprofit education and awareness program dedicated to ending tragic highway-rail collisions.

Multi-disciplinary safety approach

To maximize safety improvement efforts, the Iowa DOT has partnered with other public and private agencies to develop a multidisciplinary approach. Solutions to safety concerns can often be achieved by including input from law enforcement, emergency response, tow companies, firefighters, transit agencies, and many others. This multidisciplinary approach is promoted by the Federal Highway Administration and other national organizations. The Iowa DOT also partners with several state agencies to promote safety efforts, such as the Governor's Traffic Safety Bureau, the Department of Public Safety, the Department of Education, and the Department of Natural Resources.

The state's 27 transportation planning agencies are also included in multidisciplinary safety efforts and incorporate safety into their planning activities. Planning efforts involving safety are supported and coordinated at all levels through the Federal Highway Safety Improvement Program, Iowa DOT's Comprehensive Highway Safety Plan, and the MPO and RPA long-range plans. The CHSP has identified that half of all crashes in Iowa occur on local roadways, making it critically important to incorporate multidisciplinary efforts at the local level.

Additional safety issues

Driver distraction

Driver distraction from use of cell phones for calling and texting has seen increased media attention in recent years. Along with many other states, Iowa has implemented legislative and law enforcement countermeasures to address driver distraction. The department will continue to monitor research on the safety impact of restrictions on cell phone use while driving and will consider further countermeasures if the data support it.

Emergency operations support

To improve and manage incident and emergency response, the Iowa DOT initiated the Statewide Emergency Operations (SEOP) section in 2008. More detail on the functions of this group is included in the following section.

For more information

More detailed and comprehensive transportation safety information can be found on the Iowa DOT website: <http://www.iowadot.gov/traffic/sections/safety.htm>. This website contains a PDF version of the Comprehensive Highway Safety Plan as well as safety information for each modal area.

3.8 Security

Security is an important consideration in the transportation planning process, and has received heightened attention since the terrorist attacks of September 11, 2001. Security should not be thought of only in terms of criminal or terrorist attacks, but also vulnerability to natural and manmade incidents such as floods, tornadoes, and hazardous materials spills. In Iowa, recent flooding and winter weather events have dramatically impacted both rural and urban transportation systems, requiring adjustments to response policies and procedures. All modes of transportation are vulnerable to disruption due to natural or manmade incidents. The Iowa DOT partners with agencies at all levels of government, as well as private firms, to implement security initiatives.

National response framework

The U.S. Department of Homeland Security issued the National Response Framework (NRF) in January 2008. The NRF outlines key principles, roles, and frameworks that enable all response partners to prepare for and initiate a national response to emergencies and disasters. This comprehensive framework outlines a national approach to incidence response within the U.S. Iowa complies with the principles outlined in the NRF, which include:

- **Tiered response:** Incidents must be managed at the lowest possible jurisdictional level and supported by additional capabilities when needed.
- **Unity of effort through unified command:** Effective unified command is essential to response efforts and requires clear understanding of the roles and responsibilities of each organization that will participate.
- **Partnership engagement:** All leaders at all levels must communicate and support engaged partnerships by developing shared goals and aligning capabilities so that in times of crisis no one is overwhelmed.
- **Readiness to act:** All partners must be in a state of readiness to act but must also balance this with an understanding of risk.
- **Scalable, flexible, and adaptable operational capabilities:** When incidents change in scope, size, and complexity, the response must adapt to meet requirements.

National Incident Management System

The National Incident Management System (NIMS) is a support document to the NRF which outlines standard command and management features that apply to response activities. This system enables all levels of government and private partners to provide a consistent nationwide structure to work together

to prepare for, prevent, respond to, recover from, and mitigate the effect of incidents. The NIMS covers all incidents from daily occurrences to those of the highest national level. Iowa incorporates features of the NIMS into its incident management programs.

Iowa DOT intelligent transportation system

Intelligent Transportation System (ITS) efforts at the Iowa DOT support activities related to security and emergency response. Iowa has a 511 Traveler Information System in operation. The system has important applications for both emergency operations and homeland security concerns. The 511 system is a nationwide program that is administered and funded at the state level and provides callers with free access to real-time, route-specific travel conditions, weather conditions, incidents, congestion, and construction information. The Iowa system operates through an automated voice-activated menu and is capable of providing Amber Alerts.

Dynamic Message Signs (DMS) are also part of roadway safety and security ITS applications. The Iowa DOT has placed large electronic signs on interstates and primary highways for congestion mitigation, traffic management, and emergency diversion efforts. This system can be operated remotely from the Iowa DOT.

Iowa DOT Statewide Emergency Operations



The SEOP section was started in October 2008 and resides within the Office of Maintenance, which is located within the Highway Division's Statewide Operations Bureau. The SEOP has two functional elements, which include the Operations Support Center (OSC) and Homeland Security and Emergency Management.

The OSC is the 24-hour operations center, which is where the state's 511 system is maintained.

The OSC's functions include, but are not limited to, the following:

- Providing 24/7 support to department operations statewide.
- Leveraging the Iowa DOT's ITS technology to provide statewide traffic management on the primary highway system.
- Coordinating the Iowa DOT's response in multidiscipline incidents and operations involving local, state, and federal partners.

- Providing real-time traffic and incident notifications internally, to public safety agencies and the traveling public.

The Homeland Security and Emergency Management group's functions include, but are not limited to, the following:

- Staffing the Iowa DOT's Transportation Desk during activations of the State Emergency Operations Center (SEOC) at Camp Dodge in Johnston.
- Coordinating the Iowa DOT's response to disasters.
- Overseeing Iowa DOT recovery activities following disasters.
- Working with other state agencies on various emergency management issues.
- Representing the Iowa DOT in Homeland Security related matters.
- Working on Iowa DOT Continuity of Operations (COOP) and other Emergency Management plans.

Partnering and coordination

The Iowa DOT partners and coordinates security response efforts with a variety of entities, including local agencies such as county sheriffs' and city police departments, which provide critical local enforcement services. Private companies such as rail lines, trucking companies, emergency medical services, and tow trucking firms also play a critical role in transportation security. This is especially true where the Iowa DOT has little jurisdictional authority. Other important partners include local urban and rural planning agencies, the Iowa Governor's Traffic Safety Bureau, and the Iowa Department of Homeland Security.

Security will continue to be a key consideration in the department's efforts. A proactive approach and coordination with many public and private partners will achieve the greatest success.