Intelligent Transportation Systems Plan

Naperville

Comprehensive Transportation Plan
9. INTELLIGENT TRANSPORTATION SYSTEMS PLAN

NEEDS IDENTIFICATION

Intelligent Transportation Systems (ITS) is the application of technology to improve the operation of transportation networks. Due to the dynamic nature of technology, new opportunities to improve the operation of transportation through ITS application are continually appearing. A few examples of ITS include coordinated signals, emergency vehicle preemption, parking management systems, personal security systems, and real time travel information. The ability to address mobility concerns by constructing additional lanes of roadway is constrained by environmental factors, public acceptance, and funding. Alternative options to address mobility issues, including those based on information and technology, are being explored at regional, state, and national levels. As one of the largest municipalities in the state and as a vital economic engine of the Chicagoland area, Naperville has a role to play in regional, state, and national efforts to develop and apply ITS projects. Naperville may also have opportunities to develop locally focused ITS projects. The following paragraphs outline the needs and issues that should be considered when determining how the City will use ITS.

To determine which types of ITS applications may address the City’s transportation needs, City staff needs to be knowledgeable about ITS and seek outside expertise as appropriate. If ITS is to be an integral part of the future transportation system, it is important for the City to stay abreast of new ITS developments. As the public becomes more aware of ITS and its potential applications, the public may also propose ITS applications for consideration.

As described in the Programs section of this plan, the City has several ITS applications in operation including coordinated signals, changeable message signs, emergency vehicle preemption, video detection, and an automated railroad crossing enforcement system. Examples of broad ITS systems include, but are not limited to:

- Traffic Management Systems
- Parking Management Systems
- Incident Management Information
- Traffic Signal Systems
- Weather Monitoring Systems
- Public Transit
- Carpooling Information
- High Occupancy Vehicle Lanes
- Pavement Maintenance Systems
- Traffic Demand Management/Education
- Railroad Crossing Safety Systems

Naperville will need to consider the costs of ITS (installation and maintenance) compared to the benefits provided by new technology and information...
sharing. The ever-changing nature of technology creates a challenge when implementing ITS projects. Investments need to be thoroughly studied to avoid procuring products that will quickly become obsolete.

The strategies of implementing ITS projects need to be carefully considered. In some cases ITS can and should be integrated into other capital projects. In other cases, it may be more appropriate to implement ITS as a stand-alone project.

Sharing transportation information with transportation system users is a key characteristic of ITS applications. As our transportation systems become more complex and interconnected, there is a need to share information with others in order to maximize the efficiency of the transportation network. If Naperville is to participate in ITS initiatives, the City will need to establish methods of sharing information that are consistent with regional, state, and national standards and regularly coordinate with other agencies. Sharing information with other agencies and the public naturally raises the issue of privacy. When exploring ITS options for addressing transportation needs, the City must consider the privacy concerns of the public regarding the collection and distribution of transportation information.

The following policies, practices, and programs address the need to consider ITS as a method of improving the City’s transportation system.

POLICIES

The following policies support the City of Naperville’s effort to consider and incorporate intelligent transportation systems (ITS) technologies into its transportation system:

- Seek to maximize transportation system efficiency and safety through the application of ITS.
- Foster intergovernmental cooperation and communication as a method coordinating multi-jurisdictional ITS projects.
- Promote regional application of ITS technology.
- Support regional efforts to implement ITS projects.
- Promote local application of ITS technology.
- Encourage public/private partnerships to provide ITS projects.
- Explore new ITS applications.
- Promote system compatibility and interoperability.
- Participate in the development of ITS standards.
- Participate in ITS demonstration projects.

PRACTICES

Below are practices, methods used by City staff to provide planning and engineering services that support the consideration and incorporation of intelligent transportation system technology into the City’s transportation system:

Automated Railroad Crossing Enforcement System
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- Evaluate short-term and long-term installation and maintenance costs associated with ITS technology.
- Consider the application of ITS as a project alternative.
- Coordinate the installation of ITS infrastructure with capital improvement projects, as appropriate.
- Apply the appropriate level of technology to address transportation system deficiencies.
- Conduct cost/benefit analysis of potential ITS applications.
- Investigate alternative funding sources.
- Explore opportunities to participate in regional ITS initiatives.
- Enhance staff knowledge of ITS (e.g., training, conferences, etc.).
- Monitor developments in ITS.
- Evaluate, as appropriate, the effectiveness of ITS projects.
- Consider ITS to address safety issues.
- Way advisory radio, etc.).
- Explore new ITS applications and evaluate effectiveness.
- Utilize ITS applications to collect transportation data, when possible.
- Use ITS to enhance research, design, and evaluation of the City’s transportation system.

PROGRAMS

The following paragraphs describe programs to be administered by the City of Naperville to support the consideration and incorporation of intelligent transportation systems technology.

Coordinated Signal Program. The City of Naperville works with other governmental agencies within and adjacent to the City boundaries to interconnect and coordinate signals. The purpose of coordinating signal systems is to promote an efficient and cost effective traffic signal system for the motoring public. Coordinated signals provide the benefit of allowing vehicles to progress through several traffic signals without stopping (i.e., continuous green lights). Coordinated signal timing results in reduced travel times, fuel consumption, pollution, and reduced driver frustration.

Changeable Message Signs. Changeable message signs are electronic boards that can display messages to the traveling public. The City uses portable changeable message signs to provide information to the public regarding construction, special events, and traffic incidents. These electronic changeable message signs can be easily transported to a site and programmed to display the appropriate information. On-site public information can improve overall traffic operations.

Emergency Vehicle Preemption System. The vast majority of the traffic signals in the City have or will soon have sensors that allow emergency vehicles to change red lights to green lights. The emergency vehicle preemption (EVP) system interrupts the normal operation of a traffic signal to give fire engines and ambulances priority movement through an intersection. A strobe light is mounted to the vehicles and activates a sensor located on the traffic signal. The emergency vehicle preemption system improves response times and increases safety for emergency service personnel by clearing the intersection in advance while traveling to their destination. Providing directional information about the approaching fire truck or ambulance also increases public safety.

Traffic Signal Video Detection System. The City uses a video detection system to activate traffic signals. These systems, located in several places throughout the system, serve the same role as a loop detector placed under the pavement to detect oncoming vehicles and trigger traffic signals accordingly.
Automated Railroad Crossing Enforcement System (ARCES). An automated railroad crossing enforcement system has been installed at the intersection of River Road and the Burlington Northern Santa Fe Railway to improve railroad crossing safety. Cameras installed at the intersection record vehicles who are in violation of the warning signals of an approaching train. Citations for these traffic violations are processed via computer and sent to the violator. The program has been very successful in reducing the number of crossing violations and in meeting federal railroad safety standards.

Education Program. The City will develop a program to educate the public about Intelligent Transportation Systems (ITS). This program will include information about existing ITS projects in the Chicagoland area as well as provide information about other types of ITS applications.

IMPLEMENTATION

A number of ITS programs are currently operating within the City of Naperville. Consideration of additional ITS applications should continue and be ongoing. Please refer to the Implementation Plan for the Comprehensive Transportation Plan for information regarding implementation projects and project scope. Please refer to the annual Work Program for information about specific project tasks and required resources that support policies, practices, and programs.