

Monitoring and Sharing the Impacts of ITS: US Perspective

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IBEC 2 Reliable Data for ITS Deployment

06 October 2015

ITS World Congress Bordeaux, France

ITS Knowledge Resources

- Part of the USDOT's ITS Evaluation Program
- One-of-a-kind collection of Web-based resources to assist decision makers, state and local government agencies, and researchers in understanding the benefits, costs, lessons learned, and extent of deployment of ITS.



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

- Websites supplemented by:
 - Outreach activities (webinars, presentations, etc.)
 - Publications such as a periodic Benefits, Costs, and Lessons Learned (BCLL) Update Report and articles

ITS Knowledge Resources Evolution

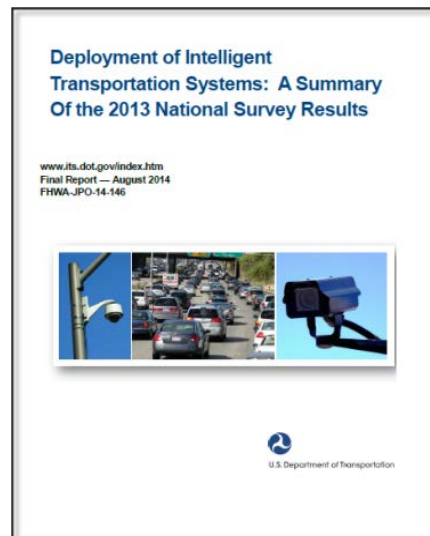
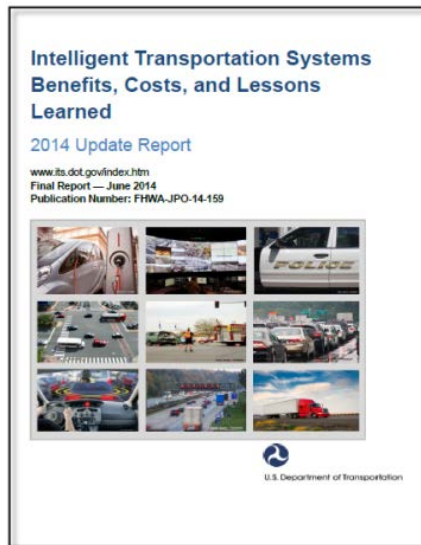
Year	Major New Feature
1995	1 st (USDOT) ITS Benefits Report was published
1999	The ITS Knowledge Resources website first launched, with ITS benefits and unit costs data
2003	ITS Deployment statistics survey data put online System Costs introduced
2005	The Lessons Learned Knowledge Resource developed
2011	Interactive Mapping Feature implemented
2013	Sample unit costs spreadsheets made available
2014	Interactive Benefits, Costs, and Lessons Learned Fact Sheets Launched

Who is the Target Audience?

- State, regional, and local transportation professionals seeking to consider ITS in the development of transportation plans and projects to address local transportation needs and problems.
- Researchers or policymakers seeking to better understand the state of knowledge and extent of deployment of ITS.

2015 Status

Two Major Evaluation Products Published Last Year

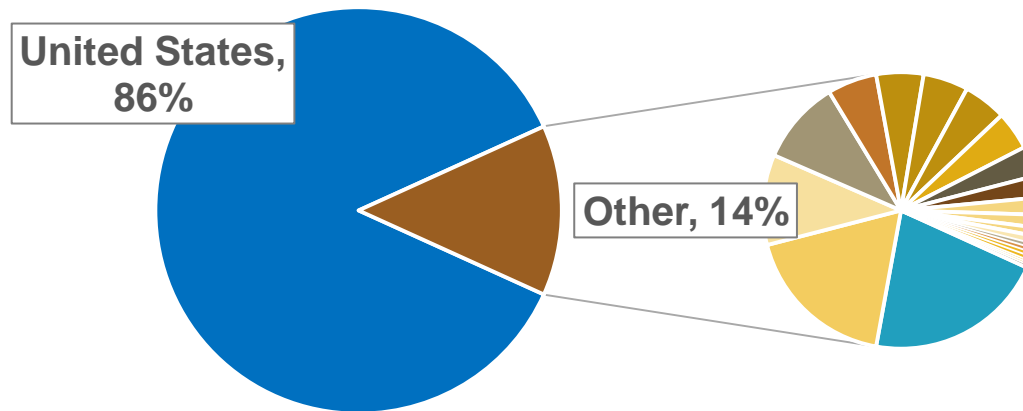


Summary Type	Number of Summaries
Benefits	885
Costs	332
Lessons Learned	593
Total	1,810

Data from these reports have been incorporated into the online ITS Knowledge Resources

International Data in the Knowledge Resources

Source of Data



- United States
- United Kingdom
- Canada
- Sweden
- Germany
- Italy
- Netherlands
- Finland
- Japan
- Singapore
- France
- Australia
- Norway
- Denmark
- Taiwan
- Brazil
- Ireland
- China
- South Korea
- Israel
- Belgium
- Spain
- Luxembourg

Recent Trends

- Increasing benefits from congestion pricing and HOV to High Occupancy Toll (HOT) conversions.
- Advances in Integrated Corridor Management (ICM) strategies that allow transportation subsystems to operate in a coordinated and integrated manner.
- The emergence of crash avoidance technologies that utilize advanced radar and sensor technologies.
- The adoption of adaptive signal control and transit signal priority to improve traffic flow resulting in reduced fuel consumption and emissions.
- Demonstrations of connected vehicle technologies

BCLL Update Report Page

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

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

Knowledge Resources Home > 2014 BCLL Update Report > Introduction

ITS Benefits, Costs, and
Lessons: 2014 Update Report

[Download Full Report](#)

[View Fact Sheets](#)

Executive Summary

Introduction

Alternative Fuels

Arterial Management: Surveillance

Arterial Management: Traffic
Control

Commercial Vehicle Operations

Crash Prevention & Safety

Driver Assistance: Connected Eco
Driving, Intelligent Speed
Control, Adaptive Cruise
Control, Platooning

Driver Assistance: Navigation,
Driver Communication, and
In-Vehicle Systems

Electronic Payment & Pricing

Emergency Management

Freeway Management: Overview

Freeway Management: Integrated
Corridor Management

Information Management

Intermodal Freight

Roadway Operations &
Maintenance

Road Weather Management

Traffic Incident Management

Transportation Management
Center

Transit Management: Information
Dissemination

Introduction

ITS Benefits, Costs, and Lessons Learned: 2014 Update Report

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Introduction

In 2014, the U.S. transportation system faces the ongoing challenges of improving safety, meeting rising demand, and mitigating congestion and environmental impacts. Motor vehicle crashes continue to be the leading cause of death among Americans aged one to 34 years old, with the total societal cost of crashes exceeding \$230 billion annually [1]. Fatalities from motor vehicle crashes rose 5.3 percent in 2012, the first time since 2005 that fatalities have gone up [2]. In 2011, congestion caused urban Americans to travel an extra 5.5 billion hours and to purchase an extra 2.9 billion gallons of fuel for a congestion cost of \$121 billion, up one billion dollars from the year before and translating to \$818 per U.S. commuter [3]. The Texas Transportation Institute estimated the additional carbon dioxide (CO₂) emissions attributed to traffic congestion at 56 billion pounds – about 380 pounds per auto commuter [3].

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ITS Leads the Way

Over the past 30 years, the demand for the use of public roads has increased approximately 95 percent, as measured in vehicle miles traveled (VMT). Over this same period the number of lane miles on public roads has increased less than 9 percent. These statistics indicate a sharp rise in demand while capacity, in terms of the number of lane miles, has stayed relatively constant [4].

Recognizing that we can no longer build our way out of these problems, transportation professionals have turned to information and communications technology for solutions. Intelligent Transportation Systems (ITS) provide a proven set of strategies for advancing transportation safety, mobility, and environmental sustainability by integrating communication and information technology applications into the management and operation of the transportation system across all modes. Connected vehicle technology has the potential to enable many services provided by infrastructure or vehicle based ITS by benefiting from enhanced communication between vehicles and the infrastructure.

The ITS Knowledge
Resources Database can be
accessed at
<http://www.ITSKnowledgeResources.its.dot.gov>

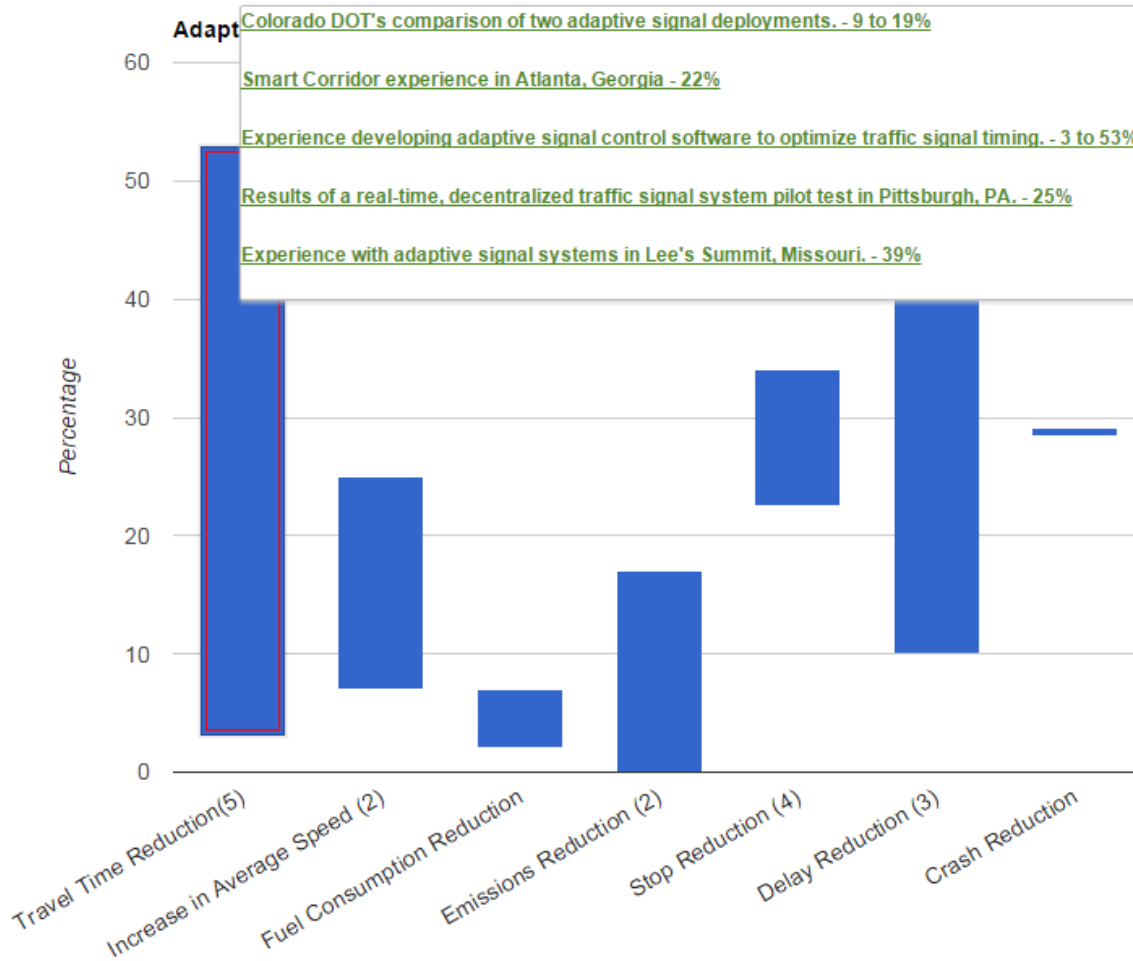
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The 2014 ITS Benefits, Costs and Lessons Learned Factsheets

This collection of factsheets presents information on the performance of deployed ITS, as well as information on the costs, and lessons learned regarding ITS deployment and operations. The factsheets, and the collection of three Web-based resources upon which it is based, have been developed by the ITS Joint Program Office (JPO) of the U.S. Department of Transportation (U.S. DOT) to support informed decision making regarding ITS planning and deployment.

Topic Areas

Interactive Graphs



PDF Versions of Fact Sheets

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



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

Knowledge Resources Home > 2014 BCLL Update Report > Fact Sheets

ITS Benefits, Costs, and Lessons: 2014 Update Report

[Download Full Report](#)

Fact Sheets

Full Report			PDF
Executive Summary		HTML	
Introduction		HTML	
Alternative Fuels		HTML	
Arterial Management: Surveillance		HTML	
Arterial Management: Traffic Control		HTML	
Commercial Vehicle Operations		HTML	
Crash Prevention & Safety		HTML	
Driver Assistance: Connected Eco Driving, Intelligent Speed Control, Adaptive Cruise Control, Platooning		HTML	
Driver Assistance: Navigation, Driver Communication, and In-Vehicle Systems		HTML	
Electronic Payment & Pricing		HTML	
Emergency Management		HTML	
Freeway Management: Overview		HTML	
Freeway Management: Integrated Corridor Management		HTML	
Information Management		HTML	
Intermodal Freight		HTML	
Roadway Operations & Maintenance		HTML	
Road Weather Management		HTML	
Traffic Incident Management		HTML	
Transportation Management Center		HTML	
Transit Management: Information Dissemination		HTML	
Transit Management: Operations & Fleet Management		HTML	
Traveler Information		HTML	



Knowledge Resources Portal

Intelligent Transportation Systems
Joint Program Office



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](#)

Welcome to DOT ITS Knowledge Resources

Intelligent transportation systems (ITS) provide a proven set of strategies for advancing transportation safety, mobility, and environmental sustainability by integrating communication and information technology applications into the management and operation of the transportation system across all modes. ITS technologies will transform surface transportation by offering a connected environment among vehicles, the infrastructure and passengers' wireless devices, allowing drivers to send and receive real-time information about potential hazards and road conditions.

This website presents information on the benefits, costs, deployment levels, and lessons learned regarding ITS deployment and operations. These Knowledge Resources were developed by the U.S. DOT's ITS Joint Program Office (JPO) evaluation program to support informed decision making regarding ITS investments by tracking the effectiveness of deployed ITS. The Knowledge Resources contain over fifteen years of summaries of the benefits, costs, lessons learned, and deployment status of specific ITS implementations, drawn primarily from written sources such as ITS evaluation studies, research syntheses, handbooks, journal articles, and conference papers.

Browse Resource Databases

Benefits

Costs

Lessons Learned

Applications Overview

Deployment Statistics



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.

Introduction to the Knowledge 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

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 current page is titled 'Benefits Database Overview' and features a search bar with a 'GO' button and a dropdown menu set to 'Benefits'. Below the search bar is a 'Benefits Database' sidebar with links for Overview, About Benefits, Browse Benefits, Map Benefits, Latest Updates, Frequently Asked Questions, and Available Documents. The main content area includes a 'Benefits Database Overview' section with a brief description of benefits and a 'Browse the Benefits Database' section with filters for Application and Goals (both with 'Select Options' dropdowns) and Location (Country and State, both with 'Select Options' dropdowns). A 'Find Benefits' button is located at the bottom right of the filter section. At the bottom of the page, there are buttons for 'Map Benefits' and 'Latest Benefit Updates'.

www.itsbenefits.its.dot.gov

Introduction to the Knowledge 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 box is present with a 'go' button. The 'Costs Database' section is expanded to show 'Overview', 'About Costs', 'Browse Costs', 'Map Costs', 'Latest Updates', 'Frequently Asked Questions', 'Available Documents', 'Links', and 'Unit Costs'. The 'Unit Costs' section is further divided into 'Unadjusted Costs', 'System Costs', and 'Sample Unit Costs'. The 'System Costs' section includes a description and a link to 'View a sample system cost summary'. The 'Sample Unit Costs' section includes a description and a link to 'View sample unit cost entries'. At the bottom, there is a 'Browse the System Costs' section with filters for 'Filter by Category' (Application) and 'Filter by Location' (Country).

www.itscosts.its.dot.gov

Introduction to the Knowledge Resources: ITS Lessons Learned

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 shows the website for the Intelligent Transportation Systems Joint Program Office Knowledge Resources. The header includes the title and navigation icons for various ITS modes. Below the header is a navigation menu with links for Home, Benefits Database, Costs Database, Lessons Learned, 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, Program Activities, Location (Country and State).

www.itslessons.its.dot.gov

Introduction to the Knowledge 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

	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

Using the Knowledge Resources to Support Deployment

1

Use the benefits database to find ITS solutions that will address your needs and will provide meaningful results.



2

Use the costs database to develop project cost estimates and conduct benefit/cost analysis.



3

Use the lessons learned database to find deployment guidance relevant to your desired system for easy and efficient implementation.

Intelligent Transportation Systems (ITS) Asset Viewer

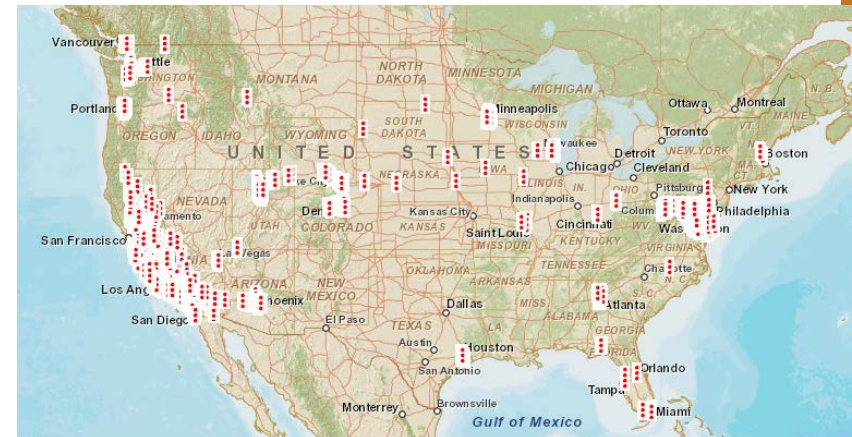
A Geographical
View of National
ITS Deployment

IBEC
International Benefits
Evaluation Society for ITS

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

Visually displays the location of ITS deployments across the U.S, providing a geographic picture of the status of ITS deployment.

- Includes GIS data regarding key ITS technologies such as cameras, messages signs, ramp meters, speed sensors, and roadway weather information systems.
- Over 75,000 assets in the database and growing...



U.S. Lessons Learned in Developing/ Maintaining Knowledge Resources

- Be willing to commit time and resources to the knowledge initiative
 - Keeping the contents updated is key!
 - Don't "build it and forget it"!
- Use a common classification system across resources but make it transparent to users
- Engage target users and stakeholders during development and maintenance/operations phases
 - Crucial to know what users want
 - Show them mock-ups and get their feedback
- Actively seek feedback from Users and non-Users
- Market the resources regularly and provide training

U.S. Lessons Learned in Developing/ Maintaining Knowledge Resources

- Design user interfaces for quick comprehension and communication of results
 - Your audience needs to find data quickly and doesn't have much time to assimilate information
- Provide “canned” presentation materials for users
- Be willing to provide interim results
 - Timely information is important
 - Shortcuts long cycles that occur before evaluation reports are published
- Seek to include a wide variety of sources, including briefings, interviews, conference presentations, etc.