



U.S. Department of Transportation
Office of the Assistant Secretary for Research and Technology

Demonstrating the Benefits and Costs of ITS: Using the Enhanced Knowledge Resources for your Next ITS Project

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Navigating the Knowledge Resources

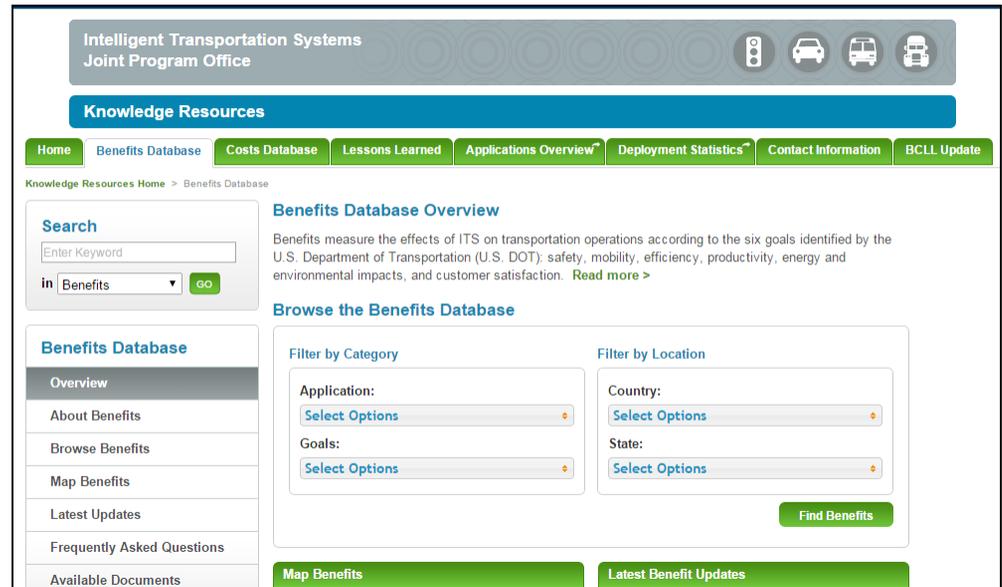
<http://www.itsknowledgeresources.its.dot.gov/>

The screenshot shows the homepage of the ITS Knowledge Resources website. At the top, there is a header for the "Intelligent Transportation Systems Joint Program Office" with icons for various transportation modes. Below this is a "Knowledge Resources" banner. A navigation menu includes links for Home, Benefits Database, Costs Database, Lessons Learned, Applications Overview, Deployment Statistics, Contact Information, and BCLL Update. The main content area is titled "Knowledge Resources Home" and features a search box, a "Submit Your Data" section, a "Need Help?" section with links to contact information and user guides, and a "Stay Connected" section with an RSS feed link. A "Welcome to DOT ITS Knowledge Resources" section provides an overview of the site's purpose. A "Browse Resource Databases" section is active, showing a "Benefits" tab and a "BROWSE BENEFITS" section with a photo of a train and a description of the six goals of ITS.

Introduction to Resources: ITS Benefits Database

- Objective
 - Analyze and document ITS benefits
 - Disseminate information about ITS benefits

- Benefit Entries
 - Provide summary of source document
 - Provide methodology
 - Provide results, findings, performance impacts, conclusions, etc.
 - Quantitative
 - Qualitative
 - Direct link to source document



www.itsbenefits.its.dot.gov



Introduction to Resources: ITS Costs Database

- Objective
 - Analyze and document the costs of deploying ITS
 - Disseminate information about ITS costs
- Costs Summary
 - Unit Costs
 - Cost associated with an individual ITS element
 - Sample Unit Costs
 - System Costs
 - Multiple ITS elements and typically represents the total project cost
 - Costs summaries provide same level of detail as Benefit and Lessons Learned summaries

The screenshot shows the website for the Intelligent Transportation Systems Joint Program Office Knowledge Resources. The main navigation bar includes links for Home, Benefits Database, Costs Database, Lessons Learned, Applications Overview, Deployment Statistics, Contact Information, and BCLL Update. The page title is 'Costs Database Overview'. A search bar is present with a dropdown menu set to 'Costs' and a 'go' button. The main content area is divided into sections: 'System Costs' (described as the total cost of an ITS project), 'Unit Costs' (described as the cost of individual ITS elements), and 'Sample Unit Costs' (described as example entries). There is also a 'Browse the System Costs' section with filters for 'Filter by Category' and 'Filter by Location'.

www.itscosts.its.dot.gov



Introduction to Resources: ITS Lessons Learned Knowledge Resource

- Objective
 - Gather and disseminate lessons learned from the experience of past ITS deployments
- Lessons Learned Entry
 - Provide summary of source document
 - Provide Lessons for practitioners to consider when deploying projects
 - Direct link to source document
 - Provide contact information

The screenshot displays the 'Intelligent Transportation Systems Joint Program Office Knowledge Resources' website. The header includes the organization name and icons for various ITS modes. A navigation bar contains links for Home, Benefits Database, Costs Database, Lessons Learned (active), Applications Overview, Deployment Statistics, Contact Information, and BCLL Update. The main content area features a search box, a 'Lessons Learned Overview' section with a brief description and a 'Read more' link, and a 'Browse the Lessons Learned' section with filters for Category, Application, Goals, Systems Engineering, Major Initiatives, and Program Activities, as well as filters for Location (Country and State). A sidebar on the left provides navigation options for the Lessons Learned section, including Overview, About Lessons Learned, Browse Lessons, Map Lessons, Latest Updates, Lesson Synthesis, Frequently Asked Questions, Available Documents, and Links.

www.itslessons.its.dot.gov



Introduction to Resources: ITS Deployment Statistics

- The ITS Deployment Tracking Project surveys transportation agencies in the largest U.S. cities on a regular basis
- Most recent survey is 2013; data from previous survey years is also available
- Deployment results organized by agency function
 - Freeway management
 - Arterial management
 - Transit management
 - TMC
 - Toll Collection
 - Fire and Rescue
 - Law Enforcement

The screenshot shows the 'Deployment Results' page for 'Freeway Management'. It includes a navigation menu with 'Home', 'Opinion', 'Deployment', 'Cross-Cutting', 'ICM', 'Download', and 'Knowledge Resources Home'. Below the navigation, there are tabs for 'Freeway Management', 'Arterial Management', 'Transit Management', 'TMC', 'Toll Collection', 'Fire Rescue', and 'Law Enforcement'. The 'Freeway Management' section is active, displaying a table of agency characteristics.

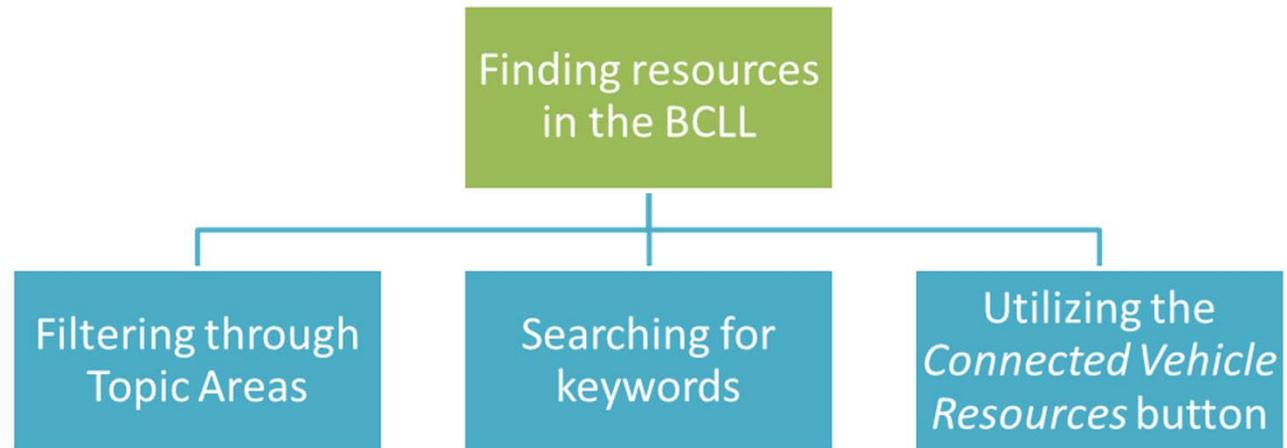
Agency Characteristics		
	Number of Agencies	Number of Miles
Agencies operating freeway centerline miles	106	72529
Agencies reporting staff performing freeway management, operations and maintenance in the following categories		
	Number of Agencies	Number of Staff
In-house management and operations staff	106	4074
Outsourced management and operations staff	49	700
In-house maintenance staff	83	3415
Outsourced maintenance staff	47	292
Agencies reporting training provided and/or required for in-house freeway management staff		
	Number of Agencies	

www.itsdeployment.its.dot.gov



Finding Resources

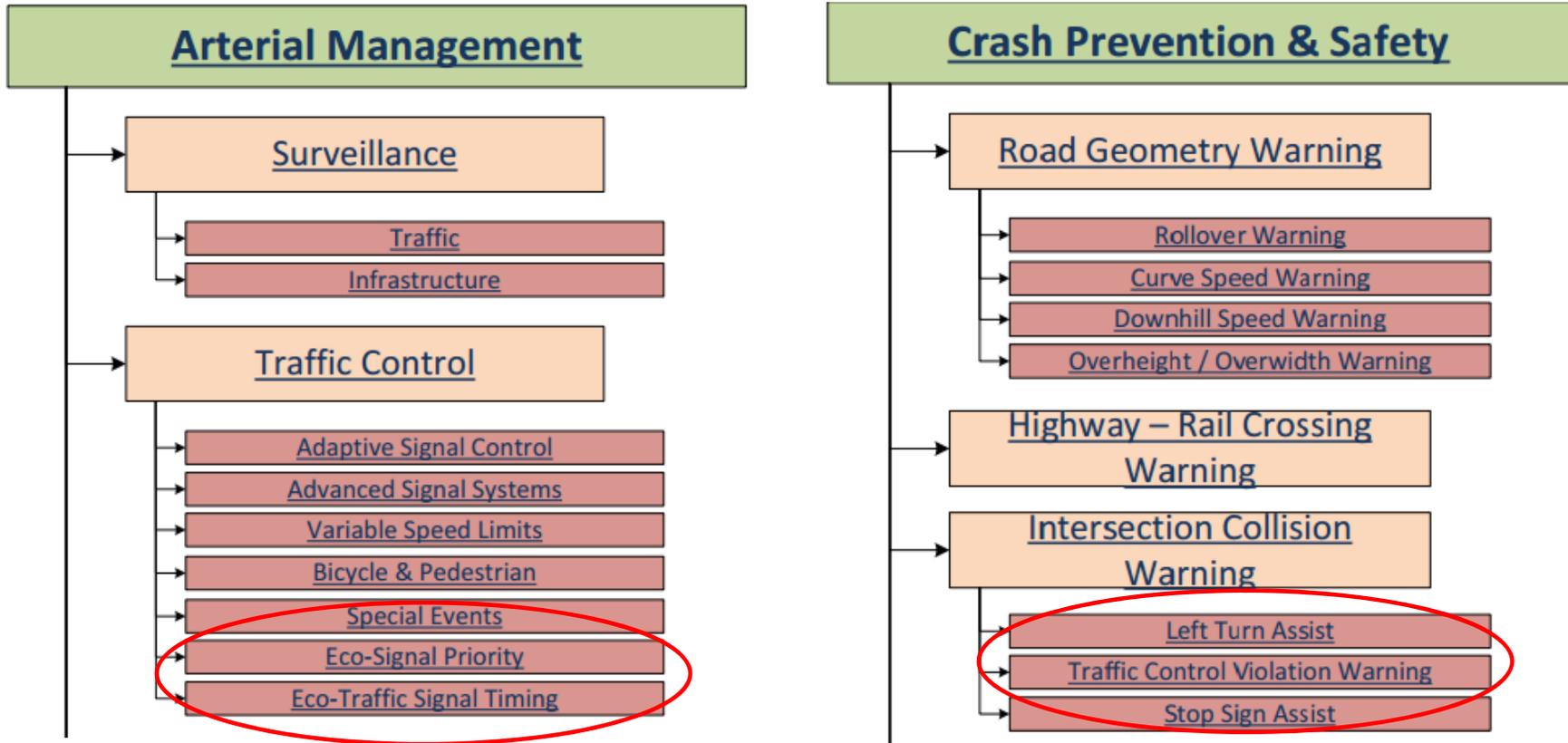
- What are your needs? – Connected Vehicles
 - Benefits
 - Costs
 - Lessons
- Where do you begin?
- Navigating the information



<http://www.itsknowledgeresources.its.dot.gov>



Finding Connected Vehicle Benefits



- Topic Areas



Finding Connected Vehicle Benefits

- Topic Area
- Goal Areas

BROWSE BENEFITS

Benefits measure the effects of ITS on transportation operations according to the six goals identified by the U.S. Department of Transportation (U.S. DOT): safety, mobility, efficiency, productivity, energy and environmental impacts, and customer satisfaction.

Please choose one from the following options:

Filter by Category

Application: 1 of 16 selected

Check All Uncheck All

- Alternative Fuels
- Arterial Management
- Commercial Vehicle Operations
- Crash Prevention & Safety
- Driver Assistance
- Electronic Payment & Pricing
- Emergency Management

Filter by Location

Country: Select Options

State: Select Options

[Go to Benefits Home >](#) [Find Benefits](#)

Resource Map

Resource Map Entries

[View Map >](#)

Longitudinal Study of ITS Implementation: Decision Factors and Effects Final Report

Browse the Benefits Database

Filter by Category

Application: Select Options

Goals: 1 of 6 selected

Check All Uncheck All

- Customer Satisfaction
- Efficiency
- Energy & Environment
- Mobility
- Productivity
- Safety

<http://www.itsknowledgeresources.its.dot.gov>



▼ Application Area Index

- **Arterial Management**
 - Surveillance
 - Traffic Control
 - Lane Management
 - Information Dissemination

Arterial Management

Surveillance

↑ top

- ▶ Simulation results indicated that vehicle emissions could be reduced by two percent if arterial traffic flow data were included in the traveler information system in Seattle, Washington. (30 May 2000)
- ▶ Modeling found emissions reductions of 3.7 to 4.6 percent due to an advanced transportation management and traveler information system serving northern Kentucky and Cincinnati. (4-7 June 2001)

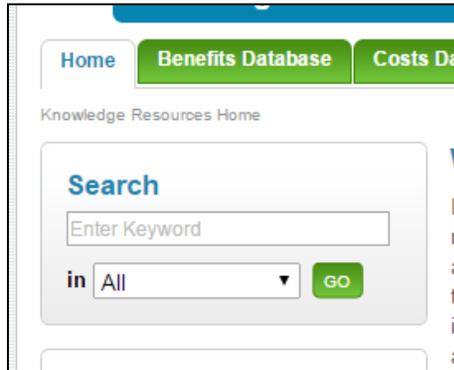
Traffic Control

↑ top

- ▶ In Oakland County, Michigan retiming 640 traffic signals during a two-phase project resulted in Carbon monoxide reductions of 1.7 and 2.5 percent, Nitrogen oxide reductions of 1.9 and 3.5 percent, and hydrocarbon reductions of 2.7 and 4.2 percent. (November/December 2004)
- ▶ Signal retiming projects in several U.S. and Canadian cities reduced fuel consumption by 2 to 9 percent. (April 2004)
- ▶ A typical signal timing project in Portland saves over 300 metric tons of CO2 annually per retimed traffic signal. (09/01/2013)
- ▶ CO2 emissions can be reduced up to 15 percent using in-vehicle performance monitoring systems for Eco-Driver Coaching. (September 16, 2009)
- ▶ A decentralized adaptive signal control system could reduce fuel consumption by 4.3 million gallons and total emissions by 39K tonnes annually, if deployed city-wide in Pittsburgh. (July 2012)
- ▶ Optimized signal timing plans, coordinated traffic signal control, and adaptive signal control reduced fuel use by 7.8 percent in California. (7-11 January 2001)
- ▶ Eco-speed control applications for connected vehicles can reduce fuel consumption 30 percent at urban intersections. (12-16 January 2014)

Finding Connected Vehicle Benefits

- Search Bar



A screenshot of the U.S. Department of Transportation Office of the Assistant Secretary for Research and Technology website. The page is titled "Intelligent Transportation Systems Joint Program Office" and "Knowledge Resources". The search bar is highlighted with a red circle and contains the text "connected vehicle", "in-vehicle". Below the search bar, there are sections for "Submit Your Data", "Need Help?", and "Browse Resource Databases". The "Browse Resource Databases" section includes a "Benefits" tab and a "BROWSE BENEFITS" link. The page also features a navigation menu with options like "Home", "Benefits Database", "Costs Database", "Lessons Learned", "Applications Overview", "Deployment Statistics", "Contact Information", and "BCLL Update".

Knowledge Resources

- Home
- Benefits Database
- Costs Database
- Lessons Learned
- Applications Overview
- Deployment Statistics
- Contact Information
- BCLL Update

Knowledge Resources Home

Search

in All

Submit Your Data

Please share any documentation that you may have regarding benefits and costs of ITS.

Contribute now!

- Need Help?**
- Contact Information
 - Website User Guide
 - Resource Tutorial
 - Help Us Improve

- Stay Connected**
- ITS RSS Feeds
 - ITS JPO on Twitter
 - RITA on Facebook
 - USDOT Fast Lane Blog

Search Results for ""connected vehicle" OR "in-vehicle"" (250 unique summaries found)

- > Connected vehicle technologies can improve roadway capacity by 20 percent with relatively low market penetration .
▶ Benefit - (09/07/2011)
- > Connected vehicle warning systems and autonomous emergency braking can reduce fatalities by 57 percent.
▶ Benefit - (02/01/2013)
- > SCMS Certificate License
▶ Sample Unit cost - (06/27/2014)
- > Total potential connected vehicle DSRC deployment costs at signalized intersections needing controller upgrades may cost on average \$51,600 per site
▶ System cost - (06/27/2014)
- > Costs and Outlook of On-Board Equipment for Connected Vehicles
▶ System cost - (September 2012)
- > On-board transit vehicle dissemination of traveler information
▶ Sample Unit cost - (February 2009)
- > On-board transit vehicle dissemination of traveler information
▶ Sample Unit cost - (February 2009)
- > A national study estimates that average hardware costs to upgrade signal controllers for connected vehicle purposes may be as little as \$3,200 per site
▶ System cost - (06/27/2014)
- > Preliminary modeling results for Eco-Traffic Signal Timing show 5 percent reduction in fuel consumption.
▶ Benefit - (01/29/2014)
- > Gear shift indicator
▶ Sample Unit cost - (September 16, 2009)



1 2 3 4 5 6 7 8 9 10 Next

[Search Other Resources:](#)

Next Steps

Please choose one from the following options:

Filter by Category

Application:

Select Options

Goals:

Select Options

Connected Vehicles Only

Filter by Location

Country:

Select Options

State:

Select Options

[Go to Benefits Home >](#)

[Find Benefits](#)

Publications

Now Available!

Longitudinal Study of ITS Implementation: Decision Factors and Effects Final Report



Resource Map

Resource Map Entries

[View Map >](#)

