

Frequently Asked Questions

How were the costs calculated?

These cost figures were determined by consulting US DOT's ITS Cost Database, recent vendor price quotes, and past ITS deployment and operation experience in Connecticut and the region. Approximate equipment quantities and unit costs for equipment were also considered. It should be noted that actual costs for individual projects are dependent on a wide variety of factors to be determined at a later date. These figures are meant as planning-level budget estimates.

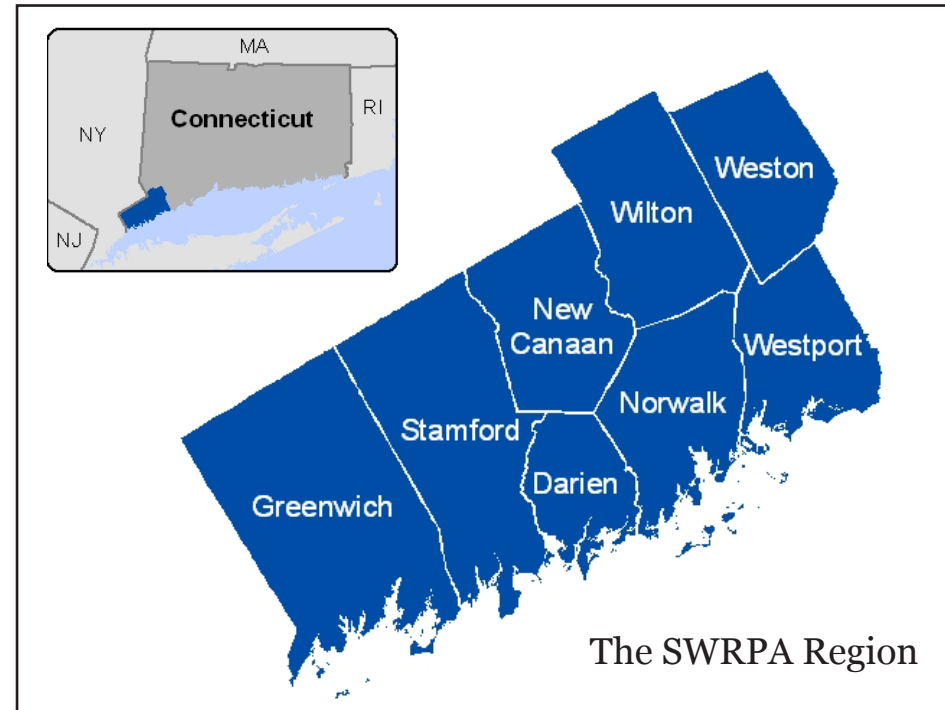
How was the benefit/cost analysis conducted?

The tool used to conduct the benefit/cost analysis for the SWRPA ITS Strategic Plan was the ITS Deployment Analysis (IDAS) System. IDAS is a sketch-planning software and analysis methodology developed by Cambridge Systematics for the Federal Highway Administration (FHWA). IDAS analyzes the monetary value of benefits from ITS deployments, such as changes in travel time, fuel costs, operating costs, accident costs, vehicle emissions and noise.

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South Western Region Intelligent Transportation Systems Strategic Plan

Prepared by
South Western Regional Planning Agency
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South Western Connecticut's transportation system is under severe pressure. Infrastructure is aging, while transportation facilities that were designed for a much smaller population must serve growing numbers of residents and workers today. With the transportation system at or exceeding capacity and limited opportunities for expansion due to physical and fiscal constraints, operational improvements represent an opportunity to reduce delays, mitigate congestion, and improve the safety and efficiency of the system.

The South Western Regional Planning Agency (SWRPA) has undertaken a strategic assessment of new and enhanced opportunities for the implementation of intelligent transportation systems (ITS) applications in the South Western Region of Connecticut. ITS encompass a broad range of technologies that relieve congestion, improve safety and efficiency. This assessment was conducted with the goal of improving the safety and efficiency of the regional transportation network.

Flowing from the results of a Needs Assessment and Preliminary Screening, eight proposed ITS strategies were identified by the SWRPA ITS Technical Advisory Committee (TAC) for further study. As part of SWRPA's commitment to multi-modal transportation, four strategies aim to improve expressway and arterial management, while four strategies seek to enhance transit services. Planning budget estimates were generated for each of strategy, including capital costs as well as annual operating and maintenance expenses.

Using IDAS, a sophisticated modeling application, the cost estimates were evaluated against the expected benefits to travelers resulting from each package. In all, six of the eight packages were determined to have positive benefit-to-cost ratios. That is, for these six packages, the benefits exceed costs. As such, SWRPA is recommending pursuit of these six packages to meet identified needs and enhance safety and efficiency of the regional transportation system.

Recommended ITS Strategies

Results

Freeway & Arterial Management Packages

ICM-1: Merritt Parkway ITS Instrumentation

The Merritt Parkway (CT 15) is one of four significant parallel routes through the South Western Region. The route currently has three Changeable Message Signs (CMS) that can alert drivers that they are approaching congestion or an incident and offer alternate routes. This package would strategically place five new CMS along the route.

This package would also add eight new surveillance cameras; there are currently none. Twenty traffic flow detectors are also recommended. Potential technologies include loop detection, microwave sensors, infrared or video detection. Monitoring and control of this equipment would be handled by ConnDOT’s Highway Operations Center in Bridgeport. Among all the packages studied, this package has the potential to benefit the greatest number of travelers.

AM-1: Stamford Real-Time Traveler Information System

To assist in its arterial management efforts, this package would provide the City of Stamford with a system to detect and broadcast real-time traveler information to travelers on its major arterials. The information would be disseminated via a public website and would include incident and construction locations, a description of traffic levels, and camera snapshots of roadway conditions.

Real-time data collection will involve coordination of public safety incident reports and the City’s traveler information website. Also, some incidents and construction activities will be detected using the City’s traffic surveillance cameras. The traveler information website will feature a GIS map-based display that will depict the location of incidents and construction activities, congestion levels, and show the location of and still images from the City’s traffic cameras.

IM-1: Norwalk Incident Management System

The City of Norwalk has several key arterials and interchanges. This package would aid Norwalk in the implementation of ConnDOT’s diversion plans that are required when incidents on the limited-access network cause large volumes of traffic to divert onto local arterials. This package would include roughly fifty electronic blank-out signs at strategic locations that would transmit timely travel information in the event of an incident. These signs would be integrated with Norwalk’s larger incident management systems, which include central traffic signal control, traffic surveillance cameras, the city’s PSAP CAD system, and AVL system. The project would also establish an interface with Connecticut’s future 511 system.

Transit Management Packages

AVL-1: Norwalk Transit District Automated Vehicle Location

Automated Vehicle Location (AVL) is a fleet management system by which the locations of vehicles are monitored in real-time via GPS or other means. With this proposed package, the Norwalk Transit District (NTD) would implement an AVL system on all of its vehicles. This would enable more efficient dispatching and improve reliability and timeliness. Additionally, this package would support a future next bus arrival/departure information.

NTD recently upgraded its on-board and dispatching technology. The AVL system would likely be integrated with this existing two-way digital radio system. However, some reconfiguration or upgrade may be necessary.

TSP-2: Stamford Transit Signal Priority

The City of Stamford is in the process of deploying transit ITS improvements as part of the Stamford Urban Transitway project. This package would build on those efforts by Transit Signal Priority (TSP) equipment at signalized intersections throughout the city. TSP would allow buses extra “green time” to pass through intersections in order to stay on schedule. Deploying TSP throughout the city should reduce travel times and improve the schedule adherence of Connecticut Transit vehicles on city streets.

The City of Stamford has already invested in a Computerized Central Traffic Control System. This central system allows the city’s traffic engineers to monitor and control signals throughout the city. Emergency vehicle preemption has been deployed on a majority of these traffic signals. It is likely that there would not be need for significant upgrades in order to integrate TSP.

AVL-2: Connecticut Transit – Stamford Division Automated Vehicle Location

Similar to the Norwalk AVL package, this package would enhance CT Transit service in Stamford with an AVL system to improve dispatch efficiency. It would be coordinated with current procurement efforts for AVL through the Stamford Urban Transitway project. CT Transit would likely utilize its existing scheduling and dispatching software so no additional CAD functionality should be necessary. However, it is likely that the AVL system will require additional radio frequency (RF) communications to transmit data from vehicles back to a central location. Alternatively, CT Transit could pursue commercial communications services.

The recommended South Western Region ITS strategies have strong benefit-to-cost ratios. Looking at the cumulative benefits and costs associated with deployment of all the recommended freeway and arterial management strategies, for every \$1 spent annually, the projects will yield over \$6 in benefits to transportation system users and transportation agencies. Likewise, the cumulative sum of transit management strategies will yield roughly \$4 of benefit for every \$1 spent. These benefits are realized as reduced travel times, delay and congestion, savings in fuel consumption and cleaner air from reduced vehicle emissions.

The overall analysis found that Merritt Parkway ITS Instrumentation would potentially benefit the greatest number of travelers and returns the greatest total benefit among the recommended strategies.

The Stamford Real-time Traveler Information System has relatively low costs and a very high benefit-to-cost ratio.

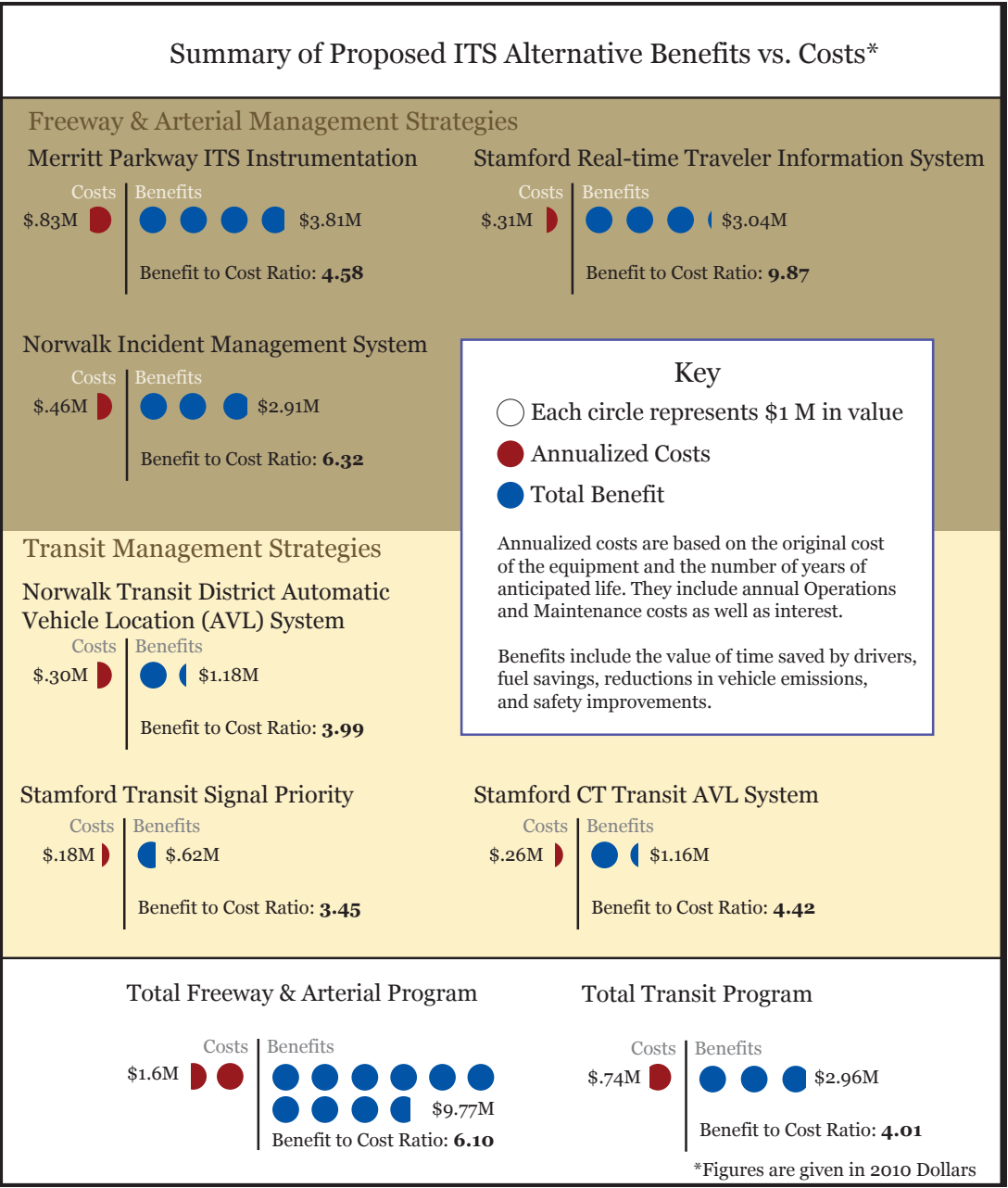
Norwalk’s Incident Management System would deliver strong benefits but also has high associated costs.

Norwalk Transit District AVL would deliver strong net benefits and also meet one of the NTD’s urgent needs.

Both the Stamford TSP and CT Transit – Stamford AVL would provide significant benefit and would also build on current ITS deployment programs.

Other Strategies

Two project packages were carried through the analysis process and are not being proposed as recommended strategies. For these packages, the benefit-to-cost ratio was less than 1, indicating a negative return on investment. Nevertheless, these projects do meet identified needs and may warrant further study.



ICM-2: US Route 1 ITS Instrumentation

This package aimed to deploy ITS Instrumentation along US 1, which is a significant arterial corridor in the South West Region. The package included CMS signs, traffic cameras, and traffic flow monitors. However, US 1 has much lower traffic volumes than the regional freeways and limited capacity to accommodate additional traffic during incidents. As such, the potential benefits are limited and are outweighed by costs.

TSP-1: US Route 1 Transit Signal Priority

The region is considering implementing Bus Rapid Transit along the US 1 corridor. This package aimed to facilitate that effort with TSP systems between Greenwich and Norwalk. Due to the large number of signalized intersections along the route, the costs are high and are not compensated for by the benefits returned.