ITS/Operations Resource Guide

2007

traffic incident management

work zones

integrated vehicle based safety systems

electronic freight management

commercial vehicle information systems and networks

mobility services for all Americans

next generation 9-1-1

integrated corridor management systems

cooperative intersection collision avoidance systems

architecture and standards implementation

clarus

511 traveler information

vehicle infrastructure integration

value pricing

national strategy to reduce congestion

Notice

The U.S. Department of Transportation provides high-quality information to serve Government, industry, and the public in a manner that promotes public understanding. Standards and policies are used to ensure and maximize the quality, objectivity, utility, and integrity of its information. U.S. DOT periodically reviews quality issues and adjusts its programs and processes to ensure continuous quality improvement.

Introduction

Dear Reader:
I am pleased to present the U.S. Department of Transportation's (U.S. DOT's) ITS/Operations Resource Guide 2007, a comprehensive listing of over 400 documents, videos, websites, training courses, software tools, and points-of-contact related to intelligent transportation systems (ITS) and other innovative transportation operations strategies. Most resources have been developed under Federal sponsorship, but other useful resources are also included.

New in this seventh edition are:

- A chapter on Intelligent Safety Systems, which includes the new National Highway Institute training course "Improving Highway Safety with ITS"
- Documents, websites and a video related to access management, included in the Arterial Operations and Traffic Signal Control chapter
- Documents and websites related to planned special events, included in the Traffic Incident Management chapter
- Documents and websites related to commercial vehicle operations, including product guides for CVO safety and security products and a website designed to help partners in the Commercial Vehicle Information Systems and Networks (CVISN) program apply for Federal funds
- Documents relating to various aspects of traveler information, including the national telephone traveler information number 511

Resources are grouped by topic area. Each section begins with a list of U.S. DOT points of contact, so you always know whom to call. We especially recommend the items listed in the Featured Resources section.
This guide has been designed to be a handy desk reference. An online version is also available at http://www.resourceguide.its.dot.gov.
This indispensable little book will help you realize the benefits of innovative transportation strategies. If you would like to share your reactions to the Resource Guide, please contact Susan Slye of the ITS Joint Program Office at susan.slye@dot.gov.

Sincerely,

Shelley Row, P.E., PTOE
Director
ITS Joint Program Office





CONTENTS

CONTENTS

How to Use This Guide

See icon key at bottom.

Topic area appears at the top of each page.

Intelligent Transportation Systems Benefits, Costs, and Lessons Learned: 2005 Update (FHWA-JPO-05-002) (2005)

Resource Title

Publication date and FHWA number - helpful when ordering hardcopies.

This report is the latest in a biennial series that provides a synthesis of the information collected by U.S. DOT on the impact of ITS projects on the operation of the surface transportation network. New in the 2005 edition is a discussion of the ITS Lessons Learned Knowledge Resource, a repository of experience on how to plan, design, deploy, operate, and maintain ITS.

Cost: Free

To Access This Resource:
Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14073.htm, EDL# 14073. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

All documents with an Electronic Document Library number (EDL#) can be downloaded two ways: (1) directly from the website address listed or (2) by accessing the main ITS Library website http://www.its.dot.gov/library.htm, selecting Profile Search, and searching for the document number.

U.S. DOT - United States Department of Transportation, **CVO** - Commercial Vehicle Operations, **FHWA** - Federal Highway Administration, **FMCSA** - Federal Motor Carrier Safety Administration, **FTA** - Federal Transit Administration, **FRA** - Federal Railroad Administration, **NCHRP** - National Cooperative Highway Research Program, **NHTSA** - National Highway Traffic Safety Administration, **NHI** - National Highway Institute, **RITA** - Research and Innovative Technology Administration, **TCRP** - Transit Cooperative Research Program

 **Points of Contact**

 **Training, Workshops, and Seminars**

Websites

 **Software Tools and Databases**

 **Videos**

 **Documents**

An online version of this guide is available at http://www.resourceguide.its.dot.gov. Use this searchable html file to link directly to website addresses.

Featured Resources

ITS Joint Program Office Website

This site is the official website of the U.S. Department of Transportation's ITS Joint Program Office. The website links to pages relating to all aspects of the National ITS Program, including ten major ITS initiatives. Sections of the website cover special topics, such as architecture, standards, and telecommunications. Technical assistance is available from the ITS Benefits Database, ITS Costs Database, ITS Lessons Learned Knowledge Resource (LLKR), and ITS Deployment Statistics Database, as well as the ITS Learning Center. The website also includes a list of contacts (in the area titled "About Us") and related links, including the ITS Library and National Transportation Operations Coalition (NTOC).

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov.

FHWA Office of Operations Website

This site is the official website of the Federal Highway Administration's Office of Operations. The website contains pages relating to all aspects of transportation operations, grouped into program areas or themes: reducing non-recurring congestion, reducing recurring congestion, improving day-to-day operations, fostering regional collaboration, measuring operations performance, improving freight operations, enhancing emergency transportation response, and facilitating integrated ITS deployment. The site also contains news briefs, speeches by Office of Operations staff, press releases, publications, and related links. A very helpful feature is the office directory, which lists featured transportation operations topic areas along with links to corresponding web pages and the point-of-contact for each topic.

Cost: Free

To Access This Resource: Access the website address http://ops.fhwa.dot.gov.

http://

National Transportation Operations Coalition Website

This website is a compilation of resources provided by the National Transportation Operations Coalition (NTOC). The Coalition is a partnership among traditional stakeholders, such as transportation professionals, and nontraditional stakeholders, such as public safety agencies. This alliance of national associations, practitioners, and private sector groups allows stakeholders to work collectively to identify barriers and opportunities for improving the management and operations of the nation's transportation system. The site contains the history of the Coalition, current action plan, vision, and mission. The site also contains resource documents that present a number of transportation operations issues and improvement strategies, links to other operations and ITS resources (including electronic forums for transportation operations, and the Talking Operations webcast series), proceedings from Coalition events, and a list of Coalition members and key partner organizations.

Cost: Free

To Access This Resource: Access the website address http://www.ntoctalks.com.

http://

NTOC Talks E-Newsletter

NTOC Talks, a newsletter of the National Transportation Operation Coalition (NTOC), is a repository of up-to-date news, insight, and resources related to ITS deployment. The newsletter contains brief summaries of news articles and is updated every few days. The database-driven newsletter features a search engine that allows users to find relevant articles by topic, category, or date going back to 1998. Every month, all articles posted over the past month are compiled into a newsletter that is sent via e-mail to newsletter subscribers. Readers can also have back issues e-mailed to them using a convenient online form. Subscription to the monthly newsletter is free, and the website features online sign-up.

Cost: Free

To Access This Resource: Access the website address http://www.ntoctalks.com/icdn/index.php3.

Moving the American Economy: National Strategy to Reduce Congestion Website

This website is a compilation of resources related to the U.S. Department of Transportation's Congestion Initiative, a six-part national strategy to reduce congestion on the country's roads, in its airspace and at its intermodal ports. The website contains the current status of U.S. DOT solicitations related to the Congestion Initiative, including those for urban partnership agreements, participation in a value pricing pilot program, and an ITS operational test. The website also contains helpful resources, including documents, presentations and related links. Documents posted on the site include the May 2006 report *National Strategy to Reduce Congestion on America's Transportation Network*, which outlines the U.S. DOT's six-part congestion reduction plan.

Cost: Free

To Access This Resource: Access the website address http://www.fightgridlocknow.gov.

Transportation Communication Newsletter

Transportation Communications is a free, daily e-mail newsletter which provides news and information related to all aspects of communications in the transportation field, including such topics as public and community relations, ITS, traveler information, outreach, and transportation operations. The newsletter covers all travel modes, including highways, transit, rail, air, and maritime. Now in its eighth year, the newsletter is distributed using Yahoo®Groups and has over 5,400 subscribers. Subscribers can use tools available in Yahoo® Groups to search back issues. The website has instructions on how to sign up.

Cost: Free

To Access This Resource: Access the website address http://groups.yahoo.com/group/transport-communications.

Operations/ITS HelpLine

The Operations/ITS HelpLine provides reliable, personalized assistance, helping members of the transportation community quickly identify appropriate resources or other technical assistance. The HelpLine functions as a telephone-based gateway to the U.S. DOT National ITS Program, offering callers access to documents, information on the status of research and development programs, and the ability to identify U.S. DOT personnel with the capabilities to provide additional technical assistance. The HelpLine is also the gateway to the ITS Peer-to-Peer Program that provides public sector transportation stakeholders with a convenient way to tap into the growing knowledge base of ITS experience. Through the program, public sector staff can request short-term assistance to address specific technical issues. The program matches callers with the appropriate individual from a pool of more than 100 "peers"—experts in various topic areas of ITS. The program is free and confidential. For more information about the program, access the website address http://www.its.dot.gov/peer/index.htm or call (888) 700-PEER, (888) 700-7337.

Cost: Free

To Access This Resource: Call the HelpLine at (866) 367-7487.

ITS Library

The Electronic Document Library (EDL) contains an electronic copy of all documents produced under the sponsorship of the National ITS Program, as well as contributions from outside sources. Types of documents posted on the website include technical reports, policy reports, presentations, conference proceedings, brochures, and legislation. The library currently contains almost 2,000 documents. Users can search the EDL by using the U.S. DOT search engine or by accessing the browse list (showing the title, publication date, and EDL number of every document, listed alphabetically by title) and using the "Find in Page" function of their Internet browser.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/welcome.htm.

Intelligent Transportation Systems Benefits, Costs, and Lessons Learned: 2005 Update (FHWA-JPO-05-002) (2005)

This report is the latest in a biennial series that provides a synthesis of the information collected by U.S. DOT on the impact of ITS projects on the operation of the surface transportation network. The report presents ITS impacts according to program areas within the intelligent infrastructure and intelligent vehicle applications. ITS benefits are classified by performance measures associated with National ITS Program goals, i.e., the improvement of safety, efficiency, mobility, productivity, and energy/environmental impacts. The report also presents unit cost figures for selected ITS deployments, as well as sample system cost information. New in the 2005 edition is a discussion of the ITS Lessons Learned Knowledge Resource, a repository of experience on how to plan, design, deploy, operate, and maintain ITS. Information in the report is drawn from the ITS Benefits and Costs Databases, available online at http://www.benefitcost.its.dot.gov.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14073_files/14073.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14073.htm, EDL# 14073

Traffic Congestion and Reliability: Trends and Advanced Strategies for Congestion Mitigation (2005)

This document is the second in a series of annual reports that provide a snapshot of congestion in the U.S. The report summarizes recent trends in congestion and analyzes the sources of congestion and other unreliable travel. In particular, the report examines travel time and travel time reliability as measures of congestion. The report concludes that available solutions—adding capacity, operating capacity more

efficiently, and reducing demand—must be used in concert to achieve realistic results. The 2004 report *Traffic Congestion and Reliability: Linking Solutions to Problems* is also available.

Cost: Free

To Access This Resource: Access the following website addresses:

- 2005 Report—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/congestion_report/congestion_report_05.pdf
- 2005 Report—HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/congestion_report/index.htm
- 2004 Report—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/congestion_report_04/congestion_report.pdf
- 2004 Report—HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/congestion_report_04/index.htm

Points-of-Contact

ITS Joint Program Office Points-of-Contact

- Shelley Row, Director, (202) 366-5719, Shelley.Row@dot.gov
- Debbie Bargar, Program Information Manager and Administrative Coordinator, (202) 366-3367, Debbie.Bargar@dot.gov
- Brian Cronin, Congestion Program Coordinator, (202) 366-8841, Brian.Cronin@dot.gov
- Linda Dodge, Emergency Transportation Operations Initiative Manager and Next Generation 9-1-1 Initiative Manager, (202) 366-8034, Linda.Dodge@dot.gov
- Ron Giguere, ITS Professional Capacity Building Program Manager, (202) 366-2203, Ron.Giguere@dot.gov
- Yehuda Gross, Mobility Services for All Americans Initiative Manager and ITS Transit Program Manager, (202) 366-1988, Yehuda.Gross@dot.gov
- Kate Hartman, Electronic Freight Management Initiative Manager and Commercial Vehicle Operations Program Manager, (202) 366-2742, Kate.Hartman@dot.gov
- William S. Jones, Vehicle Infrastructure Integration Initiative Manager, (202) 366-2128, William.S.Jones@dot.gov
- Joseph Peters, Managing Director and ITS Program Assessment Manager, (202) 366-2202, Joe.Peters@dot.gov
- Marcia Pincus, Program Analyst, (202) 366-9230, Marcia.Pincus@dot.gov
- Mike Schagrin, Cooperative Intersection Collision Avoidance Systems Initiative Manager and Intelligent Vehicle Initiative Coordinator, (202) 366-2180, Mike.Schagrin@dot.gov
- Steve Sill, Vehicle Safety Program Coordinator, (202) 366-1603, Steve.Sill@dot.gov
- Lee Simmons, ITS Architecture and Standards Program Manager, (202) 366-8048, Lee.Simmons@dot.gov
- Susan Slye, Communications Team Leader, (202) 366-1068, Susan.Slye@dot.gov

Cooperative Intersection Collision Avoidance Systems Points-of-Contact

- Mike Schagrin, ITS Joint Program Office, (202) 366-2180, Mike.Schagrin@dot.gov
- Gene McHale, FHWA Office of Research, Development and Technology, (202) 493-3275, Gene.McHale@dot.gov
- Larry Brown, FHWA Office of Safety, (202) 366-2214, Larry.J.Brown@dot.gov
- John Harding, NHTSA Intelligent Vehicle Research Division, (202) 366-5665, John.Harding@dot.gov

Electronic Freight Management Points-of-Contact

- Kate Hartman, ITS Joint Program Office, (202) 366-2742, Kate.Hartman@dot.gov
- Mike Onder, FHWA Office of Freight Management and Operations, (202) 366-2639, Michael.Onder@dot.gov

Emergency Transportation Operations Points-of-Contact

- Linda Dodge, ITS Joint Program Office, (202) 366-8034, Linda.Dodge@dot.gov
- Kimberly Vasconez, FHWA Office of Transportation Operations, (202) 366-1548, Kimberly.Vasconez@dot.gov

Integrated Corridor Management Systems Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- Gummada Murthy, FHWA Office of Transportation Management, (202) 366-0640, Gummada.Murthy@dot.gov
- Dale Thompson, FHWA Office of Research, Development and Technology, (202) 493-3420, Dale.Thompson@dot.gov

- Michael Baltes, FTA Office of Mobility Innovation, (202) 366-2182, Michael.Baltes@dot.gov
- Sebastian Renaud, FTA Office of Mobility Innovation, (202) 366-4991, Sebastian.Renaud@dot.gov

Integrated Vehicle Based Safety Systems Points-of-Contact

- Steve Sill, ITS Joint Program Office, (202) 366-1603, Steve.Sill@dot.gov
- Jack Ference, NHTSA Office of Applied Vehicle Safety Research, (202) 366-0168, Jack.Ference@dot.gov
- Sebastian Renaud, FTA Office of Mobility Innovation, (202) 366-4991, Sebastian.Renaud@dot.gov

Mobility Services for All Americans Points-of-Contact

- Yehuda Gross, ITS Joint Program Office, (202) 366-1988, Yehuda.Gross@dot.gov
- Walter Kulyk, FTA Office of Mobility Innovation, (202) 366-4991, Walter.Kulyk@dot.gov
- Michael Baltes, FTA Office of Mobility Innovation, (202) 366-2182, Michael.Baltes@dot.gov
- Richard Collins, FTA Office of Mobility Innovation, (202) 366-0232, Richard.Collins@dot.gov
- Althea Goodine, FTA Office of Mobility Innovation, (202) 366-6678, Althea.Goodine@dot.gov

Clarus Points-of-Contact

- Paul Pisano, FHWA Office of Transportation Operations, (202) 366-1301, Paul.Pisano@dot.gov
- Raj Ghaman, FHWA Office of Research, Development and Technology, (202) 493-3270, Raj.Ghaman@dot.gov

Next Generation 9-1-1 Points-of-Contact

- Linda Dodge, ITS Joint Program Office, (202) 366-8034, Linda.Dodge@dot.gov
- Laurie Flaherty, NHTSA Office of Emergency Medical Services, (202) 366-2705, Laurie.Flaherty@dot.gov

Vehicle Infrastructure Integration Points-of-Contact

- William S. Jones, ITS Joint Program Office, (202) 366-2128, William.S.Jones@dot.gov
- Raymond Resendes, NHTSA Office of Vehicle Safety Research, (202) 366-2619, Ray.Resendes@dot.gov
- Bob Rupert, FHWA Office of Transportation Management, (202) 366-2194, Robert.Rupert@dot.gov
- Robert Ferlis, FHWA Office of Operations Research, Development and Technology, (202) 493-3268, Robert.Ferlis@dot.gov
- Sebastian Renaud, FTA Office of Mobility Innovation, (202) 366-4991, Sebastian.Renaud@dot.gov

Analysis Tools Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- John Halkias, FHWA Office of Transportation Management, (202) 366-2183, John.Halkias@dot.gov
- James Colyar, FHWA Office of Research, Development and Technology, (202) 493-3282, James.Colyar@dot.gov
- Raj Ghaman, FHWA Office of Research, Development and Technology, (202) 493-3270, Raj.Ghaman@dot.gov
- Deborah Curtis, FHWA Office of Research, Development and Technology, (202) 493-3267, Deborah.Curtis@dot.gov
- Henry Lieu, FHWA Office of Research, Development and Technology, (202) 493-3273, Henry.Lieu@dot.gov

- John Tolle, FHWA Resource Center, (708) 283-3541, John.Tolle@dot.gov
- Walter Kulyk, FTA Office of Mobility Innovation, (202) 366-4991, Walter.Kulyk@dot.gov

Archived Data Points-of-Contact

- Ralph Gillmann, FHWA Office of Highway Policy Information, (202) 366-5042, Ralph.Gillmann@dot.gov
- Rich Taylor, FHWA Office of Transportation Management, (202) 366-1327, Rich.Taylor@dot.gov
- Larry Brown, FHWA Office of Safety, (202) 366-2214, Larry.J.Brown@dot.gov
- Sean Ricketson, FTA Office of Mobility Innovation, (202) 366-6678, Sean.Ricketson@dot.gov
- Richard Collins, FTA Office of Mobility Innovation, (202) 366-0232, Richard.Collins@dot.gov

Arterial Operations and Traffic Control Systems Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- John Halkias, FHWA Office of Transportation Management, (202) 366-2183, John.Halkias@dot.gov
- Eddie Curtis, FHWA Office of Transportation Management, (404) 562-3920, Eddie.Curtis@dot.gov
- Neil Spiller, FHWA Office of Transportation Management, (202) 366-2188, Neil.Spiller@dot.gov
- Raj Ghaman, FHWA Office of Research, Development and Technology, (202) 493-3270, Raj.Ghaman@dot.gov
- Dave Gibson, FHWA Office of Research, Development and Technology, (202) 493-3271, David.Gibson@dot.gov
- Dale Thompson, FHWA Office of Research, Development and Technology, (202) 493-3420, Dale.Thompson@dot.gov

- Ed Fok, FHWA Resource Center, (415) 744-0113, Edward.Fok@dot.gov
- Walter Kulyk, FTA Office of Mobility Innovation, (202) 366-4991, Walter.Kulyk@dot.gov

Commercial Vehicle Operations Points-of-Contact

- Kate Hartman, ITS Joint Program Office, (202) 366-2742, Kate.Hartman@dot.gov
- Chris Flannigan, FMCSA Office of Research and Analysis, (202) 385-2384, Chris.Flannigan@dot.gov
- Amy Houser, FMCSA Office of Research and Analysis, (202) 385-2382, Amy.Houser@dot.gov
- Quon Kwan, FMCSA Office of Research and Analysis, (202) 385-2389, Quon.Kwan@dot.gov
- Julie Lane, FHWA Office of Research and Analysis, (202) 385-2391, Julie.Lane@dot.gov
- Jeff Loftus, FMCSA Office of Research and Analysis, (202) 385-2363, Jeff.Loftus@dot.gov
- Jeff Secrist, FMCSA Office of Research and Analysis, (202) 385-2367, Jeff.Secrist@dot.gov

Freeway Management and Operations Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- Jimmy Chu, FHWA Office of Transportation Management, (202) 366-3379, Jimmy.Chu@dot.gov
- Jessie Yung, FHWA Office of Transportation Management, (202) 366-4672, Jessie.Yung@dot.gov
- Dale Thompson, FHWA Office of Research, Development and Technology, (202) 493-3420, Dale.Thompson@dot.gov
- Greg Jones, FHWA Resource Center, (404) 562-3906, GregM.Jones@dot.gov

High-Occupancy Vehicle Facilities Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- Jessie Yung, FHWA Office of Transportation Management, (202) 366-4672, Jessie.Yung@dot.gov
- Venkat Pindiprolu, FTA Office of Mobility Innovation, (202) 366-8061, Venkat.Pindiprolu@dot.gov

Intermodal Freight Points-of-Contact

- Kate Hartman, ITS Joint Program Office, (202) 366-2742, Kate.Hartman@dot.gov
- Mike Onder, FHWA Office of Freight Management and Operations, (202) 366-2639, Michael.Onder@dot.gov
- Rolf Schmitt, FHWA Office of Freight Management and Operations, (202) 366-9258, Rolf.Schmitt@dot.gov
- Randy Butler, FHWA Office of Freight Management and Operations, (202) 366-9215, Randy.Butler@dot.gov
- Crystal Jones, FHWA Office of Freight Management and Operations, (202) 366-2976, Crystal.Jones@dot.gov
- Deborah Curtis, FHWA Office of Research, Development and Technology, (202) 493-3267, Deborah.Curtis@dot.gov

Manual on Uniform Traffic Control Devices Points-of-Contact

- Linda Brown, FHWA Office of Transportation Operations, (202) 366-2192, Linda.L.Brown@dot.gov
- Hari Kalla, FHWA Office of Transportation Operations, (202) 366-5915, Hari.Kalla@dot.gov
- Kevin Sylvester, FHWA Office of Transportation Operations, (202) 366-2161, Kevin.Sylvester@dot.gov
- Scott Wainwright, FHWA Office of Transportation Operations, (202) 366-0857, Scott.Wainwright@dot.gov
- Fred Ranck, FHWA Midwest Resource Center, (708) 283-3545, Fred.Ranck@dot.gov

- Pete Rusch, FHWA Midwest Resource Center, (608) 829-7529, Peter.Rusch@dot.gov
- Ken Wood, FHWA Resource Center, (708) 283-4340, Ken.Wood@dot.gov

National Transportation Operations Coalition Point-of-Contact

- Zia Burleigh, FHWA Operations Support Team, (202) 366-1896, Zia.Burleigh@dot.gov

Planning and Integration Points-of-Contact

- Steve Clinger, FHWA Office of Transportation Management, (202) 366-2168, Stephen.Clinger@dot.gov
- Bob Rupert, FHWA Office of Transportation Management, (202) 366-2194, Robert.Rupert@dot.gov
- Wayne Berman, FHWA Office of Transportation Management, (202) 366-4069, Wayne.Berman@dot.gov
- Brian Gardner, FHWA Office of Planning, (202) 366-4061, Brian.Gardner@dot.gov
- Gloria Shepherd, FHWA Office of Planning, (202) 366-0106, Gloria.Shepherd@dot.gov
- Harlan Miller, FHWA Office of Planning, (202) 366-0847, Harlan.Miller@dot.gov
- Dale Thompson, FHWA Office of Research, Development and Technology, (202) 493-3420, Dale.Thompson@dot.gov
- Mac Lister, FHWA Resource Center, (708) 283-3532, Mac.Lister@dot.gov
- Charlie Goodman, FTA Metropolitan Planning Division, (202) 366-1944, Charles.Goodman@dot.gov

Road Weather Management Points-of-Contact

- Paul Pisano, FHWA Office of Transportation Operations, (202) 366-1301, Paul.Pisano@dot.gov
- Roemer Alfelor, FHWA Office of Transportation Operations, (202) 366-9242, Roemer.Alfelor@dot.gov
- Patrick Kennedy, FHWA Office of Transportation Operations, (202) 366-9498, Pat.Kennedy@dot.gov
- Rudy Persaud, FHWA Office of Research, Development and Technology, (202) 493-3391, Rudy.Persaud@dot.gov
- Randy VanGorder, FHWA Office of Research, Development and Technology, (202) 493-3266, Randall.VanGorder@dot.gov
- Ray Murphy, FHWA Resource Center, (708) 283-3517, Ray.Murphy@dot.gov
- Charlene Wilder, FTA Service Innovation Division, (202) 366-1077, Charlene.Wilder@dot.gov

Rural Issues Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- Paul Pisano, FHWA Office of Transportation Operations, (202) 366-1301, Paul.Pisano@dot.gov
- Steve Clinger, FHWA Office of Transportation Management, (202) 366-2168, Stephen.Clinger@dot.gov
- Bob Rupert, FHWA Office of Transportation Management, (202) 366-2194, Robert.Rupert@dot.gov
- Althea Goodine, FTA Office of Mobility Innovation, (202) 366-6678, Althea.Goodine@dot.gov

Tolling and Pricing Point-of-Contact

- Wayne Berman, FHWA Office of Transportation Management, (202) 366-4069, Wayne.Berman@dot.gov
- Patrick DeCorla-Souza, FHWA Office of Transportation Management, (202) 366-4076, Patrick.DeCorla-Souza@dot.gov

Traffic Incident Management Points-of-Contact

- Linda Dodge, ITS Joint Program Office, (202) 366-8034, Linda.Dodge@dot.gov
- Dave Helman, FHWA Office of Transportation Operations, (202) 366-8042, David.Helman@dot.gov
- Laurie Radow, FHWA Office of Transportation Operations, (202) 366-2855, Laurel.Radow@dot.gov
- Paul Sullivan, FHWA Office of Transportation Operations, (202) 366-5465, Paul.Sullivan@dot.gov
- David Smith, FHWA Office of Safety, (202) 366-6614, David.Smith@dot.gov
- Randy VanGorder, FHWA Office of Research, Development and Technology, (202) 493-3266, Randall.VanGorder@dot.gov
- Chung Tran, FHWA Rescource Center, (720) 963-3233, Chung.Tran@dot.gov

Transit Points-of-Contact

- Yehuda Gross, ITS Joint Program Office, (202) 366-1988, Yehuda.Gross@dot.gov
- Walter Kulyk, FTA Office of Mobility Innovation, (202) 366-4991, Walter.Kulyk@dot.gov
- Michael Baltes, FTA Office of Mobility Innovation, (202) 366-2182, Michael.Baltes@dot.gov
- Richard Collins, FTA Office of Mobility Innovation, (202) 366-0232, Richard.Collins@dot.gov
- Althea Goodine, FTA Office of Mobility Innovation, (202) 366-6678, Althea.Goodine@dot.gov
- Sebastian Renaud, FTA Office of Mobility Innovation, (202) 366-4991, Sebastian.Renaud@dot.gov
- Sean Ricketson, FTA Office of Mobility Innovation, (202) 366-6678, Sean.Ricketson@dot.gov
- Charlene Wilder, FTA Service Innovation Division, (202) 366-1077, Charlene.Wilder@dot.gov

Transportation Management Centers Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- Jessie Yung, FHWA Office of Transportation Management, (202) 366-4672, Jessie.Yung@dot.gov
- Raj Ghaman, FHWA Office of Research, Development and Technology, (202) 493-3270, Raj.Ghaman@dot.gov
- Tom Granda, FHWA Office of Research, Development and Technology, (202) 493-3365, Tom.Granda@dot.gov
- Charlene Wilder, FTA Service Innovation Division, (202) 366-1077, Charlene.Wilder@dot.gov

Transportation Security Points-of-Contact

- Kate Hartman, ITS Joint Program Office, (202) 366-2742, Kate.Hartman@dot.gov
- Dave Helman, FHWA Office of Transportation Operations, (202) 366-8042, David.Helman@dot.gov
- Mike Onder, FHWA Office of Freight Management and Operations, (202) 366-2639, Michael.Onder@dot.gov
- Henry Lieu, FHWA Office of Research, Development and Technology, (202) 493-3273, Henry.Lieu@dot.gov
- Greg Jones, FHWA Resource Center, (404) 562-3906, GregM.Jones@dot.gov
- Jeff Loftus, FMCSA Office of Research and Analysis, (202) 385-2363, Jeff.Loftus@dot.gov
- Amy Houser, FMCSA Office of Research and Analysis, (202) 385-2382, Amy.Houser@dot.gov
- Joe Delorenzo, FMCSA Midwestern Service Center, (708) 283-3572, Joseph.Delorenzo@dot.gov

Travel Demand Management Points-of-Contact

- Wayne Berman, FHWA Office of Transportation Management, (202) 366-4069, Wayne.Berman@dot.gov
- Allen Greenberg, FHWA Office of Transportation Management, (202) 366-2425, Allen.Greenberg@dot.gov
- Grant Zammit, FHWA Resource Center, (404) 562-3575, Grant.Zammit@dot.gov

Traveler Information Points-of-Contact

- Bob Rupert, FHWA Office of Transportation Management, (202) 366-2194, Robert.Rupert@dot.gov
- Jimmy Chu, FHWA Office of Transportation Management, (202) 366-3379, Jimmy.Chu@dot.gov
- James Pol, FHWA Office of Transportation Management, (202) 366-4374, James.Pol@dot.gov
- Mac Lister, FHWA Resource Center, (708) 283-3532, Mac.Lister@dot.gov
- Charlene Wilder, FTA Service Innovation Division, (202) 366-1077, Charlene.Wilder@dot.gov

Work Zones Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- Chung Eng, FHWA Office of Transportation Operations, (202) 366-8043, Chung.Eng@dot.gov
- Tracy Scriba, FHWA Office of Transportation Operations, (202) 366-0855, Tracy.Scriba@dot.gov
- Deborah Curtis, FHWA Office of Research, Development and Technology, (202) 493-3267, Deborah.Curtis@dot.gov
- Daniel Grate, FHWA Resource Center, (404) 562-3912, Daniel.Grate@dot.gov
- Ken Wood, FHWA Resource Center, (708) 283-4340, Ken.Wood@dot.gov

Commercial Vehicle Information Systems and Networks Points-of-Contact

- Kate Hartman, ITS Joint Program Office, (202) 366-2742, Kate.Hartman@dot.gov
- Jeff Secrist, FMCSA Office of Research and Analysis, (202) 385-2367, Jeff.Secrist@dot.gov
- Quon Kwan, FMCSA Office of Research and Analysis, (202) 385-2389, Quon.Kwan@dot.gov
- Julie Lane, FHWA Office of Research and Analysis, (202) 385-2391, Julie.Lane@dot.gov

Emergency Management and Public Safety Points-of-Contact

- Linda Dodge, ITS Joint Program Office, (202) 366-8034, Linda.Dodge@dot.gov
- Dave Helman, FHWA Office of Transportation Operations, (202) 366-8042, David.Helman@dot.gov
- David Smith, FHWA Office of Safety, (202) 366-6614, David.Smith@dot.gov
- Charlene Wilder, FTA Service Innovation Division, (202) 366-1077, Charlene.Wilder@dot.gov
- Earl Hardy, NHTSA Traffic Law Enforcement Division, (202) 366-4292, Earl.Hardy@dot.gov
- Laurie Flaherty, NHTSA Office of Emergency Medical Services, (202) 366-2705, Laurie.Flaherty@dot.gov

Highway-Rail Intersections Points-of-Contact

- Guan Xu, FHWA Office of Safety, (202) 366-5892, Guan.Xu@dot.gov
- Raj Ghaman, FHWA Office of Research, Development and Technology, (202) 493-3270, Raj.Ghaman@dot.gov
- Ron Ries, FRA Office Safety, (202) 493-6288, Ron.Ries@dot.gov

- Jim Smailes, FRA Office of Railroad Development, (202) 493-6360, James.Smailes@dot.gov
- Terrell Williams, FTA Office of Mobility Innovation, (202) 366-0232, Terrell.Williams@dot.gov

Intelligent Safety Systems Points-of-Contact

- Kate Hartman, ITS Joint Program Office, (202) 366-2742, Kate.Hartman@dot.gov
- Raymond Resendes, NHTSA Office of Vehicle Safety Research, (202) 366-2619, Ray.Resendes@dot.gov
- Michael Perel, NHTSA Office of Applied Vehicle Safety Research, (202) 366-5675, Michael.Perel@dot.gov
- Robert Ferlis, FHWA Office of Operations Research, Development and Technology, (202) 493-3268, Robert.Ferlis@dot.gov
- Gene McHale, FHWA Office of Research, Development and Technology, (202) 493-3275, Gene.McHale@dot.gov
- Mary McDonough, FHWA Office of Safety, (202) 366-2175, Mary.McDonough@dot.gov
- Tamara Redmon, FHWA Office of Safety, (202) 366-8044, Tamara.Redmon@dot.gov
- George E. Rice, FHWA Office of Safety, (202) 366-9064, Ed.Rice@dot.gov
- Davey Warren, FHWA Office of Safety, (202) 366-4668, Davey.Warren@dot.gov
- Sebastian Renaud, FTA Office of Mobility Innovation, (202) 366-4991, Sebastian.Renaud@dot.gov
- Amy Houser, FMCSA Office of Research and Analysis, (202) 385-2382, Amy.Houser@dot.gov

Architecture Implementation and National ITS Architecture Points-of-Contact

- Lee Simmons, ITS Joint Program Office, (202) 366-8048, Lee.Simmons@dot.gov
- Steve Clinger, FHWA Office of Transportation Management, (202) 366-2168, Stephen.Clinger@dot.gov
- Emiliano Lopez, FHWA Office of Transportation Management, (202) 366-2199, Emiliano.Lopez@dot.gov
- Mac Lister, FHWA Resource Center, (708) 283-3532, Mac.Lister@dot.gov
- Walter Kulyk, FTA Office of Mobility Innovation, (202) 366-4991, Walter.Kulyk@dot.gov
- Michael Baltes, FTA Office of Mobility Innovation, (202) 366-2182, Michael.Baltes@dot.gov

ITS Integration Program Points-of-Contact

- Larry Swartzlander, FHWA Office of Transportation Management, (202) 366-6066, Larry.Swartzlander@dot.gov
- Steve Clinger, FHWA Office of Transportation Management, (202) 366-2168, Stephen.Clinger@dot.gov
- Joseph Peters, ITS Joint Program Office, (202) 366-2202, Joe.Peters@dot.gov

Procurement Practices Points-of-Contact

- William S. Jones, ITS Joint Program Office, (202) 366-2128, William.S.Jones@dot.gov
- Althea Goodine, FTA Office of Mobility Innovation, (202) 366-6678, Althea.Goodine@dot.gov

Program Assessment and Evaluation Points-of-Contact

- Joseph Peters, ITS Joint Program Office, (202) 366-2202, Joe.Peters@dot.gov
- Charlene Wilder, FTA Service Innovation Division, (202) 366-1077, Charlene.Wilder@dot.gov

SAFETEA-LU Points-of-Contact

- Marcia Pincus, ITS Joint Program Office, (202) 366-9230, Marcia.Pincus@dot.gov
- Kathy Krause, FHWA Office of Safety, (202) 366-9265, Kathy.Krause@dot.gov
- Sean Ricketson, FTA Office of Mobility Innovation, (202) 366-6678, Sean.Ricketson@dot.gov

Standards Development and Implementation Points-of-Contact

- Lee Simmons, ITS Joint Program Office, (202) 366-8048, Lee.Simmons@dot.gov
- Tom Stout, FHWA Office of Transportation Management, (202) 366-6054, Tom.Stout@dot.gov
- Mike Onder, FHWA Office of Freight Management and Operations, (202) 366-2639, Michael.Onder@dot.gov
- Ed Fok, FHWA Resource Center, (415) 744-0113, Edward.Fok@dot.gov
- Michael Baltes, FTA Office of Mobility Innovation, (202) 366-2182, Michael.Baltes@dot.gov
- Jim Smailes, FRA Office of Railroad Development, (202) 493-6360, James.Smailes@dot.gov

Systems Engineering Points-of-Contact

- Steve Clinger, FHWA Office of Transportation Management, (202) 366-2168, Stephen.Clinger@dot.gov
- Emiliano Lopez, FHWA Office of Transportation Management, (202) 366-2199, Emiliano.Lopez@dot.gov

- Gene McHale, FHWA Office of Research, Development and Technology, (202) 493-3275, Gene.McHale@dot.gov
- Frank Cechini, FHWA Division Office, (916) 498-5005, Frank.Cechini@dot.gov

Telecommunications Points-of-Contact

- Linda Dodge, ITS Joint Program Office, (202) 366-8034, Linda.Dodge@dot.gov
- Jim Arnold, FHWA Office of Research, Development and Technology, (202) 493-3265, James.A.Arnold@dot.gov
- Paul Olson, FHWA Resource Center, (720) 963-3239, Paul.Olson@dot.gov
- Sebastian Renaud, FTA Office of Mobility Innovation, (202) 366-4991, Sebastian.Renaud@dot.gov
- Laurie Flaherty, NHTSA Office of Emergency Medical Services, (202) 366-2705, Laurie.Flaherty@dot.gov

Training Points-of-Contact

- Ron Giguere, ITS Joint Program Office, (202) 366-2203, Ron.Giguere@dot.gov
- John Halkias, FHWA Office of Transportation Management, (202) 366-2183, John.Halkias@dot.gov
- Emiliano Lopez, FHWA Office of Transportation Management, (202) 366-2199, Emiliano.Lopez@dot.gov
- Tom Stout, FHWA Office of Transportation Management, (202) 366-6054, Tom.Stout@dot.gov
- Ben Gribbon, FHWA Office of Safety, (202) 366-1809, Ben.Gribbon@dot.gov
- Michael Baltes, FTA Office of Mobility Innovation, (202) 366-2182, Michael.Baltes@dot.gov
- Jeff Secrist, FMCSA Office of Research and Analysis, (202) 385-2367, Jeff.Secrist@dot.gov
- Carolyn Temperine, FMCSA Eastern Service Center, (518) 431-4239 x270, Carolyn.Temperine@dot.gov

- Bud Cribbs, National Highway Institute, (703) 235-0526, William.Cribbs@dot.gov
- Renee Haider, National Transit Institute, (732) 932-1700, x223, RHaider@nti.rutgers.edu

FHWA and FTA ITS Specialists

- Eddie Curtis, (404) 562-3920, Eddie.Curtis@dot.gov
- Ed Fok, (415) 744-0113, Edward.Fok@dot.gov
- Daniel Grate, (404) 562-3912, Daniel.Grate@dot.gov
- Greg Jones, (404) 562-3906, GregM.Jones@dot.gov
- Martin Knopp, (708) 283-3514, Martin.Knopp@dot.gov
- Mac Lister, (708) 283-3532, Mac.Lister@dot.gov
- Ray Murphy, (708) 283-3517, Ray.Murphy@dot.gov
- Paul Olson, (720) 963-3239, Paul.Olson@dot.gov
- John Tolle, (708) 283-3541, John.Tolle@dot.gov
- Chung Tran, (720) 963-3233, Chung.Tran@dot.gov
- Ken Wood, (708) 283-4340, Ken.Wood@dot.gov
- Grant Zammit, (404) 562-3575, Grant.Zammit@dot.gov

FTA Regional Offices:

- Region 1: Mary Beth Mello, (617) 494-2444, Mary.Mello@dot.gov
- Region 1: Andrew Motter, (617) 494-3560, Andrew.Motter@dot.gov
- Region 2: Hans Point Du Jour, (212) 668-2170, Hans.PointDuJour@dot.gov
- Region 2: Brian Sterman, (212) 668-2503, Brian.Sterman@dot.gov
- Region 3: Carmine Fiscina, (215) 656-7111, Carmine.P.A.Fiscina@dot.gov
- Region 3: Brian Glen, (202) 219-3562, Brian.Glen@dot.gov
- Region 3: Keith Lynch, (215) 656-7056, Keith.Lynch@dot.gov
- Region 3: Herman Shipman, (215) 656-7100, Herman.Shipman@dot.gov
- Region 4: Doug Frate, (404) 562-3514, Doug.Frate@dot.gov

- Region 4: James Garland, (404) 562-3507, James.Garland@dot.gov
- Region 4: Jamie Pfister, (404) 562-3485, Jamie.Durham@dot.gov
- Region 5: Rhonda Reed, (312) 353-2865, Rhonda.Reed@dot.gov
- Region 5: David Werner, (312) 886-1621, David.Werner@dot.gov
- Region 5: Bill Wheeler, (312) 886-1621, William.Wheeler@dot.gov
- Region 6: Laura Dorman, (817) 978-0550, Laura.Dorman@dot.gov
- Region 6: Gail Lyssy, (817) 978-0564, Gail.Lyssy@dot.gov
- Region 7: William Kalt, (816) 329-3927, William.Kalt@dot.gov
- Region 7: Joan Roseler, (816) 329-3936, Joan.Roseler@dot.gov
- Region 7: Leah Russell, (816) 329-3936, Leah.Russell@dot.gov
- Region 8: David Beckhouse, (720) 963-3306, David.Beckhouse@dot.gov
- Region 8: Tiffany Gallegos, (720) 963-3312, Tiffany.Gallegos@dot.gov
- Region 9: Edward Carranza, (415) 744-3133, Edward.Carranza@dot.gov
- Region 9: Jeff Davis, (415) 744-2734, Jeffrey.Davis@dot.gov
- Region 9: Paul Page, (415) 744-3116, Paul.Page@dot.gov
- Region 9: Raymond Sukys, (415) 744-2732, Raymond.Sukys@dot.gov
- Region 9: Ray Tellis, (213) 202-3956, Ray.Tellis@dot.gov
- Region 10: Annette Clothier, (206) 220-4461, Annette.Clothier@dot.gov
- Region 10: Kenneth Feldman, (206) 220-7954, Kenneth.Feldman@dot.gov

FHWA/FTA Metropolitan Offices:

- Chicago: Vacant
- Los Angeles: Jesse Glazer, (213) 202-3955, Jesse.Glazer@dot.gov
- New York: Art O'Connor, (212) 668-2206, Arthur.O'Connor@dot.gov

- Philadelphia: Carmine Fiscina, (215) 656-7070, Carmine.Fiscina@dot.gov

FHWA Division Office ITS Specialists:

- Alabama: Jeff Dogan, (334) 223-7390, Jeff.Dogan@dot.gov
- Alabama: Linda Guin, (334) 223-7377, Linda.Guin@dot.gov
- Alaska: Al Fletcher, (907) 586-7245, Al.Fletcher@dot.gov
- Arizona: Alan Hansen, (602) 379-6856, Alan.Hansen@dot.gov
- Arkansas: Gary DalPorto, (501) 324-6441, Gary.DalPorto@dot.gov
- Arkansas: Joseph Heflin, (501) 324-6443, Joseph.Heflin@dot.gov
- California: Frank Cechini, (916) 498-5005, Frank.Cechini@dot.gov
- Colorado: Richard Santos, (303) 969-6730 x384, Richard.Santos@dot.gov
- Connecticut: Robert Ramirez, (860) 659-6703 x3004, Robert.Ramirez@dot.gov
- Delaware: Patrick Kennedy, (302) 734-5326, Patrick.Kennedy@dot.gov
- District of Columbia: Frank Mirack, (202) 523-0172, Francis.Mirack@dot.gov
- Florida: Lokesh Hebbani, (850) 942-9650 x3040, Lokesh.Hebbani@dot.gov
- Georgia: Lokesh Hebbani, (850) 942-9650 x3040, Lokesh.Hebbani@dot.gov
- Hawaii: Richelle Takara, (808) 541-2700 x311, Richelle.Takara@dot.gov
- Idaho: Lance Johnson, (208) 334-9180 x124, Lance.Johnson@dot.gov
- Illinois: Dean Mentjes, (217) 492-4631, Dean.Mentjes@dot.gov
- Indiana: Karen Stippich, (317) 226-7122, Karen.Stippich@dot.gov
- Iowa: Andrew Wilson, (515) 233-7313, Andrew.Wilson@dot.gov
- Kansas: Robert Alva, (785) 267-7299 x339, Robert.Alva@dot.gov

- Kentucky: Michael Loyselle, (502) 223-6734, Michael.Loyselle@dot.gov
- Louisiana: John Broemmelsiek, (225) 757-7614, John.Broemmelsiek@dot.gov
- Louisiana: Mary Stringfellow, (225) 757-7610, Mary.Stringfellow@dot.gov
- Maine: John A. Perry, (207) 622-8350 x103, JohnA.Perry@dot.gov
- Maryland: Breck Jeffers, (410) 962-4342 x129, Breck.Jeffers@dot.gov
- Massachusetts: Promise Otaluka, (617) 494-2528, Otaluka.Promise@dot.gov
- Massachusetts: Timothy White, (617) 494-3280, Timothy.A.White@dot.gov
- Michigan: Timothy Crothers, (517) 702-1855, Timothy.Crothers@dot.gov
- Michigan: Morris Hoevel, (517) 702-1834, Morris.Hoevel@dot.gov
- Minnesota: Jim McCarthy, (651) 291-6112, James.McCarthy@dot.gov
- Mississippi: Michael Cribb, (601) 965-4228, Michael.Cribb@dot.gov
- Missouri: Gregory Budd, (573) 638-2616, Gregory.Budd@dot.gov
- Missouri: Edward Stephen, (573) 638-2610, Edward.Stephen@dot.gov
- Montana: Bob Seliskar, (406) 449-5303 x244, Bob.Seliskar@dot.gov
- Nebraska: John J. Perry, (402) 437-5974, John.J.Perry@dot.gov
- Nevada: Russell Robertson, (801) 963-0078 x229, Russell.Robertson@dot.gov
- New Hampshire: Martin Calawa, (603) 228-0417 x140, Martin.Calawa@dot.gov
- New Jersey: Ekaraj Phomsavath, (609) 637-4231, Ekaraj.Phomsavath@dot.gov
- New Mexico: Robert Fijol, (505) 820-2029, Robert.Fijol@dot.gov

- New York: Mike Schauer, (518) 431-4125 x236, Michael.Schauer@dot.gov
- New York: Jerry Zell, (518) 431-4125 x228, JeromeF.Zell@dot.gov
- North Carolina: Joseph Geigle, (919) 856-4354 x123, Joseph.Geigle@dot.gov
- North Dakota: Steven Busek, (701) 250-4348, Steven.Busek@dot.gov
- Ohio: Jim Buckson, (614) 280-6846, James.Buckson@dot.gov
- Ohio: Hilda Velasco, (614) 280-6879, Hilda.Velasco@dot.gov
- Oklahoma: Richard Jurey, (405) 605-6040 x323, Richard.Jurey@dot.gov
- Oregon: Nathaniel Price, (503) 587-4709, Nathaniel.Price@dot.gov
- Pennsylvania: Jim Hunt, (717) 221-4422, Jim.Hunt@dot.gov
- Pennsylvania: Tony Mento, (717) 221-3412, Tony.Mento@dot.gov
- Puerto Rico/Virgin Islands: Eddie Rivera, (787) 766-5600 x232, Eddie.Rivera@dot.gov
- Rhode Island: Ingrid Allen, (401) 528-4551, Ingrid.Allen@dot.gov
- South Carolina: Jim Garling, (803) 253-3883, Jim.Garling@dot.gov
- South Dakota: Bruce Hunt, (605) 224-7326 x3038, Bruce.Hunt@dot.gov
- Tennessee: Brian Fouch, (615) 781-5765, Brian.Fouch@dot.gov
- Tennessee: Donald Gedge, (615) 781-5769, Donald.Gedge@dot.gov
- Texas: Mark Olson, (512) 536-5972, Mark.Olson@dot.gov
- Utah: Russell Robertson, (801) 963-0078 x232, Russell.Robertson@dot.gov
- Vermont: Michael Matzke, (802) 828-4423, Michael.Matzke@dot.gov
- Virginia: Daniel Jenkins, (804) 775-3347, Daniel.Jenkins@dot.gov
- Virginia: Tom Jennings, (804) 775-3357, Tom.Jennings@dot.gov

- Washington: Vacant
- West Virginia: Cathy Satterfield, (304) 347-5329, Cathy.Satterfield@dot.gov
- Wisconsin: John Berg, (608) 829-7515, John.Berg@dot.gov
- Wyoming: Paul Harker, (307) 772-2004, Paul.Harker@dot.gov

A current list of FHWA and FTA ITS Specialists is available online at http://www.ops.fhwa.dot.gov/int_its_deployment/its_specialists/fhwa_office.htm

FMCSA Division Administrators

- Alabama: Judy Van Luchene, (334) 223-7244 x228, Judy.VanLuchene@dot.gov
- Alaska: Tracey Lewellyn, (907) 271-3800, Tracey.Lewellyn@dot.gov
- Arizona: Eric Ice, (602) 379-6851 x301, Eric.Ice@dot.gov
- Arkansas: Fred McGraw, (501) 324-6595, Fred.McGraw@dot.gov
- California: Terry Wolf, (916) 930-2766, Terry.Wolf@dot.gov
- Colorado: Steve Kleszczynski, (720) 963-3149, Steve.Kleszczynski@dot.gov
- Connecticut: Jeffrey Cimahosky, (860) 659-6700 x3015, Jeffrey.Cimahosky@dot.gov
- Delaware: Veron Kirkendoll, (302) 734-4216, Veron.Kirkendoll@dot.gov
- District of Columbia: Taft Kelly, (202) 219-3553, Taft.Kelly@dot.gov
- Florida: James Gregg, (850) 942-9338 x3050, James.Gregg@dot.gov
- Georgia: Thomas Marlow, (404) 562-3622, Thomas.Marlow@dot.gov
- Hawaii: Sharon Cravalho, (808) 541-2790 x3, Sharon.Cravalho@dot.gov
- Idaho: Dolores Macias, (208) 334-1842 x102, Dolores.Macias@dot.gov
- Illinois: Steven Mattioli, (217) 492-4606, Steve.Mattioli@dot.gov

- Indiana: Kenneth Strickland, (317) 226-7523, Kenneth.Strickland@dot.gov
- Iowa: Shirley Mcguire, (515) 233-7400, Shirley.Mcguire@dot.gov
- Kansas: Teri Graham, (785) 267-7299 x315, Teri.Graham@dot.gov
- Kentucky: Pamela Rice, (502) 223-6768, Pamela.Rice@dot.gov
- Louisiana: Sterlin Williams, (225) 757-7640 x229, Sterlin.Williams@dot.gov
- Maine: Steven Piwowarski, (207) 622-8358 x121, Steven.Piwowarski@dot.gov
- Maryland: Barbara Webb-Edwards, (410) 962-4342 x137, Barbara.Webb-Edwards@dot.gov
- Massachusetts: Richard Bates, (617) 494-2065, Richard.Bates@dot.gov
- Michigan: Timothy Cotter, (517) 377-1868, Timothy.Cotter@dot.gov
- Minnesota: Daniel Drexler, (651) 291-6151, Daniel.Drexler@dot.gov
- Mississippi: Matthew Fix, (601) 965-4219 x22, Matthew.Fix@dot.gov
- Missouri: Joseph Boyd, (573) 636-3246, Joseph.Boyd@dot.gov
- Montana: Kristin Phillips, (406) 449-5304 x227, Kristin.Phillips@dot.gov
- Nebraska: Elyse Mueller, (402) 437-5980, Elyse.Mueller@dot.gov
- Nevada: Bill Bensmiller, (775) 687-5335, William.Bensmiller@dot.gov
- New Hampshire: Bruce Holmes, (603) 228-3112 x103, Bruce.Holmes@dot.gov
- New Jersey: Christopher Rotondo, (609) 637-4222 x4224, Chris.Rotondo@dot.gov
- New Mexico: John Francis, (505) 346-2595, John.Francis@dot.gov
- New York: Brian Temperine, (518) 431-4145 x311, Brian.Temperine@dot.gov

- North Carolina: Chris Hartley, (919) 856-4378 x134, Christopher.Hartley@dot.gov
- North Dakota: Jeffrey Jensen, (701) 250-4346, Jeffrey.Jensen@dot.gov
- Ohio: Patrick Muinch, (614) 280-6870, Patrick.Muinch@dot.gov
- Oklahoma: Jerry MacKirk, (405) 605-6047, Jerry.MacKirk@dot.gov
- Oregon: Andrew Eno, (503) 399-5775, Andrew.Eno@dot.gov
- Pennsylvania: Patrick Quigley, (717) 221-3702, Patrick.Quigley@dot.gov
- Puerto Rico: Enid Martinez, (787) 766-5985, Enid.Martinez@dot.gov
- Rhode Island: Jane Bates, (401) 431-6015, Jane.Bates@dot.gov
- South Carolina: Curtis Thomas, (803) 765-5414 x5116, Curtis.Thomas@dot.gov
- South Dakota: Mark Gilmore, (605) 224-8202, Mark.Gilmore@dot.gov
- Tennessee: Richard Gobbell, (615) 781-5781, Richard.Gobbell@dot.gov
- Texas: Joanne Cisneros, (512) 536-5981, Joanne.Cisneros@dot.gov
- Utah: Robert Kelleher, (801) 963-0098 x202, Robert.Kelleher@dot.gov
- Vermont: Ture Nelson, (802) 828-4480, Ture.Nelson@dot.gov
- Virginia: Craig Feister, (804) 775-3325, Craig.Feister@dot.gov
- Washington: Wendy Cunningham, (360) 753-9875 x208, Wendy.Cunningham@dot.gov
- West Virginia: Michael Myers, (304) 347-5935, Michael.Myers@dot.gov
- Wisconsin: Mark Oesterle, (608) 829-7532, Mark.Oesterle@dot.gov
- Wyoming: John Mulcare, (307) 772-2305, John.Mulcare@dot.gov

ITS Initiatives

Clarus Points-of-Contact

- Paul Pisano, FHWA Office of Transportation Operations, (202) 366-1301, Paul.Pisano@dot.gov
- Raj Ghaman, FHWA Office of Research, Development and Technology, (202) 493-3270, Raj.Ghaman@dot.gov

Clarus Website

The Nationwide Surface Transportation Weather Observing and Forecasting System Initiative, also called "Clarus," which is Latin for "clear," aims to deploy an integrated road weather observational network and data management system that is national in scope. The initiative will build upon the road weather information systems (RWIS) that many state departments of transportation have been deploying for years, primarily in support of winter maintenance activities. This website presents the goals, background, approach, milestones, and points-of-contact for the initiative.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/clarus/index.htm.

Clarus Initiative Website

This site is a compilation of resources related to the Nationwide Surface Transportation Weather Observing and Forecasting System Initiative, also called "Clarus." The website contains a Clarus flier, frequently asked questions (with answers), briefings presented at past meetings of the Clarus Initiative Coordinating Committee (ICC), the Clarus Concept of Operations, project design documents, information on the Clarus regional demonstrations, contacts, and related links.

Cost: Free

To Access This Resource: Access the website address http://www.clarusinitiative.org.

Clarus: A Clear Solution for Road Weather Information (2007)

This flier describes the Clarus system as the 21st century's answer to the need for timely, high-quality road weather information. The flier describes Clarus' benefits for transportation managers, weather information providers, and the traveling public. The flier also includes perspectives of state department of transportation personnel who will benefit from the system's ability to standardize road weather data across multiple jurisdictions and multiple regions.

Cost: Free

To Access This Resource: To order a hardcopy, contact Paul Pisano, FHWA Office of Transportation Operations, (202) 366-1301, Paul.Pisano@dot.gov.

Clarus Concept of Operations (FHWA-JPO-05-072) (2005)

This provides a high-level definition of how the Nationwide Surface Transportation Weather Observing and Forecasting System (Clarus) works. The document identifies the needs of stakeholders, who have various requirements for the types of content, timeliness, level of detail, extent of value-added processing, and reliability of surface transportation weather data. The document also outlines how the Clarus system can be structured to meet these needs. The document concludes with several scenarios showing how various stakeholders will be served by the system.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14158_files/14158.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14158.htm, EDL# 14158

Clarus—America's 21st Century Surface Transportation Weather Observing and Forecasting System (FHWA-HOP-04-037) (2004)

This flier describes the goals, benefits, and development milestones of the Nationwide Surface Transportation Weather Observing and Forecasting System Initiative, also called the "Clarus" Initiative. The flier also briefly describes, and invites readers to join, the Clarus Initiative Coordinating Committee (ICC), which provides expertise and oversight to the Clarus initiative.

Cost: Free

To Access This Resource: Access the website address http://clarusinitiative.org/documents/Clarus_2_Pager.pdf. To order a hardcopy, contact Paul Pisano, FHWA Office of Transportation Operations, (202) 366-1301, Paul.Pisano@dot.gov.

Cooperative Intersection Collision Avoidance Systems Points-of-Contact

- Mike Schagrin, ITS Joint Program Office, (202) 366-2180, Mike.Schagrin@dot.gov
- Gene McHale, FHWA Office of Research, Development and Technology, (202) 493-3275, Gene.McHale@dot.gov
- Larry Brown, FHWA Office of Safety, (202) 366-2214, Larry.J.Brown@dot.gov
- John Harding, NHTSA Intelligent Vehicle Research Division, (202) 366-5665, John.Harding@dot.gov

Cooperative Intersection Collision Avoidance Systems Website

The Cooperative Intersection Collision Avoidance Systems Initiative aims to reduce crossing path crashes through the use of cooperative (infrastructure- and vehicle-based) collision avoidance systems. This website presents the goal, background, approach, milestones, and points-of-contact for the initiative.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/cicas/index.htm.

Cooperative Intersection Collision Avoidance Systems: A Major ITS Initiative (FHWA-JPO-05-020) (2005)

This one-page brochure provides an overview of the Cooperative Intersection Collision Avoidance Systems (CICAS) Initiative. It describes the CICAS Initiative's goals and steps that will be taken to achieve these goals.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/cicas/docs/cicas_factsheet.pdf.

Electronic Freight Management Points-of-Contact

- Kate Hartman, ITS Joint Program Office, (202) 366-2742, Kate.Hartman@dot.gov
- Mike Onder, FHWA Office of Freight Management and Operations, (202) 366-2639, Michael.Onder@dot.gov

Electronic Freight Management Website

The Electronic Freight Management Initiative aims to improve efficiency and productivity of the transportation system through the implementation of a common electronic freight framework. If successfully implemented nationwide, this new electronic manifest could have the effect of entirely eliminating paper from the goods tracking system. The initiative will test the concept first at the truck-air freight interface, and then move on to other modal interfaces, such as truck-truck, truck-rail, rail-sea, and truck-sea. This website presents the goal, background, approach, milestones, and points-of-contact for the initiative.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/efm/index.htm.

Emergency Transportation Operations Points-of-Contact

- Linda Dodge, ITS Joint Program Office, (202) 366-8034, Linda.Dodge@dot.gov
- Kimberly Vasconez, FHWA Office of Transportation Operations, (202) 366-1548, Kimberly.Vasconez@dot.gov

Emergency Transportation Operations Website

The Emergency Transportation Operations Initiative aims to foster safer and more effective planned and no-notice evauations. ITS technologies being examined for use in this initiative include real-time traveler information systems, monitoring of evacuation routes, and other decision-support tools that can be used to actively manage and expedite the safe progress of an evacuation. This website presents the goal, background, approach, milestones, and points-of-contact for the initiative.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/eto/index.htm.

Integration of Emergency and Weather Elements into Transportation Management Centers (FHWA-HOP-06-090) (2006)

This report documents the findings of a study that examined how weather and emergency information is being integrated into operations at 38 transportation management centers (TMCs) across the country. The study was sponsored jointly by the FHWA Road Weather Management Program and the FHWA Emergency Transportation Operations Program. The report describes the state-of-the-practice in integration of weather and emergency information into TMC operations. The report also identifies best practices, discusses the benefits and challenges of integration, and offers recommendations on how to get started and how to enhance current weather/emergency integration at one's own TMC.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/weather/resources/publications/tcmintegration/finalrpttmc22806.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/weather/resources/publications/tcmintegration/index.htm

Effects of Catastrophic Events on Transportation Systems Management and Operations (2002-2004)

This series of reports explores the effects of catastrophic events on transportation systems management and operations. Six case studies examine how transportation systems operators responded to challenges created by recent catastrophic events in the U.S.: the Northridge earthquake in the Los Angeles, California area in 1994, a rail tunnel fire involving hazardous materials in Baltimore in 2001, the terrorist attacks on the World Trade Center and Pentagon on September 11, 2001, and the blackout in New York City and the Great Lakes Region in 2003. An Executive Summary report on the 2003 blackout is available, as well as a cross-cutting study that documents the lessons learned from the events prior to 2002 and a comparative analysis that document lessons learned from all these events.

Cost: Free

To Access This Resource: Access the following website addresses:

- Northridge Earthquake, January 17, 1994 (2002)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13775_files/13775.pdf
- Northridge Earthquake, January 17, 1994—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13775.html, EDL# 13775

- Howard Street Tunnel Fire, Baltimore City, Maryland July 18, 2001 (2002)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13754_files/13754.pdf
- Howard Street Tunnel Fire, Baltimore City, Maryland July 18, 2001—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13754.html, EDL# 13754
- September 11, 2001: Pentagon (2002)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14119_files/14119.pdf
- September 11, 2001: Pentagon—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14119.htm, EDL# 14119 or http://www.ops.fhwa.dot.gov/opssecurity/pentagon911.htm
- September 11, 2001: World Trade Center (2002)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14129_files/14129.pdf
- September 11, 2001: World Trade Center—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14129.htm, EDL# 14129 or http://www.ops.fhwa.dot.gov/opssecurity/case_studies/nycprelim.htm
- August 2003 Northeast Blackout: Great Lakes Region (2004)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14021.pdf
- August 2003 Northeast Blackout: Great Lakes Region—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14021.htm, EDL# 14021
- August 2003 Northeast Blackout: New York City (2004)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14023.pdf
- August 2003 Northeast Blackout: New York City—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14023.htm, EDL# 14023

- August 2003 Northeast Blackout: Executive Summary (2004)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14022_files/14022.pdf
- August 2003 Northeast Blackout: Executive Summary—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14022.htm, EDL# 14022
- Cross-Cutting Study (2002)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13780_files/13780.pdf
- Cross-Cutting Study—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13780.html, EDL# 13780
- Comparative Analysis (2004)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14024.pdf
- Comparative Analysis—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14024.htm, EDL# 14024

Disaster Response and Evacuation User Service: An Addendum to the ITS Program Plan (2003)

This document provides a detailed description of the Disaster Response and Evacuation User Service. This document serves as an addendum to the *National ITS Program Plan* in describing the 33rd ITS user service and establishes the need for including disaster response and evacuation (DRE) in the National ITS Architecture. ITS technologies and services described in the document provide enhanced access to the scene for response personnel and resources, better information about the transportation system in the vicinity of the disaster, and more efficient and safer evacuation of the general public. ITS can also be used to prioritize, allocate, and track personnel and resources for more efficient and effective disaster response.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/14064.html, EDL# 14064.

A Guide to Updating Highway Emergency Plans for Terrorist Incidents (2002)

This document provides preliminary planning guidelines for enhanced emergency response to terrorist incidents, especially weapons of mass destruction. The guidelines build on existing emergency management practice, as all states have basic emergency management plans in place (often following a standard Federal model). The document provides specific guidance for updating existing emergency response plans, procedures, roles, and activities, and follows a checklist format.

Cost: Free

To Access This Resource: Access the website address http://security.transportation.org/sites/security/docs/guide-ResponsePlans.pdf.

Security and Emergency Response Survey of State Transportation Agencies: Preliminary Results (2002)

This presentation presents the results of a survey of state transportation agencies taken in the fall of 2001 regarding their security and emergency response capabilities and resources. Sponsored jointly by the Association of American State Highway and Transportation Officials (AASHTO) Task Force on Transportation Security and the Transportation Research Board's Task Force on Critical Infrastructure Protection, among the survey's many conclusions is that while 98 percent of respondents have emergency response plans for natural disasters, only 70 percent have plans for terrorist attacks. The presentation also identifies areas of research and technical assistance in transportation security that are the highest priorities for state departments of transportation.

Cost: Free

To Access This Resource: Access the website address http://security.transportation.org/sites/security/docs/Security_Emergency.pdf.

Integrated Corridor Management Systems Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- Gummada Murthy, FHWA Office of Transportation Management, (202) 366-0640, Gummada.Murthy@dot.gov
- Dale Thompson, FHWA Office of Research, Development and Technology, (202) 493-3420, Dale.Thompson@dot.gov
- Michael Baltes, FTA Office of Mobility Innovation, (202) 366-2182, Michael.Baltes@dot.gov
- Sebastian Renaud, FTA Office of Mobility Innovation, (202) 366-4991, Sebastian.Renaud@dot.gov

Integrated Corridor Management Systems Website

This website provides information on the Integrated Corridor Management (ICM) Systems Initiative. The basic premise of the ICM Initiative is that "the whole is more than the sum of its parts." The goal of the ICM Initiative is to apply that premise to key transportation corridors. By working together - highways and transit, engineering and planning - and by integrating previously isolated systems, corridor throughput can be increased and mobility can be enhanced. The website contains results from completed activities and points-of-contact.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/icms/index.htm.

Integrated Corridor Management Phase 1—Concept Development and Foundational Research (2006)

This series of technical memoranda lays the foundation for the Integrated Corridor Management (ICM) Initiative. A concept of operations for a generic 15-mile corridor serves as an example that can be used by agencies for developing their own concept of operations. An implementation guide identifies and discusses the steps needed to support the

development, implementation, and operation of a ICM system. A definitions document discusses the key attributes included in the ICM Initiative. A criteria document presents concepts that should be considered when delineating corridor boundaries. A white paper discusses the similarities, differences and interrelationships between ICM and regional traffic management. Finally, a technical memorandum identifies current modeling tools that support evaluation of various corridor types and ICM operational strategies and recommends enhancements to those tools in areas where the analysis capabilities are insufficient to meet the Initiative's needs.

Cost: Free

To Access This Resource: Access the following website addresses:

- Task 2.3 Concept of Operations for a Generic Corridor—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14281_files/14281.pdf
- Task 2.3 Concept of Operations for a Generic Corridor—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14281.htm, EDL# 14281
- Task 2.5 ICM Implementation Guidance—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14284_files/14284.pdf
- Task 2.5 ICM Implementation Guidance—HyperText Markup Language format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14284.htm, EDL# 14284
- Task 3.2 Develop Criteria for Delineating a Corridor—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14274_files/14274.pdf
- Task 3.2 Develop Criteria for Delineating a Corridor—HyperText Markup Language format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14274.htm, EDL# 14274
- Task 3.3 Relationship between Corridor Management and Regional Management—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14275_files/14275.pdf

- Task 3.3 Relationship between Corridor Management and Regional Management—HyperText Markup Language format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14275.htm, EDL# 14275
- Task 5.5 Identification of Analysis Needs—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14280_files/14280.pdf
- Task 5.5 Identification of Analysis Needs—HyperText Markup Language format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14280.htm

Integrated Vehicle Based Safety Systems Points-of-Contact

- Steve Sill, ITS Joint Program Office, (202) 366-1603, Steve.Sill@dot.gov
- Jack Ference, NHTSA Office of Applied Vehicle Safety Research, (202) 366-0168, Jack.Ference@dot.gov
- Sebastian Renaud, FTA Office of Mobility Innovation, (202) 366-4991, Sebastian.Renaud@dot.gov

Integrated Vehicle Based Safety Systems Website

The Integrated Vehicle Based Safety Systems (IVBSS) Initiative aims to accelerate deployment of advanced driver safety systems in all new light vehicles and heavy commercial trucks. These safety systems will help drivers avoid the most common types of fatal collisions: rear-end, lane-change, and roadway departure. In this initiative, the U.S. DOT is partnering with members of the automotive industry to develop and field test the next generation of advanced safety systems. This website presents program goals, background, approach, milestones, and points-of-contact, as well as announcements of upcoming events and availability of reports.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/ivbss/index.htm.

Integrated Vehicle Based Safety Systems: A Major ITS Initiative (FHWA-JPO-05-019)(2005)

This one-page brochure provides an overview of the Integrated Vehicle Based Safety Systems (IVBSS) Initiative. It describes the IVBSS Initiative's goals and steps that will be taken to achieve these goals.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/ivbss/docs/ivbss_factsheet.pdf.

Mobility Services for All Americans Points-of-Contact

- Yehuda Gross, ITS Joint Program Office, (202) 366-1988, Yehuda.Gross@dot.gov
- Walter Kulyk, FTA Office of Mobility Innovation, (202) 366-4991, Walter.Kulyk@dot.gov
- Michael Baltes, FTA Office of Mobility Innovation, (202) 366-2182, Michael.Baltes@dot.gov
- Richard Collins, FTA Office of Mobility Innovation, (202) 366-0232, Richard.Collins@dot.gov
- Althea Goodine, FTA Office of Mobility Innovation, (202) 366-6678, Althea.Goodine@dot.gov

Mobility Services for All Americans Website

The Mobility Services for All Americans Initiative aims to improve transportation services for elderly, disabled, and low-income people. A variety of transit ITS technologies will be used to achieve this improvement: geographic information systems (GIS), integrated vehicle dispatching and scheduling, automatic vehicle location (AVL), communications systems, electronic payment systems, advanced traveler information systems (ATIS), and financial tracking and billing. This website presents the goal, background, approach, milestones, and points-of-contact for the initiative.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/msaa/index.htm.

Next Generation 9-1-1 Points-of-Contact

- Linda Dodge, ITS Joint Program Office, (202) 366-8034, Linda.Dodge@dot.gov
- Laurie Flaherty, NHTSA Office of Emergency Medical Services, (202) 366-2705, Laurie.Flaherty@dot.gov

Next Generation 9-1-1 Website

The Next Generation 9-1-1 Initiative aims to enable any communications device used nationwide to connect with the 9-1-1 system. The current 9-1-1 system is built on decades-old technology and cannot receive data from the text, data, image and video devices increasingly common in personal communications and critical in many safety and medical applications. This initiative will involve a fundamental reexamination of the technological approach to 9-1-1 used today. This website presents the goal, background, approach, milestones and points-of-contact for the initiative.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/ng911/index.htm.

Vehicle Infrastructure Integration Points-of-Contact

- William S. Jones, ITS Joint Program Office, (202) 366-2128, William.S.Jones@dot.gov
- Raymond Resendes, NHTSA Office of Vehicle Safety Research, (202) 366-2619, Ray.Resendes@dot.gov
- Bob Rupert, FHWA Office of Transportation Management, (202) 366-2194, Robert.Rupert@dot.gov
- Robert Ferlis, FHWA Office of Operations Research, Development and Technology, (202) 493-3268, Robert.Ferlis@dot.gov
- Sebastian Renaud, FTA Office of Mobility Innovation, (202) 366-4991, Sebastian.Renaud@dot.gov

Vehicle Infrastructure Integration Website

The Vehicle Infrastructure Integration (VII) Initiative aims to achieve a nationwide deployment of a communications infrastructure on roadways and all production vehicles. This integration of vehicle-based and infrastructure-based technologies will enable a number of key safety and operational services. This website presents the goal, background, approach, milestones, and points-of-contact for the initiative.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/vii/index.htm.

System Operations

Analysis Tools Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- John Halkias, FHWA Office of Transportation Management, (202) 366-2183, John.Halkias@dot.gov
- James Colyar, FHWA Office of Research, Development and Technology, (202) 493-3282, James.Colyar@dot.gov
- Raj Ghaman, FHWA Office of Research, Development and Technology, (202) 493-3270, Raj.Ghaman@dot.gov
- Deborah Curtis, FHWA Office of Research, Development and Technology, (202) 493-3267, Deborah.Curtis@dot.gov
- Henry Lieu, FHWA Office of Research, Development and Technology, (202) 493-3273, Henry.Lieu@dot.gov
- John Tolle, FHWA Resource Center, (708) 283-3541, John.Tolle@dot.gov
- Walter Kulyk, FTA Office of Mobility Innovation, (202) 366-4991, Walter.Kulyk@dot.gov

Traffic Analysis Tools Section of the FHWA Office of Operations Website

This website is a compilation of resources related to traffic analysis tools. This website explains what traffic analysis tools are and what challenges these tools were designed to address, and recommends a process for identifying and organizing stakeholders. The website examines how traffic analysis tools can be used to plan for freeway management, traffic incident management, arterial management, work zone management, emergency management, travel demand management, and traveler information systems. The website contains information and updates on the FHWA Next Generation Simulation (NGSIM) Program. NGSIM Program materials include workshop proceedings, a summary of a simulation feasibility study, a summary of responses to a Request for Information (RFI) soliciting information on the program, a 19-slide presentation on the program, and a list of people who attended an information meeting on the program held in January 2001. The website also lists new features available with the latest version of one traffic analysis tool—Traffic Software Integrated System (TSIS) Version 5.0.

Cost: Free

To Access This Resource: Access the website address http://ops.fhwa.dot.gov/trafficanalysistools/index.htm.

ITS Deployment Analysis System (IDAS)

The ITS Deployment Analysis System (IDAS) performs sketch planning analysis of ITS deployments. Planners and other transportation professionals can use IDAS to calculate relative costs and benefits of ITS investments, which are either alternatives to or enhancements of traditional highway and transit infrastructure investments. The current version of IDAS can predict relative costs and benefits of more than 60 types of ITS investments. For more information about IDAS, access the IDAS website at http://idas.camsys.com.

Cost: $795

To Access This Resource: Order IDAS through the McTrans Center for Microcomputers in Transportation at the University of Florida, (352) 392-0378, fax: (352) 392-3224, mctrans@ce.ufl.edu, http://mctrans.ce.ufl.edu.

Traffic Software Integrated System (TSIS) 6.0

The Traffic Software Integrated System (TSIS) is a collection of software tools designed for use by traffic engineers and researchers. Originally built as a simple shell around the microscopic traffic simulation model CORidor SIMulation (CORSIM), TSIS has evolved into a sophisticated toolkit. CORSIM simulates traffic networks by moving individual vehicles across a combined surface street and freeway network. The TSIS package contains everything users need to perform traffic analyses through microscopic simulation: the TSIS application traffic tools, including CORSIM, sample projects, and documentation and support files.

Cost: $1,000 for the complete package; $500 for upgrades from older software packages.

To Access This Resource: Order TSIS through:

- The McTrans Center for Microcomputers in Transportation at the University of Florida, (352) 392-0378, fax: (352) 392-3224, mctrans@ce.ufl.edu, http://mctrans.ce.ufl.edu.
- The PC-TRANS software distribution center at the Kansas University Transportation Center, (785) 864-5655, fax: (785) 864-3199, http://www.kutc.ku.edu/pctrans.

Turbo Architecture Version 4.0

Turbo Architecture is an interactive software tool for regional and project-specific ITS architecture development. By helping the user integrate multiple project architectures with a regional architecture and with each other, Turbo Architecture makes it easier to develop an architecture consistent with the National ITS Architecture. Version 4.0 is compatible with the National ITS Architecture 6.0, has added new interfaces and flows, has updated equipment package descriptions, function requirements and ITS standards information, and is compatible with Microsoft Vista.

Cost: $190 for a single-site license, less per license when multiple-site licenses are purchased; $50 with a trade-in of Turbo Architecture 1.0, 2.0, or 3.0.

To Access This Resource: Order Turbo Architecture through the McTrans Center for Microcomputers in Transportation at the University of Florida, (352) 392-0378, fax: (352) 392-3224, mctrans@ce.ufl.edu, http://mctrans.ce.ufl.edu.

QuickZone Version 2.0

QuickZone enables state and local traffic, construction, operations, and planning staff, and construction contractors, to estimate traveler delay due to work zones. QuickZone was designed to be easy to learn and use, and is suitable for both urban and interurban corridor analysis. QuickZone quantifies corridor delay resulting from capacity decreases in work zones, identifies delay impacts of alternative phasing programs, and supports trade-off analysis between construction costs and delay costs. QuickZone also enables users to consider

alternative phasing schedules, assess the impacts of delay mitigation strategies, and calculate work completion incentives.

Cost: $195

To Access This Resource: Order QuickZone through the McTrans Center for Microcomputers in Transportation at the University of Florida, (352) 392-0378, fax: (352) 392-3224, mctrans@ce.ufl.edu, http://mctrans.ce.ufl.edu.

CORSIM Traffic Simulation Model Training (NHI Course# 137022)

This seminar provides an understanding of CORidor SIMulation (CORSIM), a tool that simulates traffic and traffic control conditions on combined surface street and freeway networks. CORSIM determines how traffic engineering and control strategies impact a prescribed network's operational performance, as expressed in terms of various measures of effectiveness (MOEs). The MOEs, such as speed and delay, provide insights into the effects of the applied strategy on traffic operations and provide the basis for optimizing the applied strategy. Skill Level: Specialized learning. Target Audience: Traffic engineering technical staff from Federal, state, and local agencies. Course Length: Three days.

Cost: $400 per participant. The sponsoring organization is responsible for providing 200 Mhz microcomputers with Windows 95 or Windows NT or better, color monitors, and a hard disk with 50 MB free storage memory.

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137022."

Turbo Architecture Software Training (NHI Course# 137029A)

This course provides training on how to use Turbo Architecture, which is a software tool for regional and project-specific architecture development. Target Audience: Public sector transportation professionals at the state, county, city, and metropolitan planning organization (MPO) levels, as well as private sector consultants, who are developing regional and

project architectures. Skill Level: Specialized training. Course Length: Two days.

Cost: $270. The sponsoring organization is responsible for providing 400 Mhz microcomputers running Windows SE or better, color monitors, and a hard disk with 50 MB free storage memory.

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137029A."

Archived Data Points-of-Contact

- Ralph Gillmann, FHWA Office of Highway Policy Information, (202) 366-5042, Ralph.Gillmann@dot.gov
- Rich Taylor, FHWA Office of Transportation Management, (202) 366-1327, Rich.Taylor@dot.gov
- Larry Brown, FHWA Office of Safety, (202) 366-2214, Larry.J.Brown@dot.gov
- Sean Ricketson, FTA Office of Mobility Innovation, (202) 366-6678, Sean.Ricketson@dot.gov
- Richard Collins, FTA Office of Mobility Innovation, (202) 366-0232, Richard.Collins@dot.gov

Archived Data User Service (ADUS) Website

This website is a compilation of resources related to the Archived Data User Service (ADUS) and archived data management systems (ADMSs). The website contains materials relating to ADUS program activities, ADUS standards, and other ADUS resources, as well as links to online data archives from Arizona, California, Maryland, Minnesota, Texas, Oregon, Virginia, and Washington State. The website is sponsored jointly by the ITS Joint Program Office and the FHWA Office of Highway Policy Information.

Cost: Free

To Access This Resource: Access the website address http://www.fhwa.dot.gov/policy/ohpi/travel/adus.htm.

Archived Data Management System—Data Model

This software tool defines data requirements for an Archived Data Management System (ADMS), as defined in the National ITS Architecture. Definition of these requirements has been performed in order to more clearly define the key actors—i.e., entities that interact with the ADMS—and how these key actors would use the system. The ADMS Data Model includes a class diagram and sequence diagram for each of the three types of data interfaces: management of archive configuration, retrieval of data, and submittal of data. The ADMS Data Model

also links to a white paper on the Rational Unified Process for software development, as well as allows the user to view ADMS system diagrams at two levels of analysis: the Use Case View and the Logical View. Finally, the tool links to a report upon which the information in the ADMS Data Model is based.

Cost: Free

To Access This Resource: Access the website address http://www.trevilon.com/adms_web_model/adms.html.

Archived Data Management Systems: A Cross-Cutting Study (FHWA-JPO-05-044) (2005)

This report is one in a series designed to educate public sector managers about particular ITS technologies. Archived data management systems (ADMSs) use data generated by ITS technologies in transportation planning and operations. This report examines six ADMSs in depth, discussing their design considerations, operational practices, benefits, and costs.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14128/14128.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14128.htm, EDL# 14128.

National Evaluation of the TMC Applications of Archived Data Operational Test—ADMS Virginia (2005)

This report documents the findings of an operational test of the use of archived data to improve decision-making in the operation and management of a transportation network. The test took place in the Northern Virginia and Hampton Roads, Virginia metropolitan areas. The specific archived data

management system (ADMS) evaluated in the test was the ADMS Virginia system developed by the Smart Travel Lab at the University of Virginia. The evaluation found that the ADMS Virginia system works well in the transportation operations and management environment. ADMS Virginia was found to overcome significant data quality challenges, experience a significant growth in usefulness when incorporating event data, but was hampered by the limited data surveillance available about the transportation network.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14250_files/14250.pdf
- HyperText Markup Language (HTML): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14250.htm, EDL# 14250

Standard Practice for Metadata to Support Archived Data Management Systems (E2468-05) (2005)

This guide presents a hierarchical outline of sections and elements to be used in developing metadata to support archived data management systems. This guide establishes the names of metadata elements, as well as compound elements to be used in the metadata. The guide defines these metadata and compound elements and provides sample values for the metadata elements.

Cost: $59

To Access This Resource: Order the Standard Guide for Archiving and Retrieving ITS-Generated Data through the American Society for Testing and Materials (ASTM) International, http://www.astm.org and search the Standards portion of the site for "E2468-05," (610) 832-9585, service@astm.org.

Lessons Learned: Monitoring Highway Congestion and Reliability Using Archived Traffic Detector Data (2004)

This report summarizes lessons learned from the Mobility Monitoring Program regarding the use of archived traffic detector data for monitoring highway performance. The Mobility Monitoring Program started in 2000 with archived freeway detector data from 10 cities. By 2004, the program had grown to nearly 30 cities, covering about 3,000 miles of freeway. The lessons learned are centered in three general areas: analytical methods, data quality, and institutional issues.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/publications/lessons_learned/lessons_learned.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/publications/lessons_learned/index.htm

Traffic Data Quality Measurement: Final Report (2004)

This report presents a framework calculating data quality metrics for different applications. The framework is based on six recommended fundamental measures of traffic data quality: accuracy, completeness, validity, timeliness, coverage and accessibility. The report also presents guidelines and standards for calculating data quality measures, estimates the level-of-effort required of an agency to bring its data up to each standard, and presents recommended guidelines for data sharing agreements. Three case studies show how the traffic data quality metrics were applied to real-world data.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14058.htm, EDL# 14058.

Archived Data User Service (ADUS) ITS Standards Advisory (2003)

This flier is one of a series of documents that provide state and local transportation agencies with background and guidance on development issues and other key activities related to ITS standards. This flier describes the first ITS standard to be published related to the archived data user service (ADUS): ASTM E2259-03 *Standard Guide for Archiving and Retrieving ITS-Generated Data* issued by the American Society for Testing and Materials (ASTM). The flier contains case studies on the use of ASTM E2259-03 in Alaska, Arizona, Maryland, and Virginia; a list of contacts; and a bibliography.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.standards.its.dot.gov/Documents/advisories/adus_advisory.pdf
- HyperText Markup Language (HTML) format: http://www.standards.its.dot.gov/Documents/advisories/ADUS_Advisory.htm

Central Puget Sound Freeway Network Usage and Performance: 2001 Update (2003)

This report presents an overview of the level of traveler usage and travel performance on the principal urban freeways in the central Puget Sound area during 2001. The freeways included in this report are managed by the Washington State Department of Transportation through a coordinated network of traffic monitoring, measurement, information dissemination, and traffic control devices. This report is an example of how archived ITS data can be used to inform traffic operators, policymakers, and the general public.

Cost: Free

To Access This Resource: Access the website address http://depts.washington.edu/trac/bulkdisk/pdf/563.1.pdf.

Standard Guide for Archiving and Retrieving ITS-Generated Data (E2259-03a) (2003)

This guide covers desired approaches to be considered and followed in planning, developing, and operating specific archived data management systems (ADMSs) for the archived and retrieval of ITS-generated data.

Cost: $47

To Access This Resource: Order the *Standard Guide for Archiving and Retrieving ITS-Generated Data* through the American Society for Testing and Materials (ASTM) International, http://www.astm.org and search the Standards portion of the site for "E2259-03a," (610) 832-9585, service@astm.org.

Traffic Data Quality Workshop Proceedings and Action Plan (2003)

This document presents a series of recommended steps to be taken by the U.S. DOT, stakeholder organizations, and state departments of transportation to improve the quality of traffic data. These recommendations were developed following development of a series of three white papers that explore issues and current practices for ensuring data quality, and hosting of two regional workshops in Columbus, Ohio, and Salt Lake City, Utah, on March 11, 2003, and March 13, 2003, respectively. This document provides proceedings of the workshops, as well as identifies 10 priority action items to be taken to improve traffic data quality nationwide.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13839.html, EDL# 13839.

Cross-Cutting Studies and State-of-the-Practice Reviews: Archive and Use of ITS-Generated Data (2002)

This report assesses the state-of-the-practice in generating, archiving, and using data generated by ITS technologies, identifies technological and institutional barriers and opportunities, and provides real-world examples of ITS-generated data being used for planning purposes. The assessments and analysis are centered around four major applications of archived data: operations and maintenance, planning, highway safety, and transit.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13697/13697.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13697.html, EDL# 13697

Archived Data User Service (ADUS) Survey of Emerging Sensor and Information Technologies (2001)

This report provides an overview of emerging technologies that collect, transport, store, and retrieve data generated by ITS systems, as well as emerging technologies for maintaining data quality, performing analysis, and dissemination of results. The report uses a graphical roadmap format to place each of these technologies in the context of a larger process of collecting, archiving, analyzing, and disseminating ITS data and information.

Cost: Free

To Access This Resource: Access the website address http://www.noblis.org/Publications/2002-36.pdf.

Proof of Concept of ITS as an Alternative Data Resource: A Demonstration Project of Florida and New York Data (2001)

This report demonstrates the feasibility of using ITS as an alternative method for collecting traffic data, specifically total traffic volume and total vehicle miles traveled. Traffic data collected from Florida and New York ITS deployments were used to test the feasibility of this concept. The report explores data quality issues, statistical procedures to identify and correct unacceptable data, aggregation, benefits, costs, and institutional challenges.

Cost: Free

To Access This Resource: Access the website address http://www.ornl.gov/~webworks/cppr/y2001/rpt/112441.pdf.

ITS Data Archiving: Five-Year Program Description (2000)

This document explains the need for and elements of a Federal program addressing the archiving and multi-agency use of data generated from ITS applications. This program plan spans from FY00 to FY05.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/12583.pdf, EDL# 12583.

ITS Data Archiving Resources CD-ROM (2000)

This CD-ROM is a compilation of resources related to the Archived Data User Service (ADUS) and archived data management subsystems (ADMS). The CD-ROM contains reports, conference papers, conference presentations, and actual examples of data archives from Phoenix, Arizona; Atlanta, Georgia; San Antonio, Texas; Seattle, Washington; and the Oak Ridge National Laboratory. Featured reports include *ITS Data Archiving: Case Study Analyses of San Antonio TransGuide Data* and *Proceedings from the Texas ITS Data Uses and Archiving Workshop.*

Cost: Free

To Access This Resource: To order a copy of the CD-ROM, contact Shawn Turner, Texas Transportation Institute, (979) 845-8829, Shawn-Turner@tamu.edu.

Strategic Plan for the Development of ADUS Standards (2000)

This document outlines the standards needed for Archived Data User Service (ADUS) implementation and the critical paths that must be taken in order for those standards to be developed. The initial focus will be on ADUS standards that support highway performance monitoring.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/12603.pdf, EDL# 12603.

What Have We Learned about Intelligent Transportation Systems? Chapter 7: What Have We Learned about Cross-Cutting Technical and Programmatic Issues? (2000)

This document is an excerpt from a compendium report that looks back on the 10 years of the National ITS Program to examine which ITS technology applications have been successful, which have not been successful, and what are the underlying factors that determine success versus failure. This section examines cross-cutting technologies for surveillance and communications, as well as programmatic issues, such as planning and analysis tools, archived data, standards, and architecture.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13323.pdf, EDL# 13323.

ITS Data Archiving: Case Study Analyses of San Antonio TransGuide Data (FHWA-PL-99-024) (1999)

This report documents the state-of-the-practice in retaining and using archived ITS data and provides lessons learned from a case study of archived data from the Texas Department of Transportation's TransGuide center in San Antonio. The state-of-the-practice review indicates that many transportation operations centers across the U.S. are becoming more interested in archiving ITS data. The case study focuses on issues of data aggregation and data quality.

Cost: Free

To Access This Resource: Access the website address http://tti.tamu.edu/documents/FHWA-PL-99-024.pdf.

Archived Data User Service (ADUS): An Addendum to the ITS Program Plan, Final Version 3.0 (1998)

This document provides a detailed description of the archived data user service (ADUS). This document serves as an addendum to the *National ITS Program Plan* in describing the 31st ITS user service and establishes the need for including data archiving in the National ITS Architecture.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/5224.htm, EDL# 5224. This document is also included as an appendix in the *National Intelligent Transportation Systems Program Plan: Five-Year Horizon*.

Arterial Operations and Traffic Control Systems Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- John Halkias, FHWA Office of Transportation Management, (202) 366-2183, John.Halkias@dot.gov
- Eddie Curtis, FHWA Office of Transportation Management, (404) 562-3920, Eddie.Curtis@dot.gov
- Neil Spiller, FHWA Office of Transportation Management, (202) 366-2188, Neil.Spiller@dot.gov
- Raj Ghaman, FHWA Office of Research, Development and Technology, (202) 493-3270, Raj.Ghaman@dot.gov
- Dave Gibson, FHWA Office of Research, Development and Technology, (202) 493-3271, David.Gibson@dot.gov
- Dale Thompson, FHWA Office of Research, Development and Technology, (202) 493-3420, Dale.Thompson@dot.gov
- Ed Fok, FHWA Resource Center, (415) 744-0113, Edward.Fok@dot.gov
- Walter Kulyk, FTA Office of Mobility Innovation, (202) 366-4991, Walter.Kulyk@dot.gov

Arterial Management Section of the FHWA Office of Operations Website

This website is a compilation of resources related to arterial systems management and operations. The website reports on recent events plus contains a list of contacts and related links, including the Arterial Operations Toolbox. The Arterial Operations Toolbox website links to training courses, magazine articles, and reference documents related to arterial operations.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/arterial_mgmt/index.htm.

Access Management Section of the FHWA Office of Operations Website

This website is a compilation of resources related to access management, which is the proactive management of vehicular access points to land parcels. Access management techniques include access spacing, driveway spacing, safe turning lanes, median treatments, and right-of-way management. The website discusses what access management is, how it is achieved, what FHWA's role is, and what FHWA's measures of success are. The website lists technical assistance resources, such as publications, videos and points-of-contact.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/access_mgmt/index.htm.

Transportation Research Board Committee ADA70 on Access Management Website

This site is the official website of the Transportation Research Board (TRB) Committee ADA70 on Access Management. The site discusses what access management is, why it is important, what the elements of a comprehensive access management program are. The website illustrates the 10 principles of access management in an interactive animated video. The website also contains a list of committee members, a schedule of upcoming access management-related events, and links to FHWA resources, state department of transportation access management websites, software developed under TRB sponsorship that calculates the impacts of access management techniques, and numerous publications. Documents accessible through Committee ADA70's website include TRB's *Access Management Manual*, access management guidelines and handbooks from states and local jurisdictions, state and local access management codes and regulations, proceedings of past conferences, and NCHRP reports.

Cost: Free

To Access This Resource: Access the website address http://www.accessmanagement.info.

Traffic Software Integrated System (TSIS) 6.0

The Traffic Software Integrated System (TSIS) is a collection of software tools designed for use by traffic engineers and researchers. Originally built as a simple shell around the microscopic traffic simulation model CORidor SIMulation (CORSIM), TSIS has evolved into a sophisticated toolkit. CORSIM simulates traffic networks by moving individual vehicles across a combined surface street and freeway network. The TSIS package contains everything users need to perform traffic analyses through microscopic simulation: the TSIS application traffic tools, including CORSIM, sample projects, and documentation and support files.

Cost: $1,000 for the complete package; $500 for upgrades from older software packages.

To Access This Resource: Order TSIS through:

- The McTrans Center for Microcomputers in Transportation at the University of Florida, (352) 392-0378, fax: (352) 392-3224, mctrans@ce.ufl.edu, http://mctrans.ce.ufl.edu.
- The PC-TRANS software distribution center at the Kansas University Transportation Center, (785) 864-5655, fax: (785) 864-3199, http://www.kutc.ku.edu/pctrans.

Intelligent Transportation Systems for Traffic Signal Control: Deployment Benefits and Lessons Learned (FHWA-JPO-07-004) (2007)

This leaflet is one in a series that shows how ITS technologies can reduce congestion, in support of the U.S. Department of Transportation's Congestion Initiative. This leaflet summarizes the benefits, costs, extent of deployment and lessons learned about the use of ITS for traffic signal control. The online version contains a full list of sources, so that all information in the leaflet's brief four pages is backed up with supporting documentation.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.its.dot.gov/jpodocs/repts_te/14321_files/14321.pdf
- HyperText Markup Language (HTML) format: http://www.its.dot.gov/jpodocs/repts_te/14321.htm, EDL# 14321

Coordinated Freeway and Arterial Operations Handbook (FHWA-HRT-06-095) (2006)

This handbook provides direction, guidance and recommendations on how to coordinate freeway and arterial operations in a proactive and comprehensive manner. The handbook defines coordinated freeway and arterial operations (CFA) and discusses how to apply CFA to four areas of high pay-off: traffic incident management, work zone management, planned special events management, and day-to-day (or recurring) operations. The handbook concludes with a discussion of new technologies such as ITS and an example of CFA in an incident management program in Northern Virginia. Development of this handbook was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the website address http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/06095.pdf.

Transit Signal Priority: A Planning and Implementation Handbook (2005)

This handbook lays out the steps one should follow to implement a successful transit signal priority (TSP) project, including planning, design, implementation, operations, maintenance, evaluation, verification, and validation. The handbook uses eight in-depth case studies to communicate

lessons learned in system architecture, equipment, software, communications, simulation, optimization, institutional issues, and public reaction to TSP. The case studies are presented in their entirety in the handbook's appendices, along with a list of resources and glossary of terms. This handbook was developed by the Intelligent Transportation Society of America (ITS America) with funding from the U.S. DOT.

Cost: Free

To Access This Resource: Access the website address http://www.itsa.org/itsa/files/pdf/TSPHandbook2005.pdf. To order a hardcopy, contact Regina Parker, ITS America, (202) 721-4238, RParker@itsa.org.

Access Management DVD/CD Libraries (2004)

This DVD/CD-ROM set contains over 500 documents and videos related to access management, including conference proceedings, conference presentations, and NCHRP reports. The libraries have searchable indices in several formats, including Adobe Acrobat and MS Excel.

Cost: Free for the first copy; $4.20 plus shipping and handling for additional copies.

To Access This Resource:

- First free copy: Contact Neil Spiller of the FHWA Office of Transportation Management, (202) 366-2188, Neil.Spiller@dot.gov.
- Additional copies: Contact Teach America at learn@teachamerica.com.

Adaptive Control Software (FHWA-HRTS-04-037) (2004)

This brochure briefly presents the findings of a 10-year research effort at FHWA's Turner-Fairbank Highway Research Center (TFHRC) to develop several algorithms for adaptive traffic signal control. Project participants developed five initial prototype algorithms to address different geometric and traffic conditions. Three of the five were selected for field testing and further refinement. The brochure describes each of these three

control strategies and the situations under which each is most appropriate for use. The brochure also describes the benefits, such as reduced travel time and reduced delay, experienced in field tests of the algorithms, as well as the estimated per-intersection cost of installation.

Cost: Free

To Access This Resource: Access the website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/publications/adaptivecontrol/acs_l2.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/publications/adaptivecontrol/index.htm

An Overview of Transit Signal Priority (2004)

First published in 2002 and updated in 2004, this 27-page brochure provides an overview of transit signal priority (TSP). The brochure covers what TSP is, why it is important, what the costs and benefits are, how to plan for TSP deployment, and what issues to consider in the design, implementation, operations and maintenance of TSP. This brochure was developed by the Intelligent Transportation Society of America with funding from the U.S. DOT.

Cost: Free

To Access This Resource: Access the website address http://www.itsa.org/itsa/files/pdf/FinalTSPOverviewUpdate.pdf. To order a hardcopy, contact Regina Parker, ITS America, (202) 721-4238, RParker@itsa.org.

Telecommunications Handbook for Transportation Professionals: The Basics of Telecommunications (FHWA-HOP-04-034) (2004)

This handbook provides with basic descriptions of terms and technologies that are commonly used (or considered) in the deployment of freeway management and traffic signal systems, including both voice and data communications. The

handbook covers telecommunications fundamentals, the relationship between telecommunications and the National ITS Architecture, a step-by-step process for developing a telecommunications system, field devices, maintenance, warrantees, and construction. The handbook also examines the Internet and cutting-edge technologies. Two case studies from Utah and Texas are provided.

Cost: Free

To Access This Resource: Access the website addresses:

- Adobe Acrobat format: http://ops.fhwa.dot.gov/publications/telecomm_handbook/telecomm_handbook.pdf
- HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/publications/telecomm_handbook/index.htm

Access Management Manual (2003)

This manual provides technical information on access management techniques, along with information on how access management programs can be effectively developed and administered. The manual deals with the subject of access management in a comprehensive manner in an effort to integrate planning and engineering practices and the transportation and land use decisions that can improve access or make it worse. The manual draws upon the knowledge of experienced access management professionals to offer practical advice and lessons learned.

Cost: $80 for the harcopy version; $60 for the CD-ROM version; $100 for the hardcopy and CD-ROM set.

To Access This Resource: Contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "AMM03," (202) 334-3213, fax: (202) 334-2519.

Benefits of Access Management (FHWA-OP-03-066) (2003)

This brochure serves as a guide to the major benefits of access management, namely improved movement of through traffic, reduced crashes, and fewer vehicle conflicts. The

brochure profiles the three most commonly used access management techniques: access spacing, turning lanes, and median treatments. The brochure notes that many businesses experience an increase in sales after implementation of access management techniques near their properties.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/access_mgmt/docs/benefits_am_trifold.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/access_mgmt/docs/benefits_am_trifold.htm

Unclogging Arterials: Prescriptions for Relieving Congestion and Improving Safety on Major Local Roadways (FHWA-OP-03-069) (2003)

This guidebook presents 15 strategies for increasing mobility and safety of travel on arterial streets. The guidebook also contains 10 case studies of local agencies that have employed these strategies, an action checklist and appendices showing example documents, such as memoranda of understanding and city legislation, that readers can use as models in their own areas.

Cost: Free

To Access This Resource: Contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@its.dot.gov.

Cross-Jurisdictional Signal Coordination: Case Studies Final Report (FHWA-OP-02-034) (2002)

This report identifies five geographical areas that maintain cross-jurisdictional signal coordination. Each area has identified an approach that works well in its particular situation and demonstrates that cross-jurisdictional signal coordination is an achievable goal for any size community, regardless of the number of jurisdictions involved.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13613.html, EDL# 13613. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Successful Traffic Signal System Procurement Techniques: A Summary of Effective Processes (FHWA-OP-02-032) (2002)

Traffic signal systems are benefiting from the micro-computing and technology explosion of the past several decades. These new systems are more adaptable and more reliable than traffic signal systems of the past. However, these new technologies, and the capabilities enabled by them, introduce difficulties in procurement. Agencies are finding that these systems, equipment, and software do not meet their expectations for functionality and maintainability. In addition, it has become more difficult to manage the budget and schedule of a traffic signal system installation project. This document outlines a suggested procurement methodology that can support agencies in defining their signal systems needs and communicating those needs in a procurement.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13611.html, EDL# 13611. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Cross-Jurisdictional Signal Coordination in Phoenix and Seattle: Lessons Learned from the Metropolitan Model Deployment Initiative (FHWA-OP-01-035) (2001)

This is one in a series that documents lessons learned from the Metropolitan Model Deployment Initiative (MMDI). This report documents the benefits of integration between traffic signal controls across jurisdictional boundaries.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses: .

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13222_files/13222.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13222.html, EDL# 13222.

San Antonio's Medical Center Corridor: Lessons Learned from the Metropolitan Model Deployment Initiative (FHWA-OP-01-034) (2001)

This is one in a series that documents lessons learned from the Metropolitan Model Deployment Initiative (MMDI). This report documents the benefits of integration of traffic management on both freeways and arterial streets.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13220.pdf, EDL# 13220. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

What Have We Learned about Intelligent Transportation Systems? Chapter 3: Arterial Management (2000)

This document is an excerpt from a compendium report that looks back on the 10 years of the National ITS Program to examine which ITS technology applications have been successful, which have not been successful, and what are the underlying factors that determine success versus failure. This section examines arterial management systems, such as adaptive traffic signal control, traveler information about conditions on arterial streets, automated red light running enforcement, and traffic signal preemption for emergency vehicles.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13319.pdf, EDL# 13319.

Enhancing Public Safety, Saving Lives—Emergency Vehicle Preemption (FHWA-JPO-99-002) (1999)

This brochure, one in a series designed to encourage decision-makers to invest their own budget resources in ITS, examines the public safety benefits of preemption of traffic signals for emergency vehicles such as fire trucks. The brochure quotes chiefs of transportation and fire departments at several cities around the country about the benefits they have experienced from using these systems.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/6871.pdf, EDL# 6871. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Manual of Traffic Signal Design, Second Edition (1991)

This manual covers the fundamentals of traffic signal design. The manual provides wiring and cabling specifications, shows readers how to prepare contractual documents, and discusses how to supervise construction of these systems. This second edition reflects changes in the warrants in the *Manual on Uniform Traffic Control Devices (MUTCD)*, National Electronic Manufacturers Association (NEMA) standards, and the *FHWA Federal Procedures Manual*.

Cost: $75 for members of the Institute for Transportation Engineers (ITE); $95 for non-members.

To Access This Resource: Contact the ITE Bookstore, http://www.ite.org/bookstore/index.asp, (202) 289-0222 x130, fax: (202) 289-7722, publications@ite.org.

Safe Access Is Good for Business (2006)

This 12-minute video provides an overview of access management. The intended audience is business and property owners who may be unfamiliar with access management or suspicious that access management will negatively affect their business. The video discusses what access management is and the problems it is intended to solve. The video shows how access management can actually improve business by alleviating traffic congestion, which many shoppers want to avoid. The video concludes with an explanation of the land use and transportation planning process and how business owners can get involved in local decision-making. A 16-page primer accompanies the video, providing additional detail, statistics and references.

Cost: Free

To Access This Resource: Access the following website addresses:

- Video: http://www.teachamerica.com/amv
- Primer: http://www.accessmanagement.info/AM2006/PrimerWeb.pdf

CORSIM Traffic Simulation Model Training (NHI Course# 137022)

This seminar provides an understanding of CORidor SIMulation (CORSIM), a tool that simulates traffic and traffic control conditions on combined surface street and freeway networks. CORSIM determines how traffic engineering and control strategies impact a prescribed network's operational performance, as expressed in terms of various measures of effectiveness (MOEs). The MOEs, such as speed and delay, provide insights into the effects of the applied strategy on traffic operations and provide the basis for optimizing the applied strategy. Skill Level: Specialized learning. Target Audience: Traffic engineering technical staff from Federal, state,

and local agencies. Course Length: Three days.

Cost: $400 per participant. The sponsoring organization is responsible for providing 200 Mhz microcomputers with Windows 95 or Windows NT or better, color monitors, and a hard disk with 50 MB free storage memory.

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137022."

Computerized Traffic Signal Systems (NHI Course# 133010)

This course presents current technology and control options available for computerized traffic control, including microcomputer applications. It covers the technical issues of a computerized traffic control system and steps necessary to develop and manage a system. These steps begin with problem identification; followed by a feasibility study, control system design, installation, maintenance, and finally operation and system evaluation. The course will not assume any prior knowledge of computers. Skill Level: Specialized learning. Target Audience: Traffic engineering personnel from Federal, state, and local agencies involved in the technical aspects of traffic engineering. Course Length: Three days.

Cost: $400 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133010."

Traffic Signal Design and Operation (NHI Course# 133028)

This course addresses the application of the *Manual on Uniform Traffic Control Devices (MUTCD)* to intersection displays, as well as signal timing, computerized traffic signal systems, control strategies, integrated systems, traffic control simulation, and optimization software. Upon completion of this course, participants will gain an understanding of the congestion and delays that exist on streets and roadways, and how these delays can be managed through effective traffic signal timing and optimization. The course is divided into three

parts: Traffic Signal Design, Traffic Signal Systems, and Traffic Software. Skill Level: Specialized learning. Target Audience: Federal, state, and local traffic engineers involved in the design, review, and inspection of traffic control projects. Course Length: Two days.

Cost: $270 per participant. The course fee includes a copy of the *Manual of Traffic Signal Design, Second Edition.*

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133028."

Access Management, Location and Design (NHI# 133078)

This course presents the fundamentals of access management (AM) along highways and arterial streets. Topics covered in this course include the benefits of AM, AM practices and policies from various states and jurisdictions, warrants, design guidelines for the application of AM, retrofit programs, and evaluation of AM's impact on safety and operations. Target Audience: Engineers and planners at the Federal, state and local levels who expect to be involved in decisions about access to new or existing sites. Course Length: Three days.

Cost: $400 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133078."

Commercial Vehicle Operations Points-of-Contact

- Kate Hartman, ITS Joint Program Office, (202) 366-2742, Kate.Hartman@dot.gov
- Chris Flannigan, FMCSA Office of Research and Analysis, (202) 385-2384, Chris.Flannigan@dot.gov
- Amy Houser, FMCSA Office of Research and Analysis, (202) 385-2382, Amy.Houser@dot.gov
- Quon Kwan, FMCSA Office of Research and Analysis, (202) 385-2389, Quon.Kwan@dot.gov
- Julie Lane, FHWA Office of Research and Analysis, (202) 385-2391, Julie.Lane@dot.gov
- Jeff Loftus, FMCSA Office of Research and Analysis, (202) 385-2363, Jeff.Loftus@dot.gov
- Jeff Secrist, FMCSA Office of Research and Analysis, (202) 385-2367, Jeff.Secrist@dot.gov

FMCSA's Facts, Research & Technology Website

This website contains statistics on various aspects of commercial vehicle operations (CVO) as well as resources related to the use of new technologies in CVO. The website describes the mission of the FMCSA Office of Research and Analysis, which sponsors the website. The website lists numerous documents about on-board safety and on-board security systems for commercial vehicles, including product guides and factors that should be considered in the decision to purchase these systems.

Cost: Free

To Access This Resource: Access the website address https://www.fmcsa.dot.gov/facts-research/facts-research.htm.

FMCSA's Motor Carrier Security Website

This site is a compilation of resources developed to help law enforcement and commercial vehicle owners and operators to maintain motor carrier security, especially the secure shipment of hazardous materials (hazmat). Reference documents

available on the website include: a guide to developing a hazmat security plan, list of steps that should be taken by hazmat workers and companies in light of the current threat advisory level as determined by the Department of Homeland Security (DHS), anti-terrorism and anti-hijacking tips for hazmat drivers and companies, a flier issued by the Federal Bureau of Investigation (FBI) "If you receive a suspicious letter or package, what you should do," a checklist that law enforcement can use to perform a security assessment of a commercial vehicle operator, and a form to request free FMCSA training in motor carrier security risk assessment. The site also contains related links, including the National Hazardous Material Route Registry (NHMRR).

Cost: Free

To Access This Resource: Access the website address http://www.fmcsa.dot.gov/security/index.asp.

http://

Product Guides for Safety and Security Systems Technology

This website contains product guides for several new technologies that can be used by commercial vehicles to improve their safety and security. Each product guide discusses what the technologies are, how they can be used in a commercial vehicle operating environment, and their benefits and costs. Each product guide also lists contact information of vendors that sell the particular technology. A companion website https://www.fmcsa.dot.gov/facts-research/systems-technology/decision-factors/decisionfactors.htm lists factors that should be considered when deciding to make, use or buy technologies in the commercial motor vehicle industry.

Cost: Free

To Access This Resource: Access the website address https://www.fmcsa.dot.gov/facts-research/systems-technology/product-guides/productguides.htm,

Concept of Operations and Voluntary Operational Requirements On-board Commercial Motor Vehicles (2005)

This series of reports describe the concept of operations and voluntary requirements for four types of technologies for large trucks greater than 10,000 pounds gross vehicle weight rating (GVWR). The types of technologies are Forward Collision Warning Systems (FCWS), Automated Cruise Control/Collision Warning Systems (ACC/CWS), Lane Departure Warning Systems (LDWS) and Vehicular Stability Systems (VSS). Concepts of operations provide information about how each user interacts with these safety systems and their operational conditions. Voluntary requirements describe features and functions used to define the safety systems and their operational functionality.

Cost: Free

To Access This Resource: Access the following website addresses:

- Forward Collision Warning Systems (FCWS) and Automated Cruise Control/Collision Warning Systems (ACC/CWS) (FMCSA-MCRR-05-007)—Adobe Acrobat format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/forward-collision-warning-systems.pdf
- Forward Collision Warning Systems (FCWS) and Automated Cruise Control/Collision Warning Systems (ACC/CWS)—HyperText Markup Language (HTML) format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/forward-collision-warning-systems.htm
- Lane Departure Warning Systems (LDWS) (FMCSA-MCRR-05-005)—Adobe Acrobat format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/lane-departure-warning-systems.pdf
- Lane Departure Warning Systems (LDWS)—HyperText Markup Language (HTML) format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/lane-departure-warning-systems.htm
- Vehicular Stability Systems (VSS) (FMCSA-MCRR-05-006)—Adobe Acrobat format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/vehicular-stability-systems.pdf

- Vehicular Stability Systems (VSS)—HyperText Markup Language (HTML) format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/vehicular-stability-systems.htm

Development of On-Board Safety Systems (2005)

This brochure gives an overview of several on-board technologies that have the potential to dramatically increase the safety of commercial vehicles. The brochure profiles technologies, currently in development, that aim to reduce truck rollovers, rear-end collisions, and lane departure crashes, including systems for roll stability advisories (RSA), roll stability control (RSC), electronic stability control (ESC), forward collision warning (FCW), adaptive cruise control (ACC), and lane departure warning (LDW).

Cost: Free

To Access This Resource: To order a hardcopy, contact Jeff Secrist, FMCSA Office of Research and Analysis, (202) 385-2367, Jeff.Secrist@dot.gov.

Driver Violation Notification Service Feasibility Study (FMCSA-MCRR-05-003) (2005)

This report documents the findings of an assessment of the safety benefits of driver violation notification programs (also known as Employee Pull Notice or Driver Pull Notice programs). In these programs, states automatically notify motor carriers of changes in their drivers' Commercial Driver's License (CDL) records due to violations and convictions. The project team analyzed programs in 10 states and surveyed several motor carriers in order to both determine how well these programs work and establish requirements for an expanded nationwide program.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/dvn-finalreport.pdf
- HyperText Markup Language (HTML) format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/dvn-finalreport.htm

Factors in Decisions to Make, Purchase, and Use On-board Safety Technologies (FMCSA-MCRT-06-003) (2005)

This report documents the findings of a study of what motivates key commercial vehicle stakeholders when making decisions to manufacture, buy or use on-board safety technologies. Telephone interviews were conducted with several individuals representing a wide range of stakeholders: 19 motor carriers, five insurance companies, two associations, one driver training program. Factors identified in making manufacturing, purchase and use decisions include return on investment, demonstrated effectiveness to improve safety, reliability, maintainability, liability, market demand, initial cost, market image, driver acceptance, and ease of integrating the new technology into the existing layout of the commercial vehicle cab.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/factors-in-decisions.pdf
- HyperText Markup Language (HTML) format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/factors-in-decisions.htm

Intelligent Transportation Systems and Truck Parking (FMCSA-MCRR-05-001) (2005)

This report discusses key issues concerning deployment of technologies that convey real-time information on parking availability for truckers on the road. The FMCSA intends to issue a Broad Agency Announcement (BAA) for proposals to demonstrate such a technology, and this report provides background information for the BAA. The report addresses the following questions: Is there a shortage of parking? Is the truck parking shortage likely to worsen? What are potential solutions? What can be done to better match supply and demand?

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/intelligent-transportation-truckparking.pdf
- HyperText Markup Language (HTML) format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/intelligent-transportation-truckparking.htm

Untethered Trailer Tracking (UTT) and Control System (FMCSA-MCRRT-06-002) (2005)

This report documents the findings of a pilot test of an untethered trailer tracking (UTT) system, the purpose of which is to improve the safety and security of trailers and shipments at each phase of goods movement. The UTT system tested in this pilot project include near-real-time trailer identification, accurate time-of-connection and time-of-disconnection activities, location and mapping of trailers, "geo-fencing" to identify a risk area or unscheduled trailer movement, remote sensing of a loaded or empty trailer, and security of the cargo floor. The UTT equipment was installed on 75 trailers, each running one of three operational scenarios. The UTT system was tested over a three-month period from October 2004

to January 2005. This report presents an assessment of the functionality of the UTT system and potential improvements in security, safety and efficiency that can be gained from its use. The Operational Requirements Document available online at http://www.fmcsa.dot.gov/facts-research/research-technology/report/untethered/untethered-trailer-tracking.htm outlines the requirements for these systems, provides a detailed breakdown of the individual technologies used, and outlines how these requirements can be met under the three operational scenarios used in the pilot test.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/untethered-dec05/untethered-dec05.pdf
- HyperText Markup Language (HTML) format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/untethered-dec05/index.htm

The Evaluation of Advanced Traveler Information Services (ATIS) Impacts on Truck Travel Time Reliability (2004)

This report evaluates the ability of advanced traveler information systems (ATIS) to improve the on-time reliability of commercial vehicles in an urban setting. The evaluation uses the Heuristic On-Line Web-Linked Arrival Time Estimation (HOWLATE) simulation model to evaluate the impacts of ATIS on freight movements at an international terminal in Los Angeles, California. The study provides dollar value estimates of the benefits of ATIS and concludes that, for commercial vehicle operators with stringent on-time requirements who face considerable travel time variability, ATIS is a useful and high-value service.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13988_files/13988.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13988.html, EDL# 13988

Introduction to ITS/CVO and CVISN (CVISN 101)

This Web-based course provides an introduction to the ITS/CVO program and the Commercial Vehicle Information Systems and Networks (CVISN) initiative. The course includes a short discussion of some of the problems currently existing in CVO, and an overview of the four main areas of the ITS/CVO program: Safety Assurance, Credentials Administration, Electronic Screening, and Carrier Operations. The concepts underlying current and future strategies are described for each of these areas, as well as the technologies used to carry them out. The discussion of CVISN focuses on the Level 1 capabilities (Safety Information Exchange, Electronic Credentialing and Electronic Screening) and the deployment process developed for their implementation. Target Audience: Public sector transportation professionals including Federal engineers, planners, project managers, and field staff and others as appropriate. Transportation professionals from state, regional, and local agencies would also benefit from participation in the course. A blended Web-based version provides online interaction between participants and instructors. Course Length: Six hours.

Cost: $175 per participant for the Web-based version; $150 per participant for the blended version.

To Access This Resource:

- Access the website address http://www.citeconsortium.org/courses/2mod3.html.
- Contact Jeff Secrist, FMCSA Office of Research and Analysis, (202) 385-2367, Jeff.Secrist@dot.gov or Carolyn Temperine, FMCSA Eastern Service Center, (518) 431-4239 x270, Carolyn.Temperine@dot.gov.

Freeway Management and Operations Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- Jimmy Chu, FHWA Office of Transportation Management, (202) 366-3379, Jimmy.Chu@dot.gov
- Jessie Yung, FHWA Office of Transportation Management, (202) 366-4672, Jessie.Yung@dot.gov
- Dale Thompson, FHWA Office of Research, Development and Technology, (202) 493-3420, Dale.Thompson@dot.gov
- Greg Jones, FHWA Resource Center, (404) 562-3906, GregM.Jones@dot.gov

Freeway Management Program Section of the FHWA Office of Operations Website

This website is a compilation of resources related to highway operations and freeway management systems. The website explains what freeway management systems are and why they are important, plus links to the website profiling the *Freeway Management Handbook*.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/freewaymgmt/index.htm.

Transportation Research Board Committee AHB20 (formerly A3A09) on Freeway Operations Website

This site is the official website of the Transportation Research Board Committee AHB20 (formerly A3A09) on Freeway Operations. The site contains the committee's mission statement, a list of current projects and their status, membership list, papers and award nominations to be reviewed by committee members, other reference documents pertaining to the committee, and related links.

Cost: Free

To Access This Resource: Access the website address http://www.trb-freewayops.org.

http://

Vehicle Detector Clearinghouse Website

This site is the official website of the Vehicle Detector Clearinghouse (VDC), a Pooled-Fund Study among several states in cooperation with the Federal Highway Administration. The mission of the VDC is to provide information to transportation agencies about the capabilities of commercially available vehicle detectors. Equipment types studied by the VDC are devices that detect vehicle presence, speed, axles, classification (automated vehicle classification [AVC]), and weight (weigh-in-motion [WIM]). The clearinghouse also seeks to be a catalyst for developing standard protocols for testing equipment. The site contains a database of vehicle detection products as well as results of a survey of which state departments of transportation are using which products. The site also contains materials related to past and upcoming meetings, an online version of the VDC Newsletter, an extensive list of reference documents with the abstracts available online, a nationwide list of contacts, and related links.

Cost: Free

To Access This Resource: Access the website address http://www.nmsu.edu/~traffic.

http://

Coordinated Freeway and Arterial Operations Handbook (FHWA-HRT-06-095) (2006)

This handbook provides direction, guidance and recommendations on how to coordinate freeway and arterial operations in a proactive and comprehensive manner. The handbook defines coordinated freeway and arterial operations (CFA) and discusses how to apply CFA to four areas of high pay-off: traffic incident management, work zone management, planned special events management, and day-to-day (or recurring) operations. The handbook concludes with a discussion of new technologies such as ITS and an example

of CFA in an incident management program in Northern Virginia. Development of this handbook was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the website address http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/06095.pdf.

Ramp Management and Control Handbook (2006)

This handbook provides guidance and recommended practices on managing and controlling traffic on ramps with freeway facilities. The handbook discusses several ramp management strategies, including how to select appropriate strategies and develop ramp management plans, how to implement those strategies and plans, how to operate and maintain these strategies, and how to assess their performance and report on the results. This handbook also describes in greater depth the issues and concepts specific to ramp mangement and control presented in Chapter 7 of the *Freeway Management and Operations Handbook*. In addition to the *Ramp Management and Control Handbook*, key concepts of ramp management and control are summarized in a primer, brochure, fact sheet, and frequently asked questions (FAQ) document. Development of these materials was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the following website addresses:

- Handbook (FHWA-HOP-06-001)—Adobe Acrobat format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/manual/manual/pdf/rm_handbook.pdf
- Handbook—HyperText Markup Language (HTML): http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/manual/manual/default.htm, EDL# 14242

- Primer (FHWA-HOP-06-080)—Adobe Acrobat format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/primer/rm_primer.pdf
- Primer—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/primer/primer.htm
- Brochure (FHWA-HOP-06-082)—Adobe Acrobat format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/brochure/rm_brochure.pdf
- Brochure—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/brochure/brochure.htm
- Project Fact Sheet (FHWA-HOP-06-082)—Adobe Acrobat format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/factsheet/rm_fact_sheet.pdf
- Project Fact Sheet—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/factsheet/factsheet.htm
- Questions and Answers (FHWA-HOP-06-083)—Adobe Acrobat format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/faqs/rm_faqs.pdf
- Questions and Answers—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/faqs/ramp_faqs.htm

Changeable Message Sign Operation and Messaging Handbook (FHWA-OP-03-070) (2004)

This handbook is a consolidation of the most current and best information on the design and display of effective changeable message sign (CMS) messages for incident and roadwork events. The handbook presents this information in a series of 10 modules, covering topics such as fundamentals of CMS operations, CMS operating policies, principles of CMS message design, dealing with long messages, establishing a maximum message length, formatting messages, and the CMS message design process. The handbook is designed to help both new and experienced users of CMSs at various levels of a given

agency. Development of this handbook was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the website address http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/CMS%20Operation%20and%20Messaging%20Handbook-Final%20Draft.pdf.

Managed Lanes: A Cross-Cutting Study (FHWA-HOP-05-037) (2004)

This report reviews the state-of-the-art in managed lanes, i.e., employing various strategies—such as high-occupancy vehicle (HOV) lanes, high-occupancy toll (HOT) lanes, value pricing, and special use lanes—to improve traffic flow and maximize the efficiency of the freeway system. This report explores what managed lanes are, how to plan for their implementation, what operational and design issues should be considered, and how active management of the lanes over the life of the facility affects implementation. The report presents several case studies which highlight best practices and lessons learned. Finally, the report discusses emerging issues, knowledge gaps, and directions for further research.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/freewaymgmt/publications/managed_lanes/crosscuttingstudy/final3_05.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/freewaymgmt/publications/managed_lanes/crosscuttingstudy/index.htm

Managed Lanes: A Primer (FHWA-HOP-05-031) (2004)

This 24-page brochure serves as a primer on managed lanes, i.e., employing various strategies—such as high-occupancy vehicle (HOV) lanes, high-occupancy toll (HOT) lanes, value pricing,

and special use lanes—to improve traffic flow and maximize the efficiency of the freeway system. This brochure defines what managed lanes are, presents several managed lane success stories, discusses issues and challenges unique to managed lane projects, and explores the future of this freeway management approach.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/publications/managelanes_primer/managed_lanes_primer.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/publications/managelanes_primer/index.htm

A Policy on Geometric Design of Highways and Streets, Fifth Edition (2004)

Known as the "Green Book," this document discusses the geometric features of rural and urban highway design. The document contains design practices in widespread use as the standard for highway geometric design. New features of the Fifth Edition incorporates the latest research on super-elevation and side friction factors as presented in NHCRP Report# 439.

Cost: $120-$145 for the printed version, $160-$192 for the CD-ROM version, $208-$250 for both. Prices for the printed and CD-ROM versions vary depending on status of membership in the professional associations that publish the Green Book.

To Access This Resource: The Green Book printed and CD-ROM versions are available from the following professional associations:

- American Association of State Highway and Transportation Officials (AASHTO): Contact the AASHTO Bookstore, https://bookstore.transportation.org, (800) 231-3475, fax: (800) 525-5562.
- Institute of Transportation Engineers (ITE): Contact the ITE Bookstore, http://www.ite.org/bookstore/index.asp, (202) 289-0222 x130, fax: (202) 289-7722, publications@ite.org.

Telecommunications Handbook for Transportation Professionals: The Basics of Telecommunications (FHWA-HOP-04-034) (2004)

This handbook provides with basic descriptions of terms and technologies that are commonly used (or considered) in the deployment of freeway management and traffic signal systems, including both voice and data communications. The handbook covers telecommunications fundamentals, the relationship between telecommunications and the National ITS Architecture, a step-by-step process for developing a telecommunications system, field devices, maintenance, warrantees, and construction. The handbook also examines the Internet and cutting-edge technologies. Two case studies from Utah and Texas are provided.

Cost: Free

To Access This Resource: Access the website addresses:

- Adobe Acrobat format: http://ops.fhwa.dot.gov/publications/telecomm_handbook/telecomm_handbook.pdf
- HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/publications/telecomm_handbook/index.htm

Freeway Management and Operations Handbook (FHWA-OP-04-003) (2003)

This handbook provides an overview of the institutional and technical issues associated with the planning, design, implementation, and management of a freeway network. The 2003 edition is an update of the 1997 edition and is the third update to be published by FHWA. The handbook examines a wide variety of strategies, tools, and technologies that can be used to support management and operation of the freeway network. Development of this handbook was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/freewaymgmt/publications/frwy_mgmt_handbook/fmoh_complete_all.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/freewaymgmt/publications/frwy_mgmt_handbook/index.htm

Highway Traffic Operations and Freeway Management State-of-the-Practice Final Report (FHWA-OP-03-076) (2003)

This white paper summarizes the state-of-the-practice in freeway management and operations. The white paper profiles institutional arrangements such as funding, procurement and staffing, as well as system functions such as freeway management systems, corridor traffic management, electronic toll and traffic management, decision-support systems, traveler information, traffic incident management, special events management, and communication systems. In addition, the white paper notes innovative approaches not in common use, thus identifying the gap between the state-of-the-practice and the state-of-the-art.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/freewaymgmt/publications/documents/FreewayManagementSOPV.7.2.1.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13801.html, EDL# 13801 or http://www.ops.fhwa.dot.gov/freewaymgmt/publications/documents/frwy_mgmtSOPv7_2_1.htm

What Have We Learned about Intelligent Transportation Systems? Chapter 2: What Have We Learned about Freeway, Incident, and Emergency Management and Electronic Toll Collection? (2000)

This document is an excerpt from a compendium report that looks back on the 10 years of the National ITS Program to examine which ITS technology applications have been successful, which have not been successful, and what are the underlying factors that determine success versus failure. This section examines freeway, incident, and emergency management and electronic toll collection systems.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13318.pdf, EDL# 13318.

Freeway Management and Operations (NHI Course# 133075 or 133075A)

This course provides participants with an appreciation and understanding of the key policies, institutional issues, challenges and barriers, technical, and other issues to consider in the planning, design, implementation, management, operation, evaluation, and marketing of freeway facilities. The key topics covered include introduction to freeway management and operations, freeway management as a component of traffic operations programs, performance monitoring and evaluation, roadway and operational improvements, ramp management and control, lane management and control, high-occupancy vehicle (HOV) systems, traffic incident management, planned special events, information dissemination, transportation management centers, information sharing and integration, detection and surveillance, and communication media. This course addresses basic traffic flow theory for freeways and evaluation of freeway operations during project development and design. In addition, this course provides information on freeway traffic control systems, traffic management centers, and operations analysis procedures for freeways. Skill Level: Specialized learning.

Target Audience: Federal, state, and local transportation professionals involved in planning, design, and implementation of freeway traffic operational improvements. Course Length: Two or three days.

Cost: $270 per participant for the two-day course; $400 per participant for the three-day course.

To Access This Resource: Access the following website addresses:

- Two-day course: http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133075"
- Three-day course: http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133075A"

High-Occupancy Vehicle Facilities Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- Jessie Yung, FHWA Office of Transportation Management, (202) 366-4672, Jessie.Yung@dot.gov
- Venkat Pindiprolu, FTA Office of Mobility Innovation, (202) 366-8061, Venkat.Pindiprolu@dot.gov

http://

High-Occupancy Vehicle (HOV) Information Section of the FHWA Office of Operations Website

This website is a compilation of resources related to high-occupancy vehicle (HOV) lanes. The site contains program guidance on HOV lanes, frequently asked questions (with answers), a list of available training courses, and links to several technical reference documents.

Cost: Free

To Access This Resource: Access the website address http://ops.fhwa.dot.gov/freewaymgmt/hov.htm.

http://

Transportation Research Board Committee AHB35 (formerly A3A06) on High-Occupancy Vehicle Systems Website

This site is the official website of the Transportation Research Board Committee AHB35 (formerly A3A06) on High-Occupancy Vehicle (HOV) Systems, as well as a compilation of resources about HOV lanes. The site contains the committee's mission, a list of upcoming HOV-related events, a link to the FHWA Inventory of HOV Systems, and an archive of HOV-related photographs available for downloading. One of the committee's main activities is organizing the 13th International HOV Systems Conference in 2007.

Cost: Free

To Access This Resource: Access the website address http://www.HOVworld.com.

HOV Pooled-Fund Study Website

This site is the official website of the Pooled-Fund Study (PFS) on high-occupancy vehicle (HOV) systems. The purpose of the HOV Pooled-Fund Study is to identify and address the key issues and challenges that public agencies are facing with HOV facilities. The Pooled-Fund Study provides a mechanism to pursue projects that address common needs among participating members. Any agency responsible for planning, designing, implementing, managing, or operating HOV facilities is eligible to join, and the website has information on how to do so. The website also contains the Pooled-Fund Study's list of current projects and their status, charter, membership list, and materials related to past and upcoming meetings such as agendas, minutes, and handouts. The site also links to a searchable inventory of current and planned HOV facilities in the U.S. and Canada.

Cost: Free

To Access This Resource: Access the website address http://hovpfs.ops.fhwa.dot.gov.

12th International Conference on High-Occupancy Vehicle Systems: Conference Proceedings (2006)

These documents provide a summary of the 12th International Conference on High Occupancy Vehicle Systems, held April 18-20, 2005 in Houston, Texas. The conference was sponsored by the Transportation Research Board High-Occupancy Vehicle (HOV) Systems Committee. The proceedings summarize the presentations from the general and breakout sessions. Breakout sessions were organized around three topic areas: HOV facilities, bus rapid transit (BRT), and managed lanes.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/publications/12hovsysconf/12th_trb_hov_conf_proceed.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/publications/12hovsysconf/index.htm

A Guide for HOT Lane Development (FHWA-OP-03-009) (2003)

This guide provides information on a wide range of policy and technical issues associated with high-occupancy toll (HOT) lanes, focusing on how these activities are likely to differ from those associated with more traditional highway improvements. This guide includes case studies of the four existing HOT lane facilities in the U.S., as well as two recent HOT lane studies that are indicative of current trends.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13668_files/images/13668.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13668.html, EDL# 13668

Houston Managed Lanes Case Study: Evolution of the Houston HOV System (FHWA-OP-04-002) (2003)

This report examines the development and operation of the high-occupancy vehicle (HOV) lane system in Houston, Texas, and its recent transition to managed lanes. Managed lanes use a variety of tools and policies, such as occupancy, access control, and pricing strategies, to proactively manage demand and maintain free-flow traffic conditions. Started in 1979 with a single nine-mile reversible flow HOV lane, Houston's HOV network now includes over 100 miles of HOV lanes, 28 park-and-ride lots, four park-and-pool lots, transit centers, and express bus service that support these lanes. The report also documents the lessons learned from Houston's managed lane pilot project launched in 2002, including the institutional and technical issues to be considered when pursuing managed lanes.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://ops.fhwa.dot.gov/Docs/Houston/HoustonCaseStudy.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13874.html, EDL# 13874 or http://ops.fhwa.dot.gov/Docs/Houston/index.htm

Effects of Changing HOV Lane Occupancy Requirements: El Monte Busway Case Study (2002)

This report documents the findings of an evaluation of the impact of lowering the HOV lane restrictions from 3+ to 2+ on the El Monte Busway in San Bernadino, California in 1999. The report examines the impact of the change on Busway and freeway operations, public transit services, violation rates, crashes, and public response. The evaluation found that the lowering of HOV restrictions had a detrimental effect on busway, freeway and public transit operations, and the HOV restrictions were restored to 3+ the following year.

Cost: Free

To Access This Resource: Access the following website addresses:

- Executive Report (FHWA-OP-03-001)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/freewaymgmt/publications/hov/ElMonteExecSummary.pdf
- Executive Report (FHWA-OP-03-001)—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13679.html, EDL# 13679
- Full Report (FHWA-OP-03-002)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/freewaymgmt/publications/hov/ElMonteFinalReport.pdf
- Full Report (FHWA-OP-03-002)—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13692.html, EDL# 13692

High-Occupancy Vehicle (HOV) Interactive CD-ROM, Version 1.0 (2000)

This CD-ROM is a compilation of resources related to high-occupancy vehicle (HOV) facilities. The CD-ROM contains reports (including classic references dating back to the 1970s as well as current materials), an inventory of planned and operational HOV facilities in North America as of January 1998, and proceedings from the annual International Conference on HOV Systems.

Cost: Free

To Access This Resource: To order the CD-ROM, contact the Operations/ITS HelpLine, (866) 367-7487, itspubs@dot.gov.

New Jersey I-80 and I-287 HOV Lane Case Study (2000)

This report presents the lessons learned from a case study of HOV operations on the I-80 and I-287 in northern New Jersey. In 1999, the HOV lane designation for both freeways was rescinded after a substantial period of operation (four years for I-80 and 10 months for I-287). The case study indicates that, although many elements associated with successful HOV projects were present to some extent, there were critical factors missing, modified, or not implemented during the operation of these HOV facilities that led to their termination. These elements include changes in the policy and regulatory environment, and lack of sustained commitment and resources to continuously support the facilities.

Cost: Free

To Access This Resource: Access the following website addresses:

- Executive Report (FHWA-OP-01-004): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13157.pdf, EDL# 13157
- Full Report (FHWA-OP-00-018): http://www.itsdocs.fhwa.dot.gov/jpodocs/briefing/12963.pdf, EDL# 12963

High-Occupancy Vehicle (HOV) Systems Manual (NCHRP Report# 414) (1998)

This manual is a comprehensive "how to" guide for the planning, design, implementation, operation, marketing, and enforcement of high-occupancy vehicle (HOV) facilities. The manual incorporates current guidelines and best practices. The intended audience is primarily highway and transit professionals, but may also be useful to policymakers and others charged with achieving air quality and congestion management goals.

Cost: $75

To Access This Resource: Contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "NR414," (202) 334-3213, fax: (202) 334-2519.

HOV Marketing Manual: Marketing for Success (1994)

This manual presents "how to" guidance on the effective marketing of high-occupancy vehicle (HOV) lanes. The manual presents a step-by-step process for the planning, implementation, and evaluation of HOV marketing campaigns. The manual also contains case studies from seven HOV areas that have successfully used marketing to increase HOV lane use.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/freewaymgmt/publications/hov/prefforw.pdf.

Intermodal Freight Points-of-Contact

- Kate Hartman, ITS Joint Program Office, (202) 366-2742, Kate.Hartman@dot.gov
- Mike Onder, FHWA Office of Freight Management and Operations, (202) 366-2639, Michael.Onder@dot.gov
- Rolf Schmitt, FHWA Office of Freight Management and Operations, (202) 366-9258, Rolf.Schmitt@dot.gov
- Randy Butler, FHWA Office of Freight Management and Operations, (202) 366-9215, Randy.Butler@dot.gov
- Crystal Jones, FHWA Office of Freight Management and Operations, (202) 366-2976, Crystal.Jones@dot.gov
- Deborah Curtis, FHWA Office of Research, Development and Technology, (202) 493-3267, Deborah.Curtis@dot.gov

Freight Management Section of the FHWA Office of Operations Website

This site is the official website of the FHWA Office of Freight Management and Operations. The website links to pages relating to all aspects of freight management, such as institutional, infrastructure, operations and technology, and regulatory. The website contains resources related to state-of-the-art and state-of-the-practice issues in freight finance, the development of performance measures for freight productivity, and the economic benefits of freight. The website discusses the current status of several operational tests of the use of ITS technology to improve intermodal freight operations. The website also contains a section highlighting new activities and news items, a calendar of upcoming events, a list of contacts, and related links.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/freight.

Freight Analysis Framework (FAF)

The Freight Analysis Framework (FAF) is a policy analysis tool that evaluates the effect of expected volumes on the transportation networks in four key transportation modes: highways, railroads, water, and air. The FAF then enables users

to analyze geographic relationships between congestion and freight movements and congestion in four key transportation modes: highway, railroad, water, and air. The FAF enables users to determine which transportation corridors are or will become heavily congested in the future, so that they can develop solutions to help alleviate bottleneck points. The FAF includes economic forecasts for 2010 and 2020, translating these economic data into transportation demand figures that can then be assigned to network links.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/index.htm.

The Freight Story: A National Perspective on Enhancing Freight Transportation (FHWA-OP-03-004) (2002)

This report examines the role of freight transportation in the U.S. economy. The report examines trends in freight transportation brought about by a changing business environment (shift to a service economy, deregulation, "pull logistics," and globalization) and discusses key challenges freight transportation is currently facing (such as congestion, financing, safety, and national security). The report concludes with recommended strategies to enhance the productivity and security of freight transportation, not just in the U.S., but throughout North America.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/freight/freight_analysis/freight_story/freight.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/freight/freight_analysis/freight_story/index.htm

Intelligent Transportation Systems at International Borders: A Cross-Cutting Study (FHWA-OP-00-003/ FTA-TRI-11-99-26) (2001)

This report, one in a series designed to educate public sector managers about particular ITS technologies, examines how several locations along the country's northern and southern borders have used ITS technologies to expedite clearance of commercial vehicles while preserving, and even enhancing, commercial vehicle safety. The report concludes with lessons learned from each location, as well as from the program as a whole.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- English edition: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/11490.pdf, EDL# 11490
- Spanish edition: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13472.pdf, EDL# 13472

Manual on Uniform Traffic Control Devices Points-of-Contact

- Linda Brown, FHWA Office of Transportation Operations, (202) 366-2192, Linda.L.Brown@dot.gov
- Hari Kalla, FHWA Office of Transportation Operations, (202) 366-5915, Hari.Kalla@dot.gov
- Kevin Sylvester, FHWA Office of Transportation Operations, (202) 366-2161, Kevin.Sylvester@dot.gov
- Scott Wainwright, FHWA Office of Transportation Operations, (202) 366-0857, Scott.Wainwright@dot.gov
- Fred Ranck, FHWA Midwest Resource Center, (708) 283-3545, Fred.Ranck@dot.gov
- Pete Rusch, FHWA Midwest Resource Center, (608) 829-7529, Peter.Rusch@dot.gov
- Ken Wood, FHWA Resource Center, (708) 283-4340, Ken.Wood@dot.gov

Manual on Uniform Traffic Control Devices Website

This website is a compilation of resources related to the *Manual on Uniform Traffic Control Devices (MUTCD)*. The site contains an overview of the MUTCD, information about the significance of the 2003 Edition, a side-by-side comparison of the old and new versions of the manual, and an online discussion forum. The site also contains a list of frequently asked questions (with answers), Federal Register announcements, policy statements, related publications, outreach materials, training, contacts, and related links.

Cost: Free

To Access This Resource: Access the website address http://mutcd.fhwa.dot.gov.

MUTCD Peer-to-Peer Program

The MUTCD Peer-to-Peer Program provides a way for transportation officials to get answers to their questions about traffic control device issues. The program quickly connects volunteers with expertise in specific traffic control devices

with professionals who need guidance with technical issues pertaining to the *Manual on Uniform Traffic Control Devices (MUTCD)* and related technologies. For more information about the program, access the website address http://mutcd.fhwa.dot.gov/tech_p2p.htm.

Cost: Free

To Access This Resource: Contact the MUTCD Peer-to-Peer Program, (888) 700-PEER, p2p@dot.gov.

Standard Highway Signs, 2004 Edition (2004)

This document contains detailed drawings and measurements of more than 400 highway signs. As a companion to the *Manual on Uniform Traffic Control Devices (MUTCD)*, this document covers the signs mentioned in the 2003 Edition of the MUTCD, as well as other frequently used highway signs. The online version of *Standard Highway Signs* contains the Metric Standard Alphabets for Highway Signs and Pavement Markings (SAHSPM) and the English Standard Alphabets for Highway Signs. The SAHSPM contains the metric series of letters and appropriate metric spacing charts for designing signs and installing pavement markings. The SAHS contains the English series of letters and English spacing charts.

Cost: Free

To Access This Resource: Access the website addresses:

- Metric version: http://mutcd.fhwa.dot.gov/ser-shs_millennium_met.htm
- English version: http://mutcd.fhwa.dot.gov/ser-shs_millennium_eng.htm

Manual on Uniform Traffic Control Devices: 2003 Edition (2003)

The *Manual on Uniform Traffic Control Devices (MUTCD)* defines the standards used by road managers nationwide to install and maintain traffic control devices on all streets and highways. The MUTCD is published by the Federal Highway Administration under the 23 Code of Federal Regulations (CFR), Part 655, Subpart F. The 2003 Edition is the first major

update of the MUTCD since the Millennium Edition was published in 2000. The MUTCD is continually being updated to include amendments that clarify new standards and incorporate technological advances.

Cost: Free for the online version; $60-$96 for the printed version. Prices for the printed version vary depending on status of membership in the professional associations that publish the MUTCD, type of binding, and number of copies ordered.

To Access This Resource: For the most recent version of the online version, access the website address http://mutcd.fhwa.dot.gov/kno-2003r1.htm. The printed version is available from the following professional associations:

- American Association of State Highway and Transportation Officials (AASHTO): Contact the AASHTO Bookstore, https://bookstore.transportation.org, (800) 231-3475, fax: (800) 525-5562.
- Institute of Transportation Engineers (ITE): Contact the ITE Bookstore, http://www.ite.org/bookstore/index.asp, (202) 289-0222 x130, fax: (202) 289-7722, publications@ite.org.
- American Traffic Safety Services Association (ATSSA): Contact the ATSSA Products division, http://www.atssa.com/cs/roadway-safety-store, (800) 272-8772, fax: (540) 368-1711, products@atssa.com.

National Transportation Operations Coalition Point-of-Contact

- Zia Burleigh, FHWA Operations Support Team, (202) 366-1896, Zia.Burleigh@dot.gov

National Transportation Operations Coalition Website

This website is a compilation of resources provided by the National Transportation Operations Coalition (NTOC). The Coalition is a partnership among traditional stakeholders, such as transportation professionals, and nontraditional stakeholders, such as public safety agencies. This alliance of national associations, practitioners, and private sector groups allows stakeholders to work collectively to identify barriers and opportunities for improving the management and operations of the nation's transportation system. The site contains the history of the Coalition, current action plan, vision, and mission. The site also contains resource documents that present a number of transportation operations issues and improvement strategies, links to other operations and ITS resources (including electronic forums for transportation operations, and the Talking Operations webcast series), proceedings from Coalition events, and a list of Coalition members and key partner organizations.

Cost: Free

To Access This Resource: Access the website address http://www.ntoctalks.com.

National Transportation Operations Coalition Forums

"Operations" and "ITS" mean different things to different people. The National Transportation Operations Coalition (NTOC) has developed two electronic forums—the Talking Operations forum and the ITS Technology forum—to provide a venue for online discussion of operations and ITS issues among a diverse group of stakeholders, such as engineers, operators, planners, academia, private sector, policy makers, elected and appointed officials, and local state and Federal

governments. These discussion forums are designed to help frame the issues surrounding effective operations and the use of ITS.

Cost: Free

To Access This Resource: Access the website address http://www.ntoctalks.com/forums.php.

Show Me the Money: A Decision Maker's Funding Compendium for Transportation Systems Management and Operations (2006)

This document explores the different options to fund transportation management and operations investments. The document contains 22 case studies that show how state and local governments combined different funding resources to meet the needs of their diverse transportation programs. The document explores the definition of "transportation systems management and operations" by showing how it relates to familiar concepts, such as maximizing operational capacity, minimizing the impact of incidents, integrating elements of a multimodal system, maximizing safety, and integrating transportation into livable communities. The document concludes with a list of Federal funding sources and examples of programs that are eligible to receive these funds.

Cost: Free for members of Public Technologies, Inc. (PTI); $12.25 for non-members.

To Access This Resource: Access the website address http://www.pti.org/index.php/ptiee1/inside/C47.

Association White Papers on the National Dialogue on Transportation Operations (2001)

These white papers were written by professional associations that have been engaged in the National Dialogue on Transportation Operations, which focuses on opportunities and barriers to improving the operation and management of the transportation system. The white paper written by each professional association expresses its constituents' positions

and recommendations on a wide range of issues, such as the definition of management and operations, funding, institutional challenges, and appropriate Federal actions. A synthesis paper identifies the similarities and differences among the organizations' views.

Cost: Free

To Access This Resource: Access the following website addresses:

- Synthesis: http://www.ite.org/NationalSummit/association/Synthesis-Final.pdf
- Association of American State Highway and Transportation Officials (AASHTO): http://www.ite.org/NationalSummit/association/AASHTO.pdf
- Association of Metropolitan Planning Associations (AMPO): http://www.ite.org/NationalSummit/association/AMPO%20Final.pdf
- American Public Transportation Association (APTA): http://www.ite.org/NationalSummit/association/APTA%20Final.pdf
- American Public Works Association (APWA): http://www.ite.org/NationalSummit/association/APWATranspOpsPositionPaper8.30.01.pdf
- American Traffic Safety Services Association (ATSSA): http://www.ite.org/NationalSummit/association/ATSSA%20Final.pdf
- International City/County Management Association (ICMA): http://www.ite.org/NationalSummit/association/ICMA.pdf
- Institute of Transportation Engineers (ITE): http://www.ite.org/NationalSummit/association/ITE%20Final.pdf
- Intelligent Transportation Society of America (ITS America): http://www.ite.org/NationalSummit/association/ITSA.pdf
- National Association of City Transportation Officials (NACTO): http://www.ite.org/NationalSummit/association/NACTO.pdf
- Public Technology, Inc. (PTI): http://www.ite.org/NationalSummit/association/PTI%20Final.pdf

Vision White Papers on the National Dialogue on Transportation Operations (2001)

This series of white papers was written by nationally recognized experts to identify both Transportation Equity Act for the 21st Century (TEA-21) reauthorization and programmatic opportunities to improve the operation and management of the nation's transportation system. The papers serve as an intellectual underpinning for operations and focus on a wide variety of topics, such as TEA-21 reauthorization options, system performance, funding performance measurement, and data and information requirements.

Cost: Free

To Access This Resource: Access the following website addresses:

- Description of Transportation Systems Operations and Management: http://www.ite.org/NationalSummit/vision/DescriptionofTS.pdf
- Development of an Intellectual Foundation to Support the Establishment of Transportation Operations as a Transportation Agency Core Mission: Developing the Concept of Planning for Operations: http://www.ite.org/NationalSummit/vision/IntellectualFoundation.pdf
- Highway Funding: It's Time to Think Seriously about Operations—A Policy Framework: http://www.ite.org/NationalSummit/vision/HighwayOps.pdf
- Institutions for Transportation Operations with Recommendations for Reauthorization: http://www.ite.org/NationalSummit/vision/institutions.doc
- Integrated Public Safety and Highway Operations: A Policy Framework and Analysis: http://www.ite.org/NationalSummit/vision/PublicSafety.pdf
- Managing the Urban Transportation System: The Need for a New Operating Paradigm: http://www.ite.org/NationalSummit/vision/Managing.pdf
- Measuring System Performance: The Key to Establishing Operations as a Core Agency Mission: http://www.ite.org/NationalSummit/vision/Performance.pdf

- Operations in the 21st Century: 25th Annual Meeting of ITS America: http://www.ite.org/NationalSummit/vision/Operations.pdf
- Summary of Transportation Operations Data Issues: http://www.ite.org/NationalSummit/vision/DataIssues.pdf
- Traffic Congestion and Travel Reliability: How Bad Is the Situation and What Is Being Done about It?: http://www.ite.org/NationalSummit/vision/Congestion.pdf
- Transportation Operations: An Organizational and Institutional Perspective: http://www.ite.org/NationalSummit/vision/TransOps.pdf

Operations and Management: What Does It Mean for Local Agencies? (2000)

This report defines transportation systems operations and management (O&M) by discussing several O&M strategies, including ITS, traveler information, public policy, improved connections between transportation modes, benchmarking and performance measures, and interjurisdictional coordination. The report also discusses how growth is increasing the need for effective O&M and explores the new kinds of staff training that O&M requires.

Cost: Free for members of Public Technologies, Inc. (PTI); $6.50 for non-members.

To Access This Resource: Access the website address http://www.pti.org/index.php/ptiee1/inside/C47.

Advancing Transportation Systems Management and Operations (NHI Course# 133098)

This course provides an understanding of Transportation Systems Management and Operations (TSM&O) in a regional context. The transportation challenges of the 21st century require a significant cultural shift in the way transportation systems are managed and operated. This means moving from limited interactions between planners and operators to a solid linkage that facilitates data sharing, joint development of regional operations opportunities, resource sharing, and

supportive institutional arrangements. From an operations perspective, this cultural shift requires anticipating user needs 24/7, focusing on customers, and changing policies and procedures to be performance-based. To be successful, the new norm requires a cross-jurisdictional, multi-agency, and multimodal perspective. From a planning standpoint, this cultural shift means bringing "operations thinking" into the planning process. Smart planning requires that ongoing operations be considered in regional planning and investment decisions. This course explores 21st century transportation challenges and how to advance TSM&O through a cultural shift in operations and planning. Target Audience: Transportation managers, service providers, public safety officials, public works directors, and business sector members of chambers of commerce. Operators and planners from states, cities, counties and metropolitan planning organizations (MPOs) also benefit from this course. Course Length: One day.

Cost: $200 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133098."

Planning and Integration Points-of-Contact

- Steve Clinger, FHWA Office of Transportation Management, (202) 366-2168, Stephen.Clinger@dot.gov
- Bob Rupert, FHWA Office of Transportation Management, (202) 366-2194, Robert.Rupert@dot.gov
- Wayne Berman, FHWA Office of Transportation Management, (202) 366-4069, Wayne.Berman@dot.gov
- Brian Gardner, FHWA Office of Planning, (202) 366-4061, Brian.Gardner@dot.gov
- Gloria Shepherd, FHWA Office of Planning, (202) 366-0106, Gloria.Shepherd@dot.gov
- Harlan Miller, FHWA Office of Planning, (202) 366-0847, Harlan.Miller@dot.gov
- Dale Thompson, FHWA Office of Research, Development and Technology, (202) 493-3420, Dale.Thompson@dot.gov
- Mac Lister, FHWA Resource Center, (708) 283-3532, Mac.Lister@dot.gov
- Charlie Goodman, FTA Metropolitan Planning Division, (202) 366-1944, Charles.Goodman@dot.gov

Planning for Transportation System Management and Operations Website

This website is a compilation of resources related to the use of multimodal planning practice to support transportation system management and operations. The website contains links to resources to help with performance measurement, congestion management systems, regional ITS architecture, institutional arrangements, data collection and sharing, funding and resource sharing, and regional transportation systems management and operations. In addition, the website contains links to software tools and upcoming training opportunities, a glossary, frequently asked questions (with answers), a calendar of upcoming events, points-of-contact, and related links.

Cost: Free

To Access This Resource: Access the website address http://www.plan4operations.dot.gov.

Traffic Analysis Tools Section of the FHWA Office of Operations Website

This website is a compilation of resources related to traffic analysis tools. This website explains what traffic analysis tools are and what challenges these tools were designed to address, and recommends a process for identifying and organizing stakeholders. The website examines how traffic analysis tools can be used to plan for freeway management, traffic incident management, arterial management, work zone management, emergency management, travel demand management, and traveler information systems. The website contains information and updates on the FHWA Next Generation Simulation (NGSIM) Program. NGSIM Program materials include workshop proceedings, a summary of a simulation feasibility study, a summary of responses to a Request for Information (RFI) soliciting information on the program, a 19-slide presentation on the program, and a list of people who attended an information meeting on the program held in January 2001. The website also lists new features available with the latest version of one traffic analysis tool—Traffic Software Integrated System (TSIS) Version 5.0.

Cost: Free

To Access This Resource: Access the website address http://ops.fhwa.dot.gov/trafficanalysistools/index.htm.

ITS Deployment Analysis System (IDAS)

The ITS Deployment Analysis System (IDAS) performs sketch planning analysis of ITS deployments. Planners and other transportation professionals can use IDAS to calculate relative costs and benefits of ITS investments, which are either alternatives to or enhancements of traditional highway and transit infrastructure investments. The current version of IDAS can predict relative costs and benefits of more than 60 types of ITS investments. For more information about IDAS, access the IDAS website at http://idas.camsys.com.

Cost: $795

To Access This Resource: Order IDAS through the McTrans Center for Microcomputers in Transportation at the University of Florida, (352) 392-0378, fax: (352) 392-3224, mctrans@ce.ufl.edu, http://mctrans.ce.ufl.edu.

Turbo Architecture Version 4.0

Turbo Architecture is an interactive software tool for regional and project-specific ITS architecture development. By helping the user integrate multiple project architectures with a regional architecture and with each other, Turbo Architecture makes it easier to develop an architecture consistent with the National ITS Architecture. Version 4.0 is compatible with the National ITS Architecture 6.0, has added new interfaces and flows, has updated equipment package descriptions, function requirements and ITS standards information, and is compatible with Microsoft Vista.

Cost: $190 for a single-site license, less per license when multiple-site licenses are purchased; $50 with a trade-in of Turbo Architecture 1.0, 2.0, or 3.0.

To Access This Resource: Order Turbo Architecture through the McTrans Center for Microcomputers in Transportation at the University of Florida, (352) 392-0378, fax: (352) 392-3224, mctrans@ce.ufl.edu, http://mctrans.ce.ufl.edu.

Getting More by Working Together: Opportunities for Linking Planning and Operations (FHWA-HOP-05-016) (2004)

Traditionally, planning and operating the transportation system have been two relatively detached sets of activities with different requirements and different working cultures. The goal of this reference manual is bridge that gap, to help planning and operations managers understand the value of working together and realize the benefits of pursuing management and operations strategies on a regional scale. The manual discusses why building stronger links is beneficial, highlights nine areas that provide opportunities to better linkages, and includes a self-assessment tool that agencies can use to see how well they are currently working together and identify potential areas for improvement. This manual is the product of a partnership between the FHWA Office of Operations and the FHWA Office of Planning, Environment, and Realty.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/publications/lpo_ref_guide/hop05016.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/publications/lpo_ref_guide/index.htm

Crossing Boundaries: On the Road to Public-Public Partnerships (FHWA-OP-03-139) (2003)

This report documents the findings of a series of focus groups and an online survey conducted by Public Technology, Inc., (PTI), among state and local agencies. The surveys solicited observations and recommendations concerning collaboration among government agencies at the Federal, state, and local levels. The report examines what factors would facilitate both horizontal and vertical collaboration, especially in light of reauthorization of the Transportation Equity Act for the 21st Century (TEA-21) and the new transportation security environment following the terrorist attacks of September 11, 2001.

Cost: Free

To Access This Resource: To order a hardcopy, contact the ITS/Operations HelpLine, (866) 367-7487, itspubs@dot.gov.

Incorporating Intelligent Transportation Systems into Planning Analysis: Summary of Key Findings from a Seattle 2020 Case Study (FHWA-OP-02-031) (2002)

This report presents a new transportation modeling technique that shows how ITS can improve the reliability of the transportation infrastructure. This new technique is especially useful because traditional analytical tools often fail to capture how transportation improvements perform under a wide range of conditions.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13605/13605.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13605.html, EDL# 13605

Metropolitan ITS Integration: A Cross-Cutting Study (FHWA-OP-02-083/FTA-TRI-11-02-05) (2002)

This report, one in a series designed to educate public sector managers about particular ITS technologies, profiles how 24 cities in the U.S. have achieved integration of previously disparate ITS systems, the benefits they have gained as a result, and the lessons they have learned. The report concludes with a series of successful practices for making ITS integration a reality, in the areas of planning, design, implementation, and operations and maintenance.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13672_files/13672.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13672.html, EDL# 13672

Regional Transportation Operations Collaboration and Coordination: A Primer for Working Together to Improve Transportation Safety, Reliability, and Security (FHWA-OP-03-008) (2002)

This document introduces a new concept called "Regional Transportation Operations Collaboration and Coordination," which is based on the belief that in order for regional transportation operations activities to be effective, managers responsible for operating a transportation system on a day-to-day basis need to collaborate and coordinate on a continual basis. These managers need to agree on a shared operations vision, a concept for how regional activities should be operated over time, how improvements should be made to the transportation system, and what measures should be used to evaluate performance. This primer explains what regional transportation operations collaboration and coordination means, why it is important, and how to get started.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/ITS1007.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13686.html, EDL# 13686

Using Metropolitan ITS Deployment Tracking for Regional ITS Planning: Telling the Deployment Story in Tucson, Arizona (FHWA-OP-02-035) (2002)

This case study examines how the Pima Association of Governments (PAG) used the methodology contained in the Metropolitan ITS Deployment Tracking Database to develop its ITS Strategy Deployment Plan. Using the methodology contained in the database allows agencies to compare their

current ITS assets with what is possible (the "could" case), as well as with the region's long-term goals (the "should" case).

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13606_files/13606.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13606.html, EDL# 13606

Guidance on Including ITS Elements in Transportation Projects (2001)

This document provides guidance for including ITS equipment and technologies as part of traditional transportation construction and maintenance projects. The document outlines a step-by-step process for conducting a site-specific ITS assessment, providing a hypothetical case study. Appendices contain a detailed bibliography, a list of helpful hints, an overview of the transportation planning process and project cycle, tables from the ITS unit costs database, and a sample mapping of ITS infrastructure to related traditional capital projects.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13467.pdf, EDL# 13467.

Organizing for Regional Transportation Operations (2001)

This series of reports examines how several locations across North America are focusing on regional operations activities through partnerships among transportation and public safety agencies that provide coordinated transportation operations on a 24-hour-per-day, seven-days-per-week basis. An Executive Guide examines the key features and critical elements impacting the development and long-term stability of regional

operating organizations (ROOs). Individual case studies present the regional context, development history, organizational structure, key achievements, challenges encountered, and best practices employed in particular locations.

Cost: Free

To Access This Resource: To order a hardcopy, contact Wayne Berman, FHWA Office of Transportation Management, (202) 366-4069, Wayne.Berman@dot.gov. For the online version, access the following website addresses:

- An Executive Guide (FHWA-OP-01-137): http://www.ite.org/library/ROOExecutiveGuide.pdf
- Arizona AZTech Case Study (FHWA-OP-01-138): http://www.ite.org/library/Arizona.pdf
- Houston TranStar Case Study (FHWA-OP-01-139): http://www.ite.org/library/HoustonTranStar.pdf
- New York/New Jersey/Connecticut TRANSCOM Case Study (FHWA-OP-01-140): http://www.ite.org/library/Transcom.pdf
- San Francisco Bay Area Case Study (FHWA-OP-01-141): http://www.ite.org/library/SanFrancisco.pdf
- Southern California ITS Priority Corridor Case Study (FHWA-OP-01-142): http://www.ite.org/library/SouthernCali.pdf
- Vancouver TransLink Case Study (FHWA-OP-01-143): http://www.ite.org/library/Vancouver.pdf

Let's Talk It Over—Interagency Cooperation Facilitates Success: The New York, New Jersey, Connecticut Metropolitan Area TRANSMIT Operational Test (FHWA-JPO-99-019/ FTA-TRI-11-99-14) (2000)

This report is one in a series designed to educate public sector managers about particular ITS technologies. It is often said that the more daunting barriers to ITS deployment are not technical in nature, but institutional. This report explores how the numerous transportation agencies in the New York/ New Jersey/Connecticut metropolitan area came together

to meet institutional challenges and achieved a successful implementation of the TRANSMIT operational test.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/11493.pdf, EDL# 11493. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

What Have We Learned about Intelligent Transportation Systems? Chapter 7: What Have We Learned about Cross-Cutting Technical and Programmatic Issues? (2000)

This document is an excerpt from a compendium report that looks back on the 10 years of the National ITS Program to examine which ITS technology applications have been successful, which have not been successful, and what are the underlying factors that determine success versus failure. This section examines cross-cutting technologies for surveillance and communications, as well as programmatic issues, such as planning and analysis tools, archived data, standards, and architecture.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13323.pdf, EDL# 13323.

What Have We Learned about Intelligent Transportation Systems? Chapter 8: What Have We Learned about Cross-Cutting Institutional Issues? (2000)

This document is an excerpt from a compendium report that looks back on the 10 years of the National ITS Program to examine which ITS technology applications have been successful, which have not been successful, and what are the underlying factors that determine success versus failure. This Planning and Integration section examines institutional and

other non-technical barriers to ITS deployment and presents solutions that have been used to overcome these barriers.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13324.pdf, EDL# 13324.

Successful Approaches to Deploying a Metropolitan Intelligent Transportation System (FHWA-JPO-99-032) (1999)

This report, published on interactive CD-ROM, presents the findings of an analysis of institutional and other non-technical barriers that the public sector encountered while deploying ITS in four metropolitan areas selected as part of the Metropolitan Model Deployment Initiative (MMDI). This report recommends nine approaches that were used successfully by the public sector participants at the MMDI sites. An extensive compilation of appendices reproduces documentation that the MMDI public sector participants found instrumental in their efforts to overcome institutional and non-technical barriers. Types of documents include Federal and state policies, operating procedures, contracts, memoranda-of-understanding, organizational charts, and marketing and outreach plans.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/8483.pdf, EDL# 8483. To order the CD-ROM, contact the Operations/ITS HelpLine, (866) 367-7487, itspubs@dot.gov.

Turbo Architecture Software Training (NHI Course# 137029A)

This course provides training on how to use Turbo Architecture, which is a software tool for regional and project-specific architecture development. Target Audience: Public sector transportation professionals at the state, county, city, and metropolitan planning organization (MPO) levels, as well as private sector consultants, who are developing regional and

project architectures. Skill Level: Specialized training. Course Length: Two days.

Cost: $270. The sponsoring organization is responsible for providing 400 Mhz microcomputers running Windows SE or better, color monitors, and a hard disk with 50 MB free storage memory.

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137029A."

Roles of the Public & Private Sectors in ITS: Cooperative Partnerships

This course examines some of the critical success factors of cooperative partnerships and offers a suggested approach to partnering. The course presents important issues (legal, regulatory, procurement, public policy, etc.) associated with the establishment of partnerships. In addition, the course provides real-life examples of both successful and unsuccessful attempts at partnerships in the area of ITS. Target Audience: Public sector transportation professionals including Federal engineers, planners, project managers, and field staff and others as appropriate. Transportation professionals from state, regional, and local agencies would also benefit from participation in the course. Course Length: Eight hours. A blended Web-based version provides online interaction between participants and instructors.

Cost: $150 per participant

To Access This Resource: Access the website address http://www.citeconsortium.org/courses/2mod12-blended.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Road Weather Management Points-of-Contact

- Paul Pisano, FHWA Office of Transportation Operations, (202) 366-1301, Paul.Pisano@dot.gov
- Roemer Alfelor, FHWA Office of Transportation Operations, (202) 366-9242, Roemer.Alfelor@dot.gov
- Patrick Kennedy, FHWA Office of Transportation Operations, (202) 366-9498, Pat.Kennedy@dot.gov
- Rudy Persaud, FHWA Office of Research, Development and Technology, (202) 493-3391, Rudy.Persaud@dot.gov
- Randy VanGorder, FHWA Office of Research, Development and Technology, (202) 493-3266, Randall.VanGorder@dot.gov
- Ray Murphy, FHWA Resource Center, (708) 283-3517, Ray.Murphy@dot.gov
- Charlene Wilder, FTA Service Innovation Division, (202) 366-1077, Charlene.Wilder@dot.gov

Road Weather Management Section of the FHWA Office of Operations Website

This site is the official website of the Road Weather Management Program. The website contains an overview of the program, information on weather impacts and weather mitigation strategies, a schedule of upcoming events, information on training and equipment providers, and related links. The website also provides summaries of several ongoing projects and applications, a list of hundreds of road weather-related publications, and links to nearly 40 statewide road weather condition websites.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/Weather/index.asp.

Clarus Initiative Website

This site is a compilation of resources related to the Nationwide Surface Transportation Weather Observing and Forecasting System Initiative, also called "Clarus." The website contains a Clarus flier, frequently asked questions (with

answers), briefings presented at past meetings of the Clarus Initiative Coordinating Committee (ICC), the Clarus Concept of Operations, project design documents, information on the Clarus regional demonstrations, contacts, and related links.

Cost: Free

To Access This Resource: Access the website address http://www.clarusinitiative.org.

http://

Maintenance Decision Support System (MDSS) Website

This site is the official website of the Maintenance Decision Support System (MDSS) project. The MDSS is a decision support tool that integrates relevant road weather forecasts, coded maintenance rules of practice, and maintenance resource data to provide winter maintenance managers with recommended road treatment strategies. The site contains source documents, a summary of MDSS stakeholder meetings, contacts, information on field demonstrations and technology transfer workshops, links to prototype software releases, and links to other document archive sites.

Cost: Free

To Access This Resource: Access the website address http://www.rap.ucar.edu/projects/rdwx_mdss.

http://

PIARC Technical Committee on Winter Maintenance (C3.4) Website

This site is the official website of the World Road Association (abbreviated "PIARC") Technical Committee on Winter Maintenance (Committee 3.4 [C3.4]). The website contains a synopsis of the committee's near-term goals and activities, a schedule of upcoming committee meetings, contact information for the chairperson and secretary, recent deliverables, and a section where PIARC members can log in to restricted areas of the website. Among the committee's goals is to promote the use of advanced information technologies such as ITS to improve winter maintenance.

Cost: Free

To Access This Resource: Access the website address http://www.piarc.org/en/technical-committees/C3.4.

Standing International Road Weather Commission (SIRWEC) Website

This site is the official website of the Standing International Road Weather Commission (SIRWEC). The purpose of SIRWEC is to facilitate information exchange among meteorologists, weather forecasters, highway engineers, maintenance personnel, and others about improving the safety of travel in a variety of weather conditions. Users can join the commission using an online sign-up feature. The website contains an introduction, the group's constitution, levels of deployment of road weather information system (RWIS) infrastructure in 30 countries, a history of past SIRWEC conferences, information on the next biannual conference, a list of members, and related links.

Cost: Free

To Access This Resource: Access the website address http://www.sirwec.org.

National Highway Visibility Website

Sponsored by the FHWA Highway Community eXchange (HCX) program, this website provides a forum for discussion on the topic of weather conditions that affect visibility, especially fog. To participate in the Web-enabled discussion, users must join the National Highway Visibility (NHV) Community of Practice (CoP) using "one click" access via the website. The website includes an archive of previous messages posted as part of the discussion, reference documents, and a directory of NHV CoP members.

Cost: Free

To Access This Resource: Access the website address http://knowledge.fhwa.dot.gov/cops/hcx.nsf/home?openform&Group=National%20Highway%20Visibility.

Best Practices for Road Weather Management CD-ROM Version 2.0

This CD-ROM is a compilation of resources available to help traffic, emergency, and maintenance managers improve roadway operations under inclement weather conditions. The CD-ROM includes a searchable database of 30 case studies of successful techniques used in response to various weather threats, including fog, high winds, rain, snow, ice, flooding, tornadoes, hurricanes, and avalanches. Other resources contained on the CD-ROM include a searchable database of more than 200 road weather publications, an environmental sensor overview, and 39 statewide road condition websites and other online resources. New features in the Version 2.0 CD-ROM include a Web-based interface and feedback form.

Cost: Free

To Access This Resource: Access the website address http://ops.fhwa.dot.gov/Weather/best_practices/1024x768/right_main.htm. To order the CD-ROM, contact Lynette Goodwin, Noblis, (202) 488-3033, lynette.goodwin@noblis.org.

Road Weather Resource Identification Tool, Version 2.0

This software tool is a searchable database of hundreds of resources relating to road weather management, including research reports, articles, and other publications. Users can search the database by keyword, selecting from a list of topics, or using a "guided search" that interacts with the user through a series of questions. Version 2.0 was expanded to include more than 650 documents.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/weather/rwri/registration.htm. Free registration is required to download the software.

Integration of Emergency and Weather Elements into Transportation Management Centers (FHWA-HOP-06-090) (2006)

This report documents the findings of a study that examined how weather and emergency information is being integrated into operations at 38 transportation management centers (TMCs) across the country. The study was sponsored jointly by the FHWA Road Weather Management Program and the FHWA Emergency Transportation Operations Program. The report describes the state-of-the-practice in integration of weather and emergency information into TMC operations. The report also identifies best practices, discusses the benefits and challenges of integration, and offers recommendations on how to get started and how to enhance current weather/emergency integration at one's own TMC.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/weather/resources/publications/tcmintegration/finalrpttmc22806.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/weather/resources/publications/tcmintegration/index.htm

Prototype Weather Response System (WRS) for Transportation Operations (FHWA-HOP-06-106) (2006)

This flier provides an overview of an effort by the FHWA and the Missouri Department of Transportation to develop a prototype online software tool called Weather Response System (WRS). The WRS supports transportation systems management, operations, and maintenance prior to and during weather events. The flier presents the purposes, objectives, and features of the WRS. The flier concludes with a brief description of a three-month real-world test of the WRS and the planned enhancements that were identified during this test.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/publications/wrs/wrsflyernov06.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/publications/wrs/index.htm

The Maintenance Decision Support System (FHWA-HOP-05-061) (2005)

This flier provides an overview of an effort by the FHWA and its partners to develop a Maintenance Decision Support System (MDSS) prototype. The flier explains what an MDSS is, what is innovative about it, what the benefits are to maintenance supervisors at the state department of transportation level, where one can obtain MDSS documents and software, and what are the next steps in the development process.

Cost: Free

To Access This Resource: Contact Paul Pisano, FHWA Office of Transportation Operations, (202) 366-1301, Paul.Pisano@dot.gov.

Road Weather Information System Environmental Sensor Station Siting Guidelines (FHWA-HOP-05-026) (2005)

This document provides guidelines for siting a Road Weather Information System (RWIS) Environmental Sensor Station (ESS) and its associated atmospheric and pavement sensors. The guidelines are intended to help establish uniformity in siting ESSs and to improve the usefulness of road weather information derived from ESS observations. The steps in the siting process include assessment of road weather information requirements, site selection, sensor location, scheduling periodic site review, and consideration of additional factors, such as power, communications, aesthetics, safety and security.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/publications/ess05/ess05.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/publications/ess05/index.htm

Road Weather Management Product Guide (FHWA-HOP-05-057) (2005)

This flier profiles several resources that are products of the FHWA Office of Operations' Road Weather Management Program (RWMP). The flier profiles available training, software tools, project fliers, reports, and other publications.

Cost: Free

To Access This Resource: Contact Paul Pisano, FHWA Office of Transportation Operations, (202) 366-1301, Paul.Pisano@dot.gov.

Winter Highway Operations: A Synthesis of Highway Practice (NCHRP Synthesis# 344) (2005)

This report is an update to a 1994 NCHRP Synthesis report on managing roadway snow and ice control operations. This report presents the state-of-the-practice on winter highway operations, compiled through surveys sent to representatives of 71 transportation agencies in the U.S. and Canada. The report assesses the current state-of-the-practice, covering such issues as snow and ice control strategies, budgeting and performance measures, plow routes and material application decisions, storm clean-up, decision support, information management, operations, traditional technologies and Road Weather Information Systems (RWIS). The report also addresses agencies' environmental responsibilities, institutional and workforce issues, emerging technologies, and directions for future research.

Cost: $17 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "SYN344," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://gulliver.trb.org/publications/nchrp/nchrp_syn_344.pdf.

Advances in Road Weather Research (FHWA-HOP-04-030) (2004)

This brochure summarizes three publications that capture the status of road weather research: *Weather Information for Surface Transportation: National Needs Assessment*, *Where the Weather Meets the Road: A Research Agenda for Improving Road Weather Services*, and *Weather and Highways: Report of a Policy Forum*. The document also discusses the FHWA road weather research agenda that is based on needs identified in these publications.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Clarus—America's 21st Century Surface Transportation Weather Observing and Forecasting System (FHWA-HOP-04-037) (2004)

This flier describes the goals, benefits, and development milestones of the Nationwide Surface Transportation Weather Observing and Forecasting System Initiative, also called the "Clarus" Initiative. The flier also briefly describes, and invites readers to join, the Clarus Initiative Coordinating Committee (ICC), which provides expertise and oversight to the Clarus initiative.

Cost: Free

To Access This Resource: Access the website address http://clarusinitiative.org/documents/Clarus_2_Pager.pdf. To order a hardcopy, contact Paul Pisano, FHWA Office of Transportation Operations, (202) 366-1301, Paul.Pisano@dot.gov.

Collaborative Research on Road Weather Observations and Predictions by Universities, State Departments of Transportation, and National Weather Service Forecast Offices (2004)

From 2001 to 2003, the FHWA Road Weather Management program partnered with the National Weather Service to conduct five research projects through the Cooperative Program for Operational Meteorology, Education and Training (COMET). The purpose of these projects was to evaluate the use of weather observations and modeling to improve highway safety and support effective decisions made by the various jurisdictions that manage the highway system. These projects involved partnerships among the National Weather Service (NWS) Weather Forecast Offices (WFOs), state departments of transportation, and universities. A report documents the findings of the research projects. A brochure summarizes the findings and presents lessons learned.

Cost: Free

To Access This Resource: Access the following website addresses:

- Brochure (FHWA-HRT-04-101)—Adobe Acrobat format: http://www.tfhrc.gov/its/pubs/04101/04101.pdf
- Brochure—HyperText Markup Language (HTML) format: http://www.tfhrc.gov/its/pubs/04101/index.htm
- Report (FHWA-HRT-04-109)—Adobe Acrobat format: http://www.tfhrc.gov/its/pubs/04109/04109.pdf
- Report—HyperText Markup Language (HTML) format: http://www.tfhrc.gov/its/pubs/04109/index.htm

Weather and ITS (2004)

Published jointly by FHWA, the American Meteorological Society (AMS) and the Intelligent Transportation Society of America (ITS America), this brochure examines both the present and future use of surface transportation weather information in traveler information, as well as transportation systems operations and maintenance. The brochure lists

resource documents, websites and points-of-contact at FHWA, AMS, and ITS America.

Cost: Free

To Access This Resource: Access the website address http://www.itsa.org/itsa/files/pdf/Weather_ITS_brochure.pdf.

Where Weather Meets the Road: A Research Agenda for Improving Road Weather Services (2004)

This document outlines a research agenda for improving road weather services in the U.S., recommending that FHWA take the lead in creating a coordinated national road weather research program. The program's main objective would be to bring together the weather and transportation communities to maximize the use of available information and technologies, identify and support research priorities, and effectively implement new scientific and technological advances. Recommended next steps are to establish regional research centers and create national demonstration corridors to showcase the effectiveness of road weather improvements.

Cost: $36.90 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact National Academies Press at http://www.nap.edu, (800) 624-6242. For the online version, access the website address http://www.nap.edu/books/0309091365/html.

Environmental Sensor Stations (ESS) ITS Standards Advisory (2003)

This flier is one of a series of documents that provide state and local transportation agencies with background and guidance on development issues and other key activities related to ITS standards. This flier provides an update on recent developments concerning standards for environmental sensor stations within the National Transportation Communications for ITS Protocol (NTCIP) family of ITS standards. An initial version of the NTCIP standard for environmental sensor stations—NTCIP 1204—was published in 1998 and a second

version is under development. The flier contains case studies on the use of NTCIP 1204 in Minnesota, Washington, and Wisconsin; a list of contacts; and a bibliography.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.standards.its.dot.gov/Documents/advisories/ess_advisory.pdf
- HyperText Markup Language (HTML) format: http://www.standards.its.dot.gov/Documents/advisories/ess_advisory.htm

Intelligent Transportation Systems and Winter Operations in Japan (FHWA-PL-03-016) (2003)

This report documents the findings of a 2003 scanning tour of Hokkaido, Japan, to investigate the use of advanced technologies for winter maintenance operations and implementation of those advances in Japan's ITS architecture. The report presents the scanning team's recommendations for application of Japan's techniques in the U.S. including testing several advanced winter maintenance vehicle systems, investigating integration of weather-related information into ITS corridors, developing performance-based standards for winter maintenance, and establishing a data-sharing project involving the National Weather Service and transportation agencies.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://international.fhwa.dot.gov/Pdfs/converted_to_html/scanreports/intelligent/japan_winterops.pdf
- HyperText Markup Language (HTML) format: http://international.fhwa.dot.gov/Pdfs/converted_to_html/scanreports/intelligent/intelligentmain.htm

Proceedings of the Workshop on Strategy for Providing Atmospheric Information (2002)

This document is a compilation of presentations given at the Workshop on Strategy for Providing Atmospheric Information, held December 3-5, 2001, in Arlington, Virginia and sponsored by the Office of the Federal Coordinator of Meteorology's (OFCM) Joint Action Group for Weather Information for Surface Transportation (JAG/WIST). The goal of the workshop was to consider how best to take advantage of the considerable investments in weather observation technology that have already been made on a national scale.

Cost: Free

To Access This Resource: Access the website address http://www.ofcm.gov/sai/presentations/sai_linking_file.htm.

Road Weather Management: Highlights of the Federal Program (FHWA-OP-02-070) (2002)

This brochure presents the goals and objectives of the FHWA Road Weather Management Program, which are to understand the impacts of weather on the nation's highway system and develop and promote methods of minimizing these impacts. The brochure describes three particular facets of the program: hurricane evacuation, the Maintenance Decision Support System (MDSS), and traffic management for weather response.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

An Introduction to Standards for Road Weather Information Systems (RWIS) (FHWA-OP-02-079) (2002)

This brochure presents an overview of standards that are being developed for road weather information systems (RWIS). The brochure examines three types of standards:

siting standards, calibration standards, and communication standards. The brochure presents a brief case study on how siting standards were deployed by the Minnesota Department of Transportation. The brochure also lists resources for the FHWA Road Weather Management Program, the ITS Peer-to-Peer Program, and the Integrating NTCIP (National Transportation Communications for ITS Protocol) Compliant Hardware (INCH) Project.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/13670.html, EDL# 13670. To order a hardcopy, contact Paul Pisano, FHWA Office of Transportation Operations, (202) 366-1301, Paul.Pisano@dot.gov.

Weather Information for Surface Transportation (WIST): National Needs Assessment Report (2002)

Published by the Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM), part of the National Oceanic and Atmospheric Administration (NOAA), this report compiles and analyzes weather information needs for selected surface transportation sectors. The report draws conclusions that are common to roadway, railway, transit, and marine transportation, pipeline systems, and airport ground operations. In addition, the report suggests next steps for a broadly coordinated weather information for surface transportation (WIST) initiative.

Cost: Free

To Access This Resource: Access the website address http://www.ofcm.gov/wist_report/wist-report.htm.

Maintenance and Construction Operations User Service: An Addendum to the ITS Program Plan (2001)

This document provides a detailed description of the maintenance and construction operations user service. This document serves as an addendum to the *National ITS Program*

Plan in describing the 32nd ITS user service and establishes the need for including maintenance and construction operations in the National ITS Architecture, focusing on four specific functions: maintenance vehicle fleet management, roadway management, work zone management and safety, and roadway maintenance conditions and work plan dissemination.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/13465.pdf, EDL# 13465.

National Review of Hurricane Evacuation Plans and Policies (2001)

This report documents the findings of a review of state departments of transportation hurricane evacuation policies and strategies. This report includes information on the application of evacuation strategies and technologies, such as the use of lane reversal (contraflow) operations and ITS. The report also summarizes current evacuation management policies, methods of information exchange, and decision-making criteria.

Cost: Free

To Access This Resource: Access the website address http://www.hurricane.lsu.edu/%26EvacuationReview.pdf.

Proceedings of the Weather Information for Surface Transportation (WIST) Forum (2001)

This document provides a summary of the Weather Information for Surface Transportation (WIST) Forum, held December 4-6, 2000, in Rockville, Maryland, and sponsored by the Office of the Federal Coordinator of Meteorology's (OFCM) Joint Action Group for Weather Information for Surface Transportation (JAG/WIST). The goal of the forum was to improve the weather information that is available to decision-makers. The proceedings summarize each of the plenary speeches, breakout group sessions, and closing remarks, and link to the presentations given at the forum where available.

Cost: Free

To Access This Resource: Access the website address http://www.ofcm.gov/wist2/proceedings2000/wist2startup.htm. To order a hardcopy, contact Paul Pisano, FHWA Office of Transportation Operations, (202) 366-1301, Paul.Pisano@dot.gov.

Surface Transportation Weather Decision Support Requirements (1999-2000)

This series of documents presents the findings of the Surface Transportation Weather Decision Support Requirements (STWDSR) project. STWDSR Draft Version 1.0 documents the weather information requirements of all road operators, maintainers, and users. STWDSR Draft Version 2.0 focuses on the decision support requirements of a particular stakeholder group—winter road maintenance engineers. It also presents an operational concept for a Weather Information for Surface Transportation Decision Support System (WIST-DSS).

Cost: Free

To Access This Resource: The Executive Summary is available in hardcopy. To order, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Draft Version 1.0: Executive Summary (1999): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/11823.pdf, EDL# 11823
- Draft Version 1.0: Full Report (2000): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/12144.pdf, EDL# 12144
- Draft Version 1.0: User Needs and Appendices (2000): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/12143.pdf, EDL# 12143
- Draft Version 2.0: Operational Concept Definition (2000): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13134.pdf, EDL# 13134
- Draft Version 2.0: Preliminary Interface Requirements (2000): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13242.pdf, EDL# 13242

Saving Lives, Improving Transportation Efficiency—Weather Information for Surface Transportation (FHWA-JPO-99-015) (1999)

This brochure, one in a series designed to encourage decision-makers to invest their own budget resources in ITS, examines the safety and travel efficiency benefits of weather information for surface transportation (WIST) systems. The brochure quotes from road maintenance departments, transit agencies, and everyday motorists about the benefits they have experienced from using these systems.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/6863.pdf, EDL# 6863. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Road Risk (FHWA-HOP-05-024) (2005)

This 21-minute video explores the effects of weather on highway operations and the existing and emerging solutions being implemented to improve mobility, safety, and productivity. The video discusses ongoing efforts to improve operations, focusing on operations under severe weather conditions and the role of ITS. The video highlights several technology solutions, including low visibility warning systems, maintenance decision support systems, and 511.

Cost: Free

To Access This Resource: To order a copy of the video, contact Paul Pisano, FHWA Office of Transportation Operations, (202) 366-1301, Paul.Pisano@dot.gov.

Principles and Tools for Road Weather Management (NHI Course# 137030)

This course helps those involved in highway maintenance and operations develop techniques and strategies for tackling road weather problems. This course provides basic knowledge of meteorology and addresses the technological resources available to support highway personnel in making effective

road weather management decisions. Key topics covered in the course include the impacts of weather on highway operations, fundamentals of meteorology including how it pertains to Road Weather Information Systems (RWIS), technical and institutional resources available for implementing RWIS and a range of effective and open solutions to various types of road weather conditions and for various management practices. The course focuses heavily on resources and solutions, and how those solutions can reduce the impact of adverse weather on the traveling public and the highway agency. Target Audience: Transportation engineers, planners, managers, public works personnel, safety engineers, systems engineers, operators, maintenance personnel and emergency personnel. Course Length: One Day

Cost: $200 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137030."

Anti-icing/RWIS Computer-Based Training

This course is a self-paced, interactive, multi-media computer-based training (CBT) course that instructs students on the use of Road Weather Information Systems (RWIS) and anti-icing techniques. After completing the introductory lessons, students put their knowledge into practice in the Scenario Room in which students battle winter events with tools available in a simulated winter maintenance facility.

Cost: $400 for members of the American Public Works Association (APWA); $500 for non-members

To Access This Resource: Contact the APWA Bookstore, http://www.apwa.net/bookstore/detail.asp?PC=PB.X407, (800) 848-2792, fax: (816) 472-1610.

Fundamentals of Road Weather Management CD-ROM: Professional Development Module

This professional development module was developed by FHWA in partnership with the Institute of Transportation Engineers (ITE) to provide transportation practitioners with a quick, concise, and easy way to learn the basics of road weather management. The CD-ROM provides general information about the scope of the road weather problem, the types of management strategies that can be used, the technologies available to support road weather management, and actions that can be taken to address road weather incidents. The CD-ROM also presents best practices in road weather management. The module includes a PowerPoint presentation that takes about an hour to complete, as well as a supplemental guide.

Cost: $75 for ITE members; $100 for non-members

To Access This Resource: Contact the ITE Bookstore, http://www.ite.org/bookstore/index.asp, (202) 289-0222 x130, fax: (202) 289-7722, publications@ite.org.

Rural Issues Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- Paul Pisano, FHWA Office of Transportation Operations, (202) 366-1301, Paul.Pisano@dot.gov
- Steve Clinger, FHWA Office of Transportation Management, (202) 366-2168, Stephen.Clinger@dot.gov
- Bob Rupert, FHWA Office of Transportation Management, (202) 366-2194, Robert.Rupert@dot.gov
- Althea Goodine, FTA Office of Mobility Innovation, (202) 366-6678, Althea.Goodine@dot.gov

Rural ITS Section of the FHWA Office of Operations Website

This website is a compilation of resources related to the use of ITS technologies in rural and statewide transportation. The website contains announcements of upcoming events, resource documents, presentations, and related links.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/int_its_deployment/rural/rural.htm.

Traveler Information and Tourism: Assessment of Traveler Information and 511 Impacts upon Tourist Destinations and National Parks (2004)

This report documents the findings of a study that examined the impact of traveler information on four tourist areas: Acadia National Park in Maine; Branson, Missouri; the I-81 Corridor in the Shenandoah Valley of Virginia; and Salt Lake City, Utah. The report examines the impacts of traveler information at each of the four sites in depth, and then concludes with cross-cutting findings and recommendations on how to improve traveler information operations in tourist areas.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14054_files/14054.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14054.htm, EDL# 14504

Best Practices of Rural and Statewide ITS Strategic Planning (FHWA-OP-02-037) (2002)

This report documents best practices in rural and statewide ITS planning and presents an overview of the "typical" ITS strategic planning process. This report contains 30 examples of ITS rural and statewide strategic planning (12 in-depth case studies and 18 interview summaries). In addition, this report documents the benefits of rural and statewide ITS strategic planning, in order to encourage future planning efforts in other locations.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13608.pdf, EDL# 13608.

Safety Applications of ITS in Rural Areas (FHWA-OP-02-038) (2002)

This report examines current, past, and planned infrastructure-based technology applications aimed at reducing the frequency and/or severity of crashes in rural areas. The report focuses on variable speed limit (VSL) systems and safety warning systems (SWSs), although a range of technology applications is addressed in the report.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13609.html, EDL# 13609. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Small Communities Benefits: Innovative Traffic Management Practices in Small Communities (FHWA-OP-02-033) (2002)

This document profiles five small communities that have been adept at finding traffic management solutions that address their needs and at the same time match their financial and human resources. The five communities encompass a range of population sizes, traffic management solution types, and geographic locations.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13612.html, EDL# 13612. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Rural ITS Solutions: Rural ITS Toolbox (FHWA-OP-01-030) (2001)

This report profiles over 50 successful rural and statewide ITS applications from across the U.S. For each application, the report provides a description, transportation needs addressed by the application, expected benefits, lessons learned from previous deployments, opportunities for integration with other ITS systems, and institutional and implementation issues that may be encountered when attempting to deploy the system. Each profile also includes a real-world example of this type of application in action.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13477.html, EDL# 13477.

Serving Rural America (FHWA-EP-01-033) (2001)

This guide provides information about the U.S. Department of Transportation's grant programs that are of direct interest to rural areas and small communities. Published by the FHWA Office of Planning and Environment, the guide also includes

a brief discussion of programs that address transportation problems that both rural and urban areas typically face.

Cost: Free

To Access This Resource: To order a hardcopy, contact Elizabeth Fischer, FHWA Office of Planning, (202) 366-0349, Elizabeth.Fischer@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.fhwa.dot.gov/planning/rural/ruralamerica/ruralfinal-nu2.pdf
- HyperText Markup Language (HTML) format: http://www.fhwa.dot.gov/planning/rural/ruralamerica/index.html

National Parks: Transportation Alternatives and Advanced Technology for the 21st Century (1999)

This report documents the findings of the workshop on National Parks: Transportation Alternatives and Advanced Technology for the 21st Century that was held June 3-5, 1999, in Big Sky, Montana. The number of visitors to National Parks in the U.S. is expected to increase fivefold in the next 40 years. Meanwhile, the National Park Service (NPS) is expected to provide increased services with fewer resources and simultaneously protect the parks' environment for future generations. Workshop participants explored how the use of advanced transportation technologies can help the NPS meet these formidable challenges.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/proceedn/11803.pdf, EDL# 11803.

Rural ITS User Needs (1999)

This document articulates a comprehensive list of rural ITS user needs that can be used to identify rural travel requirements to guide rural ITS deployments. The needs identified in this document serve as the basis for definition of a rural ITS

infrastructure, update of the *Rural ITS Program Plan*, and maintenance of the National ITS Architecture.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/10063.pdf, EDL# 10063.

Technology in Rural Transportation: "Simple Solutions" (FHWA-RD-97-108) (1997)

This report profiles more than 50 proven, cost-effective, "low-tech" solutions to problems in rural transportation. For each solution, the report provides a description of the "low-tech" approach, the goals of the system and whether or not these goals have been achieved, current status and projected schedule for the future, location or geographic scope, agencies involved, project costs (if available), and contact information.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/3144.pdf, EDL# 3144. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Rural ITS Toolbox (NHI Course# 137007)

This course describes many ITS-related practices and techniques that have been applied successfully to rural transportation problems, which are described in the Rural ITS Toolbox document. The training course goes into further detail by including problem solving techniques and training for the course participant to describe ITS technologies to their stakeholders. This course will help participants identify cost-effective ITS technologies that can address rural transportation problems. Skill Level: Core learning. Target Audience: County, municipal, and town executives; traffic engineers; state, Federal, and local transportation planners and operations personnel; motor carrier managers; environmental groups; information technology (IT) personnel; academia; consultants; and contractors. Course Length: Eight hours.

Cost: $200 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137007."

Integrated Transportation Management for Small- and Medium-Sized Communities (NHI Course# 137043)

This course introduces the use of Advanced Transportation Management Systems (ATMS) and Advanced Traveler Information Systems (ATIS) when deployed in small and medium-sized communities. This course provides participants with the basic knowledge and resources needed to begin the process of planning for ATMS and ATIS in small and medium sized communities. Target Audience: Transportation professionals involved in the planning, design, implementation, and operation of ITS in small and medium sized communities. Course Length: One day.

Cost: $200 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137043."

Rural ITS

The purpose of this course is to provide transit, and health and human service agencies with an overview of ITS as well as the costs and benefits of applying ITS to transit operations. This course emphasizes the use of technologies to improve operations, customer service, maintenance and management for agencies with small fleets, agencies that operate over wide geographic areas and agencies that have challenges in coordinating their services with other transportation providers. Providing transit agencies with this information is crucial as agencies search for cost-effective and innovative ways to provide better service and administer services more efficiently. Agencies armed with this knowledge can successfully determine whether the deployment of new technologies is needed and can then pursue the procurement and deployment. Target Audience: Agency managers, lead

maintenance staff, customer service staff and others interested in learning about useful technologies. Course Length: One day.

Cost: Free for Federal, state, and local government employees; $150 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfoasp?CourseNumber=ID035 or contact Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

Flexible Community Transit Services: Planning, Design, and Technology

Transit operators increasingly need to serve markets for which conventional bus and rail modes can be too expensive, inefficient, or inflexible. Many operators are finding that flexible services such as route deviation have an important role to play in serving low-density areas, dispersed trip patterns, and travel by seniors and people with disabilities. This course presents the wide variety of innovative services now in use at transit systems in North America and Europe and examines and how ITS technologies can help implement flexible services. Other topics covered in the course include current efforts in Europe to use technology to create better flexible transit services, coordination of conventional transit service and paratransit to reduce the cost of compliance with the Americans with Disabilities Act of 1990 (ADA), the benefits of technology as applied to flexible services, and the use of market research and performance data to determine where flexible services are appropriate. The course will also explore implementation issues, such as contracting, community relations, and technology procurement. Target Audience: Transit and paratransit managers, service planners, transportation planners from metropolitan planning organizations, social service agencies, and others concerned with effective and efficient service delivery. Course Length: Two days.

Cost: Free for Federal, state, and local government employees; $300 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfoasp?CourseNumber=ID008 or contact Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

Tolling and Pricing Point-of-Contact

- Wayne Berman, FHWA Office of Transportation Management, (202) 366-4069, Wayne.Berman@dot.gov
- Patrick DeCorla-Souza, FHWA Office of Transportation Management, (202) 366-4076, Patrick.DeCorla-Souza@dot.gov

Tolling and Pricing Opportunities Section of the FHWA Office of Operations Website

This website is a compilation of information about FHWA tolling and pricing programs. With the enactment of Safe, Accountable, Flexible, Efficient Tranportation Equity Act: A Legacy for Users (SAFETEA-LU) in 2005, Title 23 of the U.S. Code was revised to contain several new provisions for tolling and pricing. The website contains a solicitation for expressions of interest from states and other public entities to participate in new tolling programs available under the new legislation, who can respond to the solicitation directly through the website. The website also contains presentations, fact sheets, articles, reports, white papers, Federal guidance, points-of-contact, and related links.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/tolling_pricing/index.htm.

Value Pricing Home Page Website

This site, co-sponsored by the FHWA, Minnesota Department of Transportation and the University of Minnesota's Hubert H. Humphrey Institute of Public Affairs, is a compilation of materials related to value pricing. The website contains a tutorial on value pricing, including a definition, examination of the different kinds of pricing, a draft information kit, and glossary. The website lists value pricing projects in the U.S., including established projects and those in the demonstration stage. Through the website, users can download reports, workshop proceedings, project work plans, and a promotional video. The website also supports a value pricing online discussion group.

Cost: Free

To Access This Resource: Access the website address http://www.hhh.umn.edu/centers/slp/projects/conpric/index.htm.

Congestion Pricing: A Primer (FHWA-HOP-07-074) (2006)

This primer presents an overview of congestion pricing as an effective tool to address the growing congestion problem in the U.S. The primer defines congestion pricing and discusses its benefits, then highlights examples of congestion pricing from both the U.S. and elsewhere. The primer discusses Federal policies and programs that affect congestion pricing and concludes with a list of frequently asked questions (with answers).

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/publications/congestionpricing/congestionpricing.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/publications/congestionpricing/index.htm

A Guide for HOT Lane Development (FHWA-OP-03-009) (2003)

This guide provides information on a wide range of policy and technical issues associated with high-occupancy toll (HOT) lanes, focusing on how these activities are likely to differ from those associated with more traditional highway improvements. This guide includes case studies of the four existing HOT lane facilities in the U.S., as well as two recent HOT lane studies that are indicative of current trends.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13668_files/images/13668.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13668.html, EDL# 13668

Automated Vehicle Identification Tags in San Antonio: Lessons Learned from the Metropolitan Model Deployment Initiative (FHWA-OP-01-037) (2001)

This is one in a series that documents lessons learned from the Metropolitan Model Deployment Initiative (MMDI). This report documents the benefits of integration of electronic toll collection and traffic management.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13230_files/13230.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13230.html, EDL# 13230

Traffic Incident Management Points-of-Contact

- Linda Dodge, ITS Joint Program Office, (202) 366-8034, Linda.Dodge@dot.gov
- Dave Helman, FHWA Office of Transportation Operations, (202) 366-8042, David.Helman@dot.gov
- Laurie Radow, FHWA Office of Transportation Operations, (202) 366-2855, Laurel.Radow@dot.gov
- Paul Sullivan, FHWA Office of Transportation Operations, (202) 366-5465, Paul.Sullivan@dot.gov
- David Smith, FHWA Office of Safety, (202) 366-6614, David.Smith@dot.gov
- Randy VanGorder, FHWA Office of Research, Development and Technology, (202) 493-3266, Randall.VanGorder@dot.gov
- Chung Tran, FHWA Resource Center, (720) 963-3233, Chung.Tran@dot.gov

Traffic Incident Management Section of the FHWA Office of Operations Website

This website is a compilation of resources related to traffic incident management. This website contains press releases, resource documents, and a schedule of upcoming meetings of groups that focus on traffic incident management, such as the Institute for Electrical and Electronics Engineers (IEEE) Incident Management Working Group.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/incidentmgmt/index.htm.

Planned Special Events Traffic Management Section of the FHWA Office of Operations Website

This website is a compilation of resources related to traffic management for planned special events. The website explains what planned special events are—including sporting events, concerts, festivals, conventions and political protests—and why managing traffic before, during and after them is so

important. The website contains key documents including the *Managing Travel for Planned Special Events* handbook and announcements of important upcoming events such as the biennial National Conference on Managing Travel for Planned Special Events.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/program_areas/sp-evnts-mgmt.htm.

http://

National Traffic Incident Management Coalition (NTIMC) Website

This website is the official website for the National Traffic Incident Management Coalition (NTIMC), a forum where major stakeholders involved in traffic incident management (TIM) work together to advance best practices. The website contains the NTIMC newsletter, a calendar of upcoming events, a membership roster, and other resources. On March 1, 2007, the NTIMC released its proposed National Unified Goal (NUG) for Traffic Incident Management. The website has the full text of the NUG, a NUG fact sheet, a presentation with accompanying text that describes the NUG, and other materials.

Cost:

To Access This Resource: Access the website address http://www.timcoalition.org.

http://

Managing Travel for Planned Special Events Section of the TMC Pooled-Fund Study Website

This website is a compilation of resources related to traffic management for planned special events assembled as part of the Traffic Management Center (TMC) Pooled-Fund Study. The TMC Pooled-Fund Study is a joint effort by FHWA and several state departments of transportation to advance both state-of-the-art and state-of-the-practice of several aspects of transportation operations. The website contains links to key documents, including the *Managing Travel for Planned Special Events* series of documents and the NCHRP Synthesis report *Transportation Planning and Management for Special Events*,

as well as example planned special event traffic management documents from several states and local agencies.

Cost: Free

To Access This Resource: Access the website address http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=59&new=2.

Planned Special Events: Checklists for Practitioners

This tool is a series of six checklists that outline the steps for managing traffic before, during and after planned special events. The steps outlined in these checklists are based on Chapters 4 through 10 of the handbook *Managing Travel for Planned Special Events*. Each step incorporates several assessments designed to address the effects that planned special events may have on traffic, parking, pedestrian access, and transit operations. The assessments include consideration of such factors as travel demand, road capacity, site capacity, event operation, and available resources.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/publications/psechecklists/index.htm.

Intelligent Transportation Systems for Traffic Incident Management: Deployment Benefits and Lessons Learned (FHWA-JPO-07-001) (2007)

This leaflet is one in a series that shows how ITS technologies can reduce congestion, in support of the U.S. Department of Transportation's Congestion Initiative. This leaflet summarizes the benefits, costs, extent of deployment and lessons learned about the use of ITS for traffic incident management. The online version contains a full list of sources, so that all information in the leaflet's brief four pages is backed up with supporting documentation.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.its.dot.gov/jpodocs/repts_te/14288_files/14288.pdf
- HyperText Markup Language (HTML) format: http://www.its.dot.gov/jpodocs/repts_te/14288.htm, EDL# 14288

Coordinated Freeway and Arterial Operations Handbook (FHWA-HRT-06-095) (2006)

This handbook provides direction, guidance and recommendations on how to coordinate freeway and arterial operations in a proactive and comprehensive manner. The handbook defines coordinated freeway and arterial operations (CFA) and discusses how to apply CFA to four areas of high pay-off: traffic incident management, work zone management, planned special events management, and day-to-day (or recurring) operations. The handbook concludes with a discussion of new technologies such as ITS and an example of CFA in an incident management program in Northern Virginia. Development of this handbook was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the website address http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/06095.pdf.

Simplified Guide to the Incident Command System for Transportation Professionals (FHWA-HOP-06-004/ FHWA-NHI-06-007) (2006)

This guide provides an introduction to the Incident Command System, a systematic tool used for the command, control, and coordination of emergency response. ICS allows agencies

to work together using common terminology and operating procedures for controlling personnel, facilities, equipment, and communications at a single incident scene. ICS is part of a broader incident management system as outlined in the Department of Homeland Security's National Incident Management System (NIMS). Topics covered in the guide include ICS organizational structure, characteristics of unified command, strategies and tools that support the development of an ICS framework for day-to-day highway incident management, considerations for the on-scene management of highway incidents, and the benefits of ICS. The guide also summarizes NIMS requirements for resource management, communications, and information management.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/publications/ics_guide/ics_guide.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/publications/ics_guide/index.htm

Managing Travel for Planned Special Events: First National Conference Proceedings (FHWA-OP-05-017) (2005)

This document provides a summary of the first national conference on planned special events, held December 1-3, 2004 in New Orleans, Louisiana. The proceedings summarize the presentations from both the plenary and breakout sessions. The breakout sessions were organized into eight tracks: regional planning and coordination, event-specific operations planning, traffic management and security plans for stadiums and arenas, ITS support and applications, traffic management plans, transit and travel demand management, security and contingency planning, and traffic management team day-of-event activities.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/program_areas/conf1204/index.htm.

IMS Model Procedures Guide for Highway Incidents (Item# 36612) (2004)

Developed by the National Fire Service (NFS) Incident Management Service Consortium, this model procedures guide applies the more general principles of incident management systems (IMS) to highway traffic incidents. The IMS principles were developed by the NFS to deal with a wide range of incidents, including structure fires or collapses, emergency medical services incidents, wildland fires, and hazardous material spills. The purpose of the guide is to help the types of organizations involved in highway incidents—including law enforcement, fire and rescue, emergency medical services, hazardous material response, traffic management, repair and maintenance, utilities, towing and recovery, public works, and motorist assistance—work together in a well-coordinated and unified fashion. This model procedures guide can serve as the initial design document from which organizations in a given region may build joint operating procedures. The document emphasizes using IMS principles for all types of highway incidents, from small routine incidents to large complicated unexpected disasters.

Cost: $25

To Access This Resource: To order a hardcopy, contact the International Fire Service Training Association's (IFSTA's) Fire Protection Publications division, part of Oklahoma State University, (800) 654-4055, http://www.ifsta.org.

Incident Management (IM) ITS Standards Advisory (2004)

This flier is one of a series of documents that provide state and local transportation agencies with background and guidance on development issues and other key activities related to ITS standards. This flier describes the family of standards developed by the Institute of Electrical and Electronics

Engineers (IEEE) that facilitates incident management. The IEEE 1512 family allows traffic management systems and public safety management systems to exchange incident-related information immediately for real-time command and control of resources. The flier profiles each of the four standards in the family (the base standard and standards for traffic incident management, public safety, and hazardous materials), and provides an update on their standards development status. The flier contains case studies on the use of IEEE 1512 standards in New York, Washington, D.C., Utah, and Washington State; and a list of available resources for technical assistance.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.standards.its.dot.gov/Documents/advisories/IM_advisory.pdf
- HyperText Markup Language (HTML) format: http://www.standards.its.dot.gov/Documents/advisories/IM_Advisory.htm

Watching It All Come Together: Case Studies Report on Special Event Planning and Management (FHWA-HOP-04-029) (2004)

This report profiles seven examples of traffic management for planned special events: Texas State Fair in Dallas, Texas; 2000 Democratic National Convention in Los Angeles, California; severe weather in Monroe County, New York; New Year's Eve in Times Square in New York City, New York; After the Independence Day fireworks in Northern Virginia; sporting events at Bank One Ballpark in Phoenix, Arizona; and sporting events at Compaq Center in San Jose, California. The report highlights helpful strategies used by the agencies to get transportation, law enforcement, emergency management, and other stakeholders to work together effectively.

Cost: Free for members if ordered through Public Technologies, Inc. (PTI); $15 for non-members; free if ordered through FHWA.

To Access This Resource:

- Access the website address http://www.pti.org/index.php/ptiee1/inside/C47.
- Contact Laurie Radow of the FHWA Office of Transportation Operations, (202) 366-2855, Laurel.Radow@dot.gov.

Managing Travel for Planned Special Events (2003)

This series of documents presents a wide range of information on planning for and managing transportation for planned special events. A handbook presents a recommended set of policies, regulations, processes, impact mitigation strategies, equipment and personnel resources and technology applications used in planned special events traffic management. A frequently asked questions (FAQ) sheet summarizes the information in the handbook into a list of 33 questions with answers. A two-page fact sheet encapsulates the essential information even further and lists available resources including training opportunities. A presentation guides readers through the special events traffic management planning process. Finally, a tri-fold brochure contains an overview of planned special events traffic management, as well as quotes from transportation operators who have used these techniques with success. Development of these materials was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the following website addresses:

- Handbook (FHWA-OP-04-010)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/handbook/handbook.pdf
- Handbook—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13883.html, EDL# 13883 or http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/handbook/index.htm

- Frequently Asked Questions—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/faq/faq.pdf
- Frequently Asked Questions—HyperText Markup Language format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/faq/faq.htm
- Fact Sheet (FHWA-OP-04-033)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/fact_sheet/factsheet.pdf
- Fact Sheet—HyperText Markup Language format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/fact_sheet/fact_sheet.htm
- Presentation—HyperText Markup Language format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/presentation/presentation.htm
- Presentation—MS PowerPoint format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/presentation/presentation.ppt
- Brochure (FHWA-OP-04-033)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/brochure/brochure.pdf
- Brochure—HyperText Markup Language format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/brochure/brochure.htm

Quick Clearance and "Move It" Best Practices: Executive Summary (2003)

This document summarizes the findings of a survey, conducted by the I-95 Corridor Coalition's Coordinated Incident Management program track, of quick clearance policies and procedures among its member states and organizations. The report covers both the clearance of major incidents as well as minor crashes and stalled vehicles. This study builds upon the NCHRP Synthesis# 318 *Safe and Quick Clearance of Traffic Incidents*. Other documents related to the I-95 Corridor Coalition's Quick Clearance and "Move It" Best Practices project can be found at http://66.167.232.132/pm/ViewProject.asp?pid=128.

Cost: Free

To Access This Resource: Access the website address http://66.167.232.132/pm/projectmanagement/Upfiles/reports/summary325.pdf.

Safe and Quick Clearance of Traffic Incidents (NCHRP Synthesis# 318) (2003)

This report documents the findings of a survey among all 50 states of laws, policies, and procedures that have been used successfully to facilitate the clearance of highway traffic incidents, primarily those blocking travel lanes and attended to by the vehicle operator. The report discusses quick clearance legislation ("Move-It" and "Steer It, Clear It" laws), hold harmless laws, and policies governing the removal of accident victims. Also discussed are the duties of private tow truck drivers, policies governing the rapid clearance of semi-tractor trailers, appropriate actions to take when there is an accompanying fuel spill, and technologies to provide uninterrupted information flow between agencies participating in incident clearance.

Cost: $19 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "SYH318," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://gulliver.trb.org/publications/nchrp/nchrp_syn_318.pdf.

Traffic Incident Management Tow Operators Workplan (TIMTOW) Guide (2003)

Developed by the Towing & Recovery Association of America (TRAA) with a grant from FHWA, this guide presents a framework for traffic incident management (TIM), outlining five main issues in TIM site operations: responder safety, secondary crash prevention, traffic control, site management, and quick clearance. Interest by the towing industry in participation as full professional partners in TIM activities has

grown considerably in recent years, and one of the purposes of the guide is to show tow operators how they can become more involved. The guide presents an example of successful teamwork among the many actors that can be involved in TIM, as well as establishes a standard of care and level of competency for TIM tow operations.

Cost: Free

To Access This Resource: To order a hardcopy, contact David Helman, FHWA Office of Transportation Operations, (202) 366-8042, David.Helman@dot.gov.

Transportation Planning and Management for Special Events (NCHRP Synthesis# 309) (2003)

This report presents the state-of-the-practice in planning and managing transportation during special events. The report addresses how agencies plan for special events, coordinate services, and manage the overall transportation system. The report will be of interest to any organization with a stake in special event planning, including transportation agencies, law enforcement, fire departments, media, event organizers, political organizations, and the military. Appendices present special event traffic operations plans from Florida, Maryland and New Hampshire.

Cost: $16 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy report, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "SYH309," (202) 334-3213, Fax: (202) 334-2519. For the online version, access the following website addresses:.

- Chapters 1 and 2: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/nchrp_syn_309a.pdf
- Chapter 3: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/nchrp_syn_309b.pdf
- Chapters 4, 5, 6 and 7: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/nchrp_syn_309c.pdf
- Chapter 8: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/nchrp_syn_309d.pdf

- Chapters 9 and 10: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/nchrp_syn_309e.pdf
- Appendix A: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/nchrp_syn_309aa.pdf
- Appendix B: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/nchrp_syn_309ab.pdf
- Appendix C: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/nchrp_syn_309ac.pdf
- Appendix D: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/nchrp_syn_309ad.pdf
- Appendix E: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/nchrp_syn_309ae.pdf
- Appendix F: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/nchrp_syn_309af.pdf

Regional Traffic Incident Management Programs: Implementation Guide (FHWA-OP-01-002/FTA-TRI-11-00-03) (2001)

This report is one in a series designed to provide public sector project managers with practical "how to" advice on the implementation of selected ITS technologies. This report presents a framework for developing what is missing in almost every urban area in the U.S.—a formal, multi-agency traffic incident management program with endorsement by, participation from, and coordination by senior agency management, and which includes all the participating agencies. The report discusses each of the steps needed to formalize the incident management effort. The intended audience for this report is project-level managers from organizations typically involved in traffic incident management, such as transportation agencies, law enforcement agencies, fire and rescue agencies, hazardous material (HazMat) cleanup services, towing and recovery companies, and public and private traveler information providers.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13149.pdf, EDL# 13149. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Incident Management Successful Practices: A Cross-Cutting Study (FHWA-JPO-99-018/FTA-TRI-11-99-09) (2000)

This report, one in a series designed to educate public sector managers about particular ITS technologies, examines how several locations across the country are using ITS technology to overcome agency and jurisdictional barriers to implement effective traffic incident management programs. The report walks through each stage of the traffic incident management timeline (detection, verification, response, site management, traffic management, clearance, and recovery), showing the different choices made by each location profiled.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/11484.pdf, EDL# 11484. To order a hardcopy, contact the Operations/ ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Traffic Incident Management Handbook (2000)

This handbook is an update of the *Freeway Incident Management Handbook* published in 1991. The handbook provides details on key elements of successful traffic incident management programs, as well as field operations. The handbook includes new and advanced traffic incident management topics. It focuses on the safety benefits achievable through effective traffic incident management, as experienced by crash victims, the motoring public, and response agency field personnel.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/rept_mis/13286.pdf, EDL# 13286. To order a hardcopy, contact David Helman, FHWA Office of Transportation Operations, (202) 366-8042, David.Helman@dot.gov.

What Have We Learned about Intelligent Transportation Systems? Chapter 2: What Have We Learned about Freeway, Incident, and Emergency Management and Electronic Toll Collection? (2000)

This document is an excerpt from a compendium report that looks back on the 10 years of the National ITS Program to examine which ITS technology applications have been successful, which have not been successful, and what are the underlying factors that determine success versus failure. This section examines freeway, incident, and emergency management and electronic toll collection systems.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13318.pdf, EDL# 13318.

Faster Response Time, Effective Use of Resources—Integrating Transportation and Emergency Management Systems (FHWA-JPO-99-004) (1999)

This brochure, one in a series designed to encourage decision-makers to invest their own budget resources in ITS, examines the safety and efficiency benefits of integrating traffic incident management (typically led by transportation departments) with emergency response (typically run by law enforcement). The brochure quotes leaders in transportation and law enforcement about the benefits they have experienced from co-locating critical functions, sharing communications media, and automating notification to responding agencies.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/6874.pdf, EDL# 6874. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Improving Mobility, Saving Lives—Safety Service Patrols (FHWA-JPO-99-005) (1999)

This brochure, one in a series designed to encourage decision-makers to invest their own budget resources in ITS, examines the mobility and safety benefits of safety service patrols. Operated typically by state departments of transportation, these fleets of trucks assist stranded motorists and help manage the flow of traffic during incidents. The brochure quotes chiefs of transportation from around the country about benefits they have experienced from implementing safety service patrol programs. The brochure also contains excerpts from letters from motorists praising the patrols for the assistance they provided.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/6872.pdf, EDL# 6872. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Safer Travel, Improved Economic Productivity—Incident Management Systems (FHWA-JPO-99-006) (1999)

This brochure, one in a series designed to encourage decision-makers to invest their own budget resources in ITS, examines the safety and economic benefits of traffic incident management from the perspective of a state department of transportation commissioner. The brochure quotes transportation officials from around the country about the benefits they have experienced from participating in regional traffic incident management programs.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/6868.pdf, EDL# 6868. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Sharing Resources, Coordinating Response—Deploying and Operating Incident Management Systems (FHWA-JPO-99-007) (1999)

This brochure, one in a series designed to encourage decision-makers to invest their own budget resources in ITS, examines the benefits of traffic incident management from a public safety perspective. The brochure quotes public safety officials from around the country about the benefits they have experienced from participating in traffic incident management programs.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/6869.pdf, EDL# 6869. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Intelligent Transportation Systems Field Operational Test Cross-Cutting Study: Hazardous Material Incident Response (FHWA-JPO-99-035) (1998)

This report summarizes and interprets the results of three field operational tests (FOTs) that tested the use of new technologies for improving the accuracy and availability of hazardous material (HazMat) information provided to emergency response personnel. Topics covered include impacts, user response, technical lessons learned, institutional challenges and resolutions, and implementation costs.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/6327.pdf, EDL# 6327. To order a hardcopy, contact the Operations/ ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Intelligent Transportation Systems Field Operational Test Cross-Cutting Study: Incident Management: Detection, Verification, and Traffic Management (FHWA-JPO-99-034) (1998)

This report summarizes and interprets the results of several field operational tests (FOTs) that tested the use of new technologies for improving traffic incident management. Topics covered include impacts, user response, technical lessons learned, institutional challenges and resolutions, and implementation costs.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/6328.pdf, EDL# 6328. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Managing Traffic Incident and Roadway Emergencies (NHI Course# 133048 or 133048A)

This course addresses the concepts and techniques of traffic incident management. The course focuses on the safety and operational efficiency of responding agencies and the institutional and administrative barriers that hinder interagency cooperation. Course modules cover the main groupings of topics: on-scene traffic incident management operations, multi-agency communications, and program management. Skill Level: Core learning. Target Audience: This course is designed for a multi-agency, multidisciplinary audience of mid- and upper-level managers from transportation, law enforcement, fire and rescue, emergency medical, emergency communications, and other agencies that respond to traffic

incidents. In addition, the target audience also includes private sector responders from towing and recovery companies, hazardous materials contractors, and traffic reporting media. Course Length: One or two days.

Cost: $4,500 or $6900 per session (between $128 and $345 per participant depending on the number of participants and course length).

To Access This Resource: Contact the NHI Training Team, (703) 235-0534, nhitraining@fhwa.dot.gov or access the website addresses:

- One-day course: http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133048"
- Two-day course: http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133048A"

Managing Travel for Planned Special Events (NHI Course# 133099 or 133099A)

This course provides participants with the ability to identify and discuss the key phases, institutional issues, challenges, techniques, and other issues to consider in coordinating, planning, managing, and controlling traffic for planned special events. The following key topics are covered in the course: planned special events overview, pre-event planning and coordination, traffic management plan and travel demand management initiatives, implementation activities, day-of-event activities, and post-event activities. Participants will be able to apply the recommended concepts and techniques with all five key phases involved with managing travel for a planned special event: (1) program planning, (2) event operations planning, (3) implementation activities, (4) day-of-event activities, and (5) post-event activities. The course will refer to FHWA's *Managing Travel for Planned Special Events Handbook*. The course will guide participants on how to apply key concepts contained in the handbook. Target Audience: The target audience includes transportation managers, service providers, public safety officials, public works directors, and business sector members of chambers of commerce. Operators and planners from states, cities, counties and metropolitan planning organizations (MPOs) would also benefit from this

course. Course Length: One or two days. The two-day version includes scenario-based exercises in a workshop format.

Cost: $200 per participant for the one-day course; $270 per participant for the two-day course.

To Access This Resource: Access the following website addresses:

- One-day course: http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133099A"
- Two-day course: http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133099"

Transit Points-of-Contact

- Yehuda Gross, ITS Joint Program Office, (202) 366-1988, Yehuda.Gross@dot.gov
- Walter Kulyk, FTA Office of Mobility Innovation, (202) 366-4991, Walter.Kulyk@dot.gov
- Michael Baltes, FTA Office of Mobility Innovation, (202) 366-2182, Michael.Baltes@dot.gov
- Richard Collins, FTA Office of Mobility Innovation, (202) 366-0232, Richard.Collins@dot.gov
- Althea Goodine, FTA Office of Mobility Innovation, (202) 366-6678, Althea.Goodine@dot.gov
- Sebastian Renaud, FTA Office of Mobility Innovation, (202) 366-4991, Sebastian.Renaud@dot.gov
- Sean Ricketson, FTA Office of Mobility Innovation, (202) 366-6678, Sean.Ricketson@dot.gov
- Charlene Wilder, FTA Service Innovation Division, (202) 366-1077, Charlene.Wilder@dot.gov

FTA's Safety & Security Website

This site is a compilation of resources related to safety and security of all aspects of public transportation. Sponsored by the FTA Office of Safety & Security, the site contains listings of publications, training courses, and upcoming conferences. Topics addressed include rail safety, bus safety, emergency management, fire safety, and human factors, as well as the Drug and Alcohol Management Information Statistics (DAMIS) and Safety Management Information Statistics (SAMIS) programs. In response to the terrorist attacks on the World Trade Center and Pentagon on September 11, 2001, the site includes a "Dear Colleague" letter from the FTA Administrator outlining public transportation security resources that FTA has made available or are in development. Available transit security resources include a one-page primer on lessons learned by transit agencies in emergency response in New York City and Washington, DC; a registration form to sign up for a mailing list with information on upcoming security awareness and training workshops; and a transit security survey that FTA is asking the members of the community to fill out. The "Dear Colleague" letter also describes a Safety and Security Tool Kit mailed to

transit agencies in October 2001 containing several key transit security publications and other resources.

Cost: Free

To Access This Resource: Access the website address http://transit-safety.volpe.dot.gov.

FTA's Bus Rapid Transit Website

This site is a compilation of resources related to bus rapid transit (BRT), which combines priority for transit vehicles at traffic signals, cleaner and more quiet vehicles, automated fare collection, and integration with land use policy. This site contains information on BRT projects, upcoming workshops and other events, the winners of a BRT design competition adjudicated by FTA, and a BRT evaluation project being conducted in Honolulu, Hawaii. Several documents are available for downloading from the site, including brochures, reports, and a reference guide. The site also contains BRT news items and related links.

Cost: Free

To Access This Resource: Access the website address http://www.fta.dot.gov/assistance/technology/research_4234.html.

Transit ITS Benefits Impacts Matrix

This matrix serves as a single source for displaying the impacts—benefits, disbenefits, and costs—of ITS technologies for transit. Entries in the matrix are brief summaries of the potential impacts of transit ITS technologies, as well as actual examples of impacts experienced where available. Users can view the matrix by impact area, such as safety and security, service quality, customer satisfaction, capital costs, operations and maintenance costs, increase in revenue, and ridership and market share. Users can also view the matrix by technology, such as fleet management, electronic fare payment, traveler information, transit safety and security, transportation demand management, Transit Intelligent Vehicle Initiative, bus rapid transit and communications-based train control. Users are invited to contribute new information, and the website has instructions on how to do so.

Cost: Free

To Access This Resource: Access the website address http://itsweb.noblis.org/aptsmatrix.

TransitWeb

This website is a compilation of information designed to help transit agencies that provide advanced traveler information services (ATIS) to their customers. Resources available through the website include guidelines on the usability of transit websites, a discussion of transit website characteristics, a report on the customer preferences for transit ATIS, guidelines on the use of light-emitting diodes (LEDs) in bus signage, and related links.

Cost: Free

To Access This Resource: Access the website address http://www.transitweb.its.dot.gov.

ITS Applications for Coordinating and Improving Human Services Transportation: Brochures (2006)

These two brochures are part of a series designed to educate public sector managers about particular ITS technologies. These brochures profile ITS technologies used in providing human services transportation to special populations—older adults, people with disabilities and low-income individuals—sometimes called "transportation disadvantaged." One brochure focuses on the benefits of these technologies to passengers; another focuses on the benefits to transit agencies.

Cost: Free

To Access This Resource: Access the following website addresses:

- Better Public Transportation Options for Everyone—Technologies to Improve Accessibility and Service of Public Transportation (FHWA-JPO-05-046)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/14138_files/14138.pdf
- Better Public Transportation Options for Everyone—Technologies to Improve Accessibility and Service of Public Transportation—HyperText Markup Language

(HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/14138.htm, EDL# 14138

- Improving Transit Equity, Streamlining Operations—Technologies That Benefit the Transportation Disadvantaged (FHWA-JPO-05-055)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/14139_files/14139.pdf
- Improving Transit Equity, Streamlining Operations—Technologies That Benefit the Transportation Disadvantaged—HyperText Markup Language format: http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/14139.htm, EDL# 14139

ITS Applications for Coordinating and Improving Human Services Transportation: A Cross-Cutting Study (FHWA-JPO-05-056) (2006)

This report is one in a series designed to educate public sector managers about particular ITS technologies. This study profiles six examples of ITS technologies used in providing human services transportation to special populations—older adults, people with disabilities and low-income individuals—sometimes called "transportation disadvantaged." This study examines in depth six examples of the use of ITS technologies to coordinate and improve all aspects of transportation provided to these groups: operations, information dissemination, fare payment, safety and security. The study concludes with keys to success and lessons learned from the six sites.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14140_files/14140.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14140.htm, EDL# 14140

Advanced Public Transportation Systems Deployment in the United States: Year 2004 Update (2005)

This report is a compilation of existing and planned deployments of advanced public transportation systems (APTS) technologies and services. The information was collected during the summer and fall of 2004 through contacts with representatives of each transit agency. A total of 516 agencies provided information for this study.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14169_files/14169.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14169.htm, EDL# 14169

Transit Signal Priority: A Planning and Implementation Handbook (2005)

This handbook lays out the steps one should follow to implement a successful transit signal priority (TSP) project, including planning, design, implementation, operations, maintenance, evaluation, verification, and validation. The handbook uses eight in-depth case studies to communicate lessons learned in system architecture, equipment, software, communications, simulation, optimization, institutional issues, and public reaction to TSP. The case studies are presented in their entirety in the handbook's appendices, along with a list of resources and glossary of terms. This handbook was developed by the Intelligent Transportation Society of America (ITS America) with funding from the U.S. DOT.

Cost: Free

To Access This Resource: Access the website address http://www.itsa.org/itsa/files/pdf/TSPHandbook2005.pdf. To order a hardcopy, contact Regina Parker, ITS America, (202) 721-4238, RParker@itsa.org.

Best Practices—Bus Signage for Persons with Visual Impairments: Light-Emitting Diode (LED) Signs (FTA-VA-26-7026-2003-1) (2004)

An increasing number of transit authorities are installing light-emitting diode (LED) signs on their transit buses to display route and destination information. However, these LED signs can be difficult to read by people with visual impairments. This report presents best practices that make LED signs more easily read by all passengers, both visually impaired and non-impaired. The report covers system design and implementation, and offers lessons learned and recommended practices for successful deployments.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.its.dot.gov/transit_dev/BusSignage/FTA-VA-26-7026-2003.pdf
- HyperText Markup Language (HTML) format: http://www.its.dot.gov/transit_dev/BusSignage/FTA-VA-26-7026-2003.html

An Overview of Transit Signal Priority (2004)

First published in 2002 and updated in 2004, this 27-page brochure provides an overview of transit signal priority (TSP). The brochure covers what TSP is, why it is important, what the costs and benefits are, how to plan for TSP deployment, and what issues to consider in the design, implementation, operations and maintenance of TSP. This brochure was developed by the Intelligent Transportation Society of America with funding from the U.S. DOT.

Cost: Free

To Access This Resource: Access the website address http://www.itsa.org/itsa/files/pdf/FinalTSPOverviewUpdate.pdf. To order a hardcopy, contact Regina Parker, ITS America, (202) 721-4238, RParker@itsa.org.

FTA National ITS Architecture Consistency Policy: Additional Grantee Guidance (2003)

In 2001, the Federal Transit Administration published its *National ITS Architecture Policy on Transit Projects* to meet the requirement in Section 5206(s) of the Transportation Equity Act for the 21st Century (TEA-21). The policy requires that ITS projects conform to the National ITS Architecture and related standards, and recommended activities that transit agencies should be carrying out in order to meet the policy's requirements. This document contains additional guidance resulting from feedback received since the policy went into effect. The additional guidance recommends that transit agencies take several key steps: familiarize themselves with the policy, assess how the policy is applicable to their own projects and grants, participate in the ITS architecture development process in their own region, and develop an ITS project architecture for all major ITS projects. The additional guidance recommends that this last step be accomplished by conducting a systems engineering analysis for the ITS and communications components of any major ITS project.

Cost: Free

To Access This Resource: Access the following website addresses:

- Cover letter from FTA Administrator: http://www.fta.dot.gov/assistance/technology/research_511.html
- Document: http://www.fta.dot.gov/documents/dc2003.pdf

Customer Preferences for Transit ATIS: Research Report (FTA-OH-26-7015-2003-1) (2003)

This report presents findings from a series of customer preference workshops on the topic of transit information. Twelve (12) workshops were held in four metropolitan areas with more than 250 transit customers in November 2002. The study found that riders prefer traditional forms of paper-based information and traditional wayside signage such as schedules, maps, and fares. Inaccurate information was perceived as

worse than no information, and high-quality traditional forms of information were considered more important than high-technology delivery media. Awareness of advanced transit information services was low, even in geographic areas where these services are available, suggesting that transit agencies need to do more to promote their existing information services.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.its.dot.gov/transit_dev/ATIS_NOW/ATIS.pdf
- HyperText Markup Language (HTML) format: http://www.its.dot.gov/transit_dev/ATIS_NOW/ATIS.htm

Guidance for Developing and Deploying Real-Time Traveler Information Systems for Transit (FTA-OH-26-7017-2003-1) (2003)

This document offers guidance to transit agencies on the development and deployment of real-time transit information systems. The report presents the current state-of-the-practice in real-time transit information systems, components of successful systems, deployment issues and challenges, recommended practices for successful deployment, and a look toward the future of this promising technology.

Cost: Free

To Access This Resource: Access the website address http://ntl.bts.gov/lib/23000/23600/23663/RTTIS_Final.pdf.

Ventura County Fare Integration: A Case Study (FHWA-OP-01-033/ FTA-TRI-11-01-01) (2001)

This report is one in a series designed to educate public sector managers about particular ITS technologies. Starting in 1996, transit agencies in Ventura County, California, field-tested an electronic fare payment system called "Smart Passport." The demonstration ended in 1999 without Ventura County transit operators experiencing many of the program's anticipated

benefits. The demonstration was conducted when the National ITS Program was in its early stages and few resources were available to assist the local participants. Today, the experiences of Ventura County have much to teach us. This case study contains insights gained in institutional needs, technical requirements, and customer acceptance techniques that can be helpful to those deploying any new technology in an operational setting.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13479/13479.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13479.html, EDL# 13479

Advanced Public Transportation Systems: Update 2000 (FTA-MA-26-7007-00-1) (2000)

This report is the latest in a series of "State-of-the-Art" reports, the last of which was published in January 1998. These reports catalogue the extent of adoption of advanced technology in the provision of public transportation service in North America. The first report was published in 1991, and subsequent updates have been published every other year since 1992. This report focuses on some of the most innovative or comprehensive implementations, categorized into one of four types of services or technologies: fleet management, traveler information, electronic fare payment, and transportation demand management.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13583.pdf, EDL# 13583. To order a hardcopy, contact the FTA Office of Mobility Innovation, (202) 366-4995.

Advanced Public Transportation Systems Publications (2000)

This CD-ROM contains nearly 100 advanced public transportation systems (APTS) reports published in the 1990s as part of the Transit ITS Program. The reports cover topics such as fleet management, traveler information, electronic payment systems, transportation demand management, and the Transit Intelligent Vehicle Initiative (IVI).

Cost: Free

To Access This Resource: To order a copy of the CD-ROM, contact the FTA Office of Mobility Innovation, (202) 366-4995.

Automatic Vehicle Location Successful Transit Applications: A Cross-Cutting Study (FHWA-OP-99-022/ FTA-TRI-11-99-12) (2000)

This report is one in a series designed to educate public sector managers about particular ITS technologies. Transit agencies across the country are turning to automatic vehicle location (AVL) to increase the safety and efficiency of their operations. This report provides an in-depth examination of six agencies' experience with AVL, including the challenges they faced, how those challenges were overcome, and the benefits gained from AVL implementation.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/11487.pdf, EDL# 11487. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Benefits Assessment of Advanced Public Transportation System Technologies: Update 2000 (FTA-MA-26-7007-00-4) (2000)

This report presents "order-of-magnitude" estimates of the expected benefits to the transit industry of the application of advanced public transportation system (APTS) technologies.

The study identifies and quantifies major benefits derived from current applications of APTS technologies and projects benefits to a national level, based on forecasts and reasonable assumptions.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13334.pdf, EDL# 13334. To order a hardcopy, contact the FTA Office of Mobility Innovation, (202) 366-4995.

What Have We Learned about Intelligent Transportation Systems? Chapter 5: What Have We Learned about Advanced Public Transportation Systems? (2000)

This document is an excerpt from a compendium report that looks back on the 10 years of the National ITS Program to examine which ITS technology applications have been successful, which have not been successful, and what the underlying factors that determine success versus failure are. This section examines advanced public transportation systems (APTS) such as automatic vehicle location; operations software; computer-aided dispatching; mobile data terminals; silent alarms/covert microphones; surveillance cameras on transit vehicles; automated passenger counters; pre-trip, en route, and in-vehicle passenger information; vehicle diagnostic systems; transit traffic signal priority for transit vehicles; and electronic fare payment.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13321.pdf, EDL# 13321.

Better Service, Greater Efficiency—Transit Management for Demand-Responsive Systems (FTA-TRI-10-98-2) (1999)

This brochure, one in a series designed to encourage decision-makers to invest their own budget resources in ITS, examines the efficiency and service benefits of using automatic vehicle

location (AVL) and computer-aided dispatching (CAD) systems in demand-responsive transit fleets. The brochure quotes from managers of paratransit systems about the benefits they have experienced using CAD/AVL.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/6876.pdf, EDL# 6876. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Better Service, Safer Service—Transit Management for Fixed-Route Systems (FTA-TRI-10-98-1) (1999)

This brochure, one in a series designed to encourage decision-makers to invest their own budget resources in ITS, examines the safety and improved service benefits of installing automatic vehicle location (AVL) on fixed-route transit fleets. The brochure quotes transit agency executive directors, drivers, and dispatchers about the benefits they have experienced from using these systems.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/6875.pdf, EDL# 6875. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Strategies for Improved Traveler Information (TCRP Report# 92) (2003)

This report summarizes the state of the practice in the provision of advanced traveler information services (ATIS) to transit riders. This report identifies transit traveler information needs, assesses the state of the art in providing transit traveler information, contains examples of customer information systems for both within and outside the transit industry, discusses transit traveler information as part of a larger continuity of information systems, and looks to the future of this promising new facet of the transit industry.

Cost: $22 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TC092," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://trb.org/publications/tcrp/tcrp_rpt_92.pdf.

e-Transit: Electronic Business Strategies for Public Transportation, Volume 4: Advanced Features of Transit Websites (TCRP Report# 84) (2003)

This report is the fourth volume in the TCRP 84 series, which examines the application of electronic business strategies to public transportation and mobility management. This report examines the use by transit agencies of the Internet and other Web-based services, such as automated itinerary planning systems, real-time transit information, and e-mail notification. The report also discusses the application of customer relationship management concepts to these services. The report provides covers technology options, implementation considerations, best practices, and lessons learned.

Cost: $15 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy report and CD-ROM, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TC084D," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://gulliver.trb.org/publications/tcrp/tcrp_rpt_84v4.pdf.

Guidebook for Selecting Technology for Rural and Small Urban Public Transportation Systems (TCRP Report# 76) (2002)

This guidebook helps public transportation professionals identify appropriate technologies for their transit systems, which can range from off-the-shelf computer software to automatic vehicle location (AVL) systems. The guidebook

encourages readers to conduct a self-assessment of the services, character, and environment of their own transit system in order to select the technology best suited to their needs. The guidebook lists grants and revenue sources that can be used to pay for these technologies. Finally, the guidebook offers recommendations on developing an implementation plan, conducting the procurement process, and installing the new technology system.

Cost: $17 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TC076," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://gulliver.trb.org/publications/tcrp/tcrp_rpt_76.pdf.

Simulators and Bus Safety: Guidelines for Acquiring and Using Transit Bus Operator Driving Simulators (TCRP Report# 72) (2001)

Driving simulators hold great promise to train student bus operators more efficiently and safely than traditional training methods. However, only a handful of transit agencies are using driving simulation, and even among these agencies, different types of simulations are being used. This report provides guidelines for transit agencies to determine if they should procure and use simulators and associated advanced technology training tools.

Cost: $25 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TC072," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://gulliver.trb.org/publications/tcrp/tcrp_rpt_72.pdf.

Using Geographic Information Systems for Welfare to Work Transportation Planning and Service Delivery: A Handbook (TCRP Report# 60) (2000)

The purpose of this handbook is to facilitate use of geographic information systems (GIS) as a tool among organizations responsible for planning or providing transportation services in response to welfare reform, including trip itinerary planning. This handbook includes guidance on how agencies can either implement GIS or enhance their current GIS applications for this purpose. Accompanying the handbook is a CD-ROM containing three case study descriptions and color illustrations of GIS application for transit planning and welfare-to-work.

Cost: $30 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy report and CD-ROM, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TC060," (202) 334-3213, fax: (202) 334-2519. For the online version, access the following website addresses:

- Part A: http://gulliver.trb.org/publications/tcrp/tcrp_rpt_60-a.pdf
- Part B: http://gulliver.trb.org/publications/tcrp/tcrp_rpt_60-b.pdf
- Case Studies: http://gulliver.trb.org/publications/tcrp/tcrp_webdoc_14.pdf

Understanding and Applying Advanced On-Board Bus Electronics (TCRP Report# 43) (1999)

This report provides an overview of electronics and their application to bus operations and other transportation sectors. The report addresses electronic integration, potential benefits offered by integration, and transit agency experiences with the technology. The report concludes with guidelines for implementing bus transit electronics. This report is intended to be a primer on the subject, providing essential background information to serve as a starting point for acquiring additional knowledge. The intended audience of this report is transit

managers, operations and maintenance professionals, bus procurement specialists, bus manufacturers and suppliers, and others interested in the application of advanced electronics to transit buses.

Cost: $30 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TC043," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://gulliver.trb.org/publications/tcrp/tcrp_rpt_43.pdf.

Multipurpose Transit Payment Media (TCRP Report# 32) (1998)

This report examines the potential for introducing multipurpose payment smart cards that can be used to purchase transit services from multiple operators, as well as other goods and services such as parking and retail products. Topics covered include smart card technology, the legal and institutional issues associated with introducing multipurpose smart card programs, cost and revenue impacts, and customer acceptance. The report presents guidelines for the development of multipurpose fare payment programs. The intended audience for this report is transit managers, transit operations personnel involved with fare collection, parking professionals, and representatives of the financial services industry.

Cost: $36 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TC032," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://gulliver.trb.org/publications/tcrp/tcrp_rpt_32.pdf.

A Handbook for Acquiring Demand-Responsive Transit Software (TCRP Report# 18) (1996)

This handbook is intended to assist providers of demand-responsive transit (DRT) in the selection, acquisition, and implementation of software for DRT operations and administration. The purpose of this handbook is to advise providers of DRT services about computer software and other technology appropriate for DRT applications, and to assist software vendors in understanding the market for DRT software and technologies.

Cost: $26 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TC018," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://gulliver.trb.org/publications/tcrp/tcrp_rpt_18.pdf.

The Impact of Radio Frequency Refarming on Transit Communications (TCRP Report# 11) (1996)

This report examines the impact of the Federal Communications Commission (FCC) rules governing the refarming of the land mobile radio spectrum on current and future transit communication system requirements. The intended audience for this report is general managers, operations managers, and communication specialists responsible for communications systems within transit and paratransit organizations.

Cost: $20 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TC011," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://gulliver.trb.org/publications/tcrp/tcrp_rpt_11.pdf.

Real-Time Bus Arrival Information Systems (TCRP Synthesis# 48) (1998)

This synthesis report examines real-time bus arrival systems, including technological capabilities, agency experience, cost, and reactions of transit passengers. The report describes the state of the practice in the U.S. and internationally.

Cost: $15 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TS048," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://trb.org/publications/tcrp/tcrp_syn_48.pdf.

Passenger Counting Technologies and Procedures (TCRP Synthesis# 29) (1998)

This synthesis report summarizes information from selected transit agencies about the benefits and problems associated with passenger counting technologies. The report also provides advice for agencies considering the purchase of a passenger counting system, discussing such issues as data collection methodology, data processing, end uses of ridership data, organizational responsibilities, and resource requirements. The intended audience is transit agency general managers; their planning and schedule, operations and maintenance, computer services, and budget and finance staffs; as well as passenger counting technology providers.

Cost: $24 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TS029," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://gulliver.trb.org/publications/tcrp/tsyn29.pdf.

AVL Systems for Bus Transit (TCRP Synthesis# 24) (1997)

This synthesis report addresses various aspects of developing and deploying automated vehicle location (AVL) systems for bus transit. Current practice, AVL architecture and technologies, and the institutional context of AVL, in terms of funding, justification, staffing, and procurement, are discussed. This report describes different approaches to AVL deployment used at selected transit agencies. The intended audience for this report is transit agency general managers, bus operations, planning, scheduling, safety, and procurement staff, as well as agency communications and engineering staff.

Cost: $16 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TS024," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://gulliver.trb.org/publications/tcrp/tsyn24.pdf.

ITS for Transit: Applications, Costs and Benefits

This course presents case studies with examples of the costs and benefits experienced by transit agencies that have implemented ITS technologies. The course provides an overview of the range of capabilities of ITS technologies for transit and a methodology for determining their value to an organization. In the course, participants will review common transit problems and the potential solutions offered by ITS technologies and learn how to apply cost-benefit analysis methodologies using real-life applications. Target Audience: Managers, service planners, senior operational, maintenance and fleet management staff, and senior customer relations and security staff. Course Length: Two days.

Cost: Free for Federal, state, and local government employees; $300 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfo.asp?CourseNumber=ID005 or contact Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

Rural ITS

The purpose of this course is to provide transit, and health and human service agencies with an overview of ITS as well as the costs and benefits of applying ITS to transit operations. This course emphasizes the use of technologies to improve operations, customer service, maintenance and management for agencies with small fleets, agencies that operate over wide geographic areas and agencies that have challenges in coordinating their services with other transportation providers. Providing transit agencies with this information is crucial as agencies search for cost-effective and innovative ways to provide better service and administer services more efficiently. Agencies armed with this knowledge can successfully determine whether the deployment of new technologies is needed and can then pursue the procurement and deployment. Target Audience: Agency managers, lead maintenance staff, customer service staff and others interested in learning about useful technologies. Course Length: One day.

Cost: Free for Federal, state, and local government employees; $150 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfo.asp?CourseNumber=ID035 or contact Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

Managing Information for Success

This course emphasizes the importance of efficient handling of data and information to transit operations. Modern operations using transit ITS technologies generate a large amount of data that can be not only used within the agency but also shared with other partners in an integrated system. The course outlines the benefits of having trained staff make full use of the information available and having means to efficiently process and archive this information. Course Length: One day.

Cost: Free for Federal, state, and local government employees; $150 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfo.asp?CourseNumber=ID027 or contact Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

Intelligent Transportation Staffing

Human resources are the key to a successful deployment of ITS in a transit agency. It is important that organizations have people in place that know how to create disparate parts of an organization into a team, set realistic goals, implement and use the technology, interpret the data, and derive the optimum benefits from the system. These staffing needs transcend all departments. How does an agency that is planning an ITS deployment ensure that its organization is appropriately staffed to ensure a successful and profitable implementation? This course will address these questions and provide participants with a toolkit to recruit, interview, hire, train and retain employees who are critical to an ITS purchase and deployment. Target Audience: Transit managers, human resource personnel, employees assigned to an ITS project who need additional personnel, consultants, decision-makers, project management managers, and staff of agencies participating in regional ITS projects. State departments of transportation, metropolitan planning organizations (MPOs), and county and municipal government staff would also benefit from this course. Course Length: Two days.

Cost: Free for Federal, state, and local government employees; $300 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfo.asp?CourseNumber=ID050 or contact Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

Flexible Community Transit Services: Planning, Design, and Technology

Transit operators increasingly need to serve markets for which conventional bus and rail modes can be too expensive, inefficient, or inflexible. Many operators are finding that flexible services such as route deviation have an important role to play in serving low-density areas, dispersed trip patterns, and travel by seniors and people with disabilities. This course presents the wide variety of innovative services now in use at transit systems in North America and Europe and examines and how ITS technologies can help implement flexible services. Other topics covered in the course include current efforts in Europe

to use technology to create better flexible transit services, coordination of conventional transit service and paratransit to reduce the cost of compliance with the Americans with Disabilities Act of 1990 (ADA), the benefits of technology as applied to flexible services, and the use of market research and performance data to determine where flexible services are appropriate. The course will also explore implementation issues, such as contracting, community relations, and technology procurement. Target Audience: Transit and paratransit managers, service planners, transportation planners from metropolitan planning organizations, social service agencies, and others concerned with effective and efficient service delivery. Course Length: Two days.

Cost: Free for Federal, state, and local government employees; $300 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfo.asp?CourseNumber=ID008 or contact Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

Complying with the Federal Transit Administration's Policy on ITS Architecture Consistency and Its Impact on Project Planning and Implementation

In 2001, the Federal Transit Administration published its *National ITS Architecture Policy on Transit Projects* to meet the requirement in Section 5206(s) of the Transportation Equity Act for the 21st Century (TEA-21). This policy requires that ITS projects conform to the National ITS Architecture and related standards. This policy applies to all ITS projects that are funded in whole or in part with the Highway Trust Fund, including the mass transit account. Additionally, FTA encourages the coordination of local ITS strategies and projects to help meet national and local goals. This course focuses on providing transportation agencies and Federal field staff with an understanding of the policy, the intent behind the policy, the impact of transit ITS planning and development, practical benefits of conformity, and guidelines for meeting policy requirements. Course Length: One day.

Cost: Free for Federal, state, and local government employees; $150 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfo.asp?CourseNumber=ID019 or Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

System Security Awareness and Security Incident Management

This series of four courses is designed to help transit systems better handle a potential terrorist incident as well as improve their security and reduce crime on their properties. Participants will learn how to improve their innate common sense abilities to observe, determine, and report people and things that are suspicious or out of place. Separate courses are available for employees of commuter railroads, passenger vessels, transit and transportation agencies. The course emphasizes prioritizing actions that must be taken at the scene of a threat or incident. Target Audience: Frontline employees and supervisors who have direct contact with the public for the vehicles and facilities used by the public. A train-the-trainer option for all four courses is available. Course Length: Three to four hours for the regular version; five to six hours for the train-the-trainer version.

Cost: Free

To Access This Resource: Access the following website addresses:

- System Security Awareness for Commuter Railroad Employees: http://www.ntionline.com/CourseInfo.asp?CourseNumber=SA001a
- System Security Awareness for Passenger Vessel Employees: http://www.ntionline.com/CourseInfoasp?CourseNumber=SA001
- System Security Awareness for Transit Employees: http://www.ntionline.com/CourseInfo.asp?CourseNumber=WP028i

- System Security Awareness for Transportation Employees http://www.ntionline.com/CourseInfoasp?CourseNumber=SA005
- Alternatively, contact Coleen Meyer, National Transit Institute, (732) 932-1700 x231, CMeyer@rutgers.edu. Agencies can request that the course be customized for employees. To download the request form, access the website address http://www.ntionline.com/documents/CFRWEB.pdf.

Transportation Management Centers Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- Jessie Yung, FHWA Office of Transportation Management, (202) 366-4672, Jessie.Yung@dot.gov
- Raj Ghaman, FHWA Office of Research, Development and Technology, (202) 493-3270, Raj.Ghaman@dot.gov
- Tom Granda, FHWA Office of Research, Development and Technology, (202) 493-3365, Tom.Granda@dot.gov
- Charlene Wilder, FTA Service Innovation Division, (202) 366-1077, Charlene.Wilder@dot.gov

TMC Pooled-Fund Study Website

This site is the official website of the Pooled-Fund Study (PFS) on Traffic Management Centers (TMCs). The purpose of the TMC Pooled-Fund Study is to identify and address the key issues and challenges that managers and operators of TMCs are facing. The Pooled-Fund Study provides a mechanism to pursue projects that address common needs among participating members. Any agency responsible for managing travel on any surface transportation system is eligible to join, and the website has information on how to do so. The website also contains the Pooled-Fund Study's list of current projects and their status, list of completed projects and products delivered, charter membership list, and materials related to past and upcoming meetings such as agendas, minutes, and handouts. The Pooled-Fund Study welcomes proposals for new projects and the website has instructions on how to submit new project ideas.

Cost: Free

To Access This Resource: Access the website address http://tmcpfs.ops.fhwa.dot.gov.

TMCOps

This tool assists the user in developing knowledge, skills and ability (KSA) requirements for transportation management center (TMC) operations personnel. These KSA requirements

enable transportation professionals to develop position descriptions and job classifications based on the tasks the TMC operator is required to perform and consider the tasks performed by an operator in support of an overall systems engineering process of a TMC. This tool encapsulates the information contained in the document *TMC Operator Requirements and Position Description*. Development of this tool and *TMC Operator Requirements and Position Descriptions* was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the website address http://tmcops.gtri.gatech.edu/tool_home.php,

TMC Staffing and Scheduling Tool

This software tool automates three of the process described in the document *TMC Staffing and Scheduling for Day-to-Day Operations*: shift scheduling, days-off scheduling, and the calculation of a relief factor. Development of this tool and *TMC Staffing and Scheduling for Day-to-Day Operations* was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the website address http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/Final_TMC_Staffing_Tool.zip.

Coordinated Freeway and Arterial Operations Handbook (FHWA-HRT-06-095) (2006)

This handbook provides direction, guidance and recommendations on how to coordinate freeway and arterial operations in a proactive and comprehensive manner. The handbook defines coordinated freeway and arterial operations (CFA) and discusses how to apply CFA to four areas of high pay-off: traffic incident management, work zone management, planned special events management, and day-to-day (or recurring) operations. The handbook concludes with a discussion of new technologies such as ITS and an example of

CFA in an incident management program in Northern Virginia. Development of this handbook was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the website address http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/06095.pdf.

Integration of Emergency and Weather Elements into Transportation Management Centers (FHWA-HOP-06-090) (2006)

This report documents the findings of a study that examined how weather and emergency information is being integrated into operations at 38 transportation management centers (TMCs) across the country. The study was sponsored jointly by the FHWA Road Weather Management Program and the FHWA Emergency Transportation Operations Program. The report describes the state-of-the-practice in integration of weather and emergency information into TMC operations. The report also identifies best practices, discusses the benefits and challenges of integration, and offers recommendations on how to get started and how to enhance current weather/emergency integration at one's own TMC.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/weather/resources/publications/tcmintegration/finalrpttmc22806.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/weather/resources/publications/tcmintegration/index.htm

Ramp Management and Control Handbook (2006)

This handbook provides guidance and recommended practices on managing and controlling traffic on ramps with freeway facilities. The handbook discusses several ramp management strategies, including how to select appropriate strategies and develop ramp management plans, how to implement those strategies and plans, how to operate and maintain these strategies, and how to assess their performance and report on the results. This handbook also describes in greater depth the issues and concepts specific to ramp mangement and control presented in Chapter 7 of the *Freeway Management and Operations Handbook*. In addition to the *Ramp Management and Control Handbook*, key concepts of ramp management and control are summarized in a primer, brochure, fact sheet, and frequently asked questions (FAQ) document. Development of these materials was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the following website addresses:

- Handbook (FHWA-HOP-06-001)—Adobe Acrobat format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/manual/manual/pdf/rm_handbook.pdf
- Handbook—HyperText Markup Language (HTML): http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/manual/manual/default.htm, EDL# 14242
- Primer (FHWA-HOP-06-080)—Adobe Acrobat format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/primer/rm_primer.pdf
- Primer—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/primer/primer.htm
- Brochure (FHWA-HOP-06-082)—Adobe Acrobat format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/brochure/rm_brochure.pdf
- Brochure—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/brochure/brochure.htm

- Project Fact Sheet (FHWA-HOP-06-082)—Adobe Acrobat format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/factsheet/rm_fact_sheet.pdf
- Project Fact Sheet—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/factsheet/factsheet.htm
- Questions and Answers (FHWA-HOP-06-083)—Adobe Acrobat format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/faqs/rm_faqs.pdf
- Questions and Answers—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/publications/ramp_mgmt_handbook/faqs/ramp_faqs.htm

Transportation Management Center Staffing and Scheduling for Day-to-Day Operations (2006)

This document provides an introduction to the concept of work analysis, scheduling, and staff planning needed for staffing a transportation management center (TMC). The document explores several methods of work analysis, including job analysis, workload analysis, and demand analysis. The document discusses various aspects of staff scheduling, including who should have the responsibility for scheduling employees and methods for developing a schedule. The document concludes by showing how to develop a staffing plan and how to plan for emergencies. An appendix contains a case study from the Arizona TMC. This document serves as a companion to the TMC Staffing and Scheduling Tool. Development of this document and the TMC Staffing an Scheduling Tool was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the website address http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/Final_Technical_Document1.pdf.

Handbook for Developing a TMC Operations Manual (2005)

This handbook shows how to develop an operations manual for a transportation management center (TMC). The handbook explains why a TMC operations manual is important, describes the components of a manual, and identifies the activities and participants needed to develop and update a manual. The handbook provides a checklist that can be used in the development of a TMC operations manual and presents case studies on TMC operations manual development from Northern Virginia and Orlando, Florida. Development of this handbook was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the website address http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/Handbook_TMC_Ops_Manual1.pdf.

Impacts of Using Dynamic Features to Display Messages on Changeable Message Signs (FHWA-HOP-05-069) (2005)

This report documents the findings of an evaluation of how well drivers comprehend messages displayed on changeable message signs (CMSs) that use dynamic features, i.e., text that flashes or alternates between multiple pieces of text. The evaluation was conducted in a driving simulator with 64 subjects. The study found that dynamic features have an adverse effect on drivers' ability to comprehend CMS messages. This research was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the website address http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/Final%20Research%20Report%20091905.pdf.

Changeable Message Sign Operation and Messaging Handbook (FHWA-OP-03-070) (2004)

This handbook is a consolidation of the most current and best information on the design and display of effective changeable message sign (CMS) messages for incident and roadwork events. The handbook presents this information in a series of 10 modules, covering topics such as fundamentals of CMS operations, CMS operating policies, principles of CMS message design, dealing with long messages, establishing a maximum message length, formatting messages, and the CMS message design process. The handbook is designed to help both new and experienced users of CMSs at various levels of a given agency. Development of this handbook was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the website address http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/CMS%20Operation%20and%20Messaging%20Handbook-Final%20Draft.pdf.

TMC Operator Requirements and Position Descriptions (2004)

This document provides guidance on how to develop knowledge, skills and ability (KSA) requirements for transportation management center (TMC) operations personnel. These KSA requirements enable transportation professionals to develop position descriptions and job classifications based on the tasks the TMC operator is required to perform and consider the tasks performed by an operator in support of an overall systems engineering process of a TMC. This document serves as a companion to the TMCOps software tool. Development of this document and the TMCOps tool was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the website address http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/tmc_opreq_pds.pdf.

Configuration Management for Transportation Management Systems: Final Report (FHWA-OP-04-013) (2003)

This handbook provides an introduction to configuration management (CM) in a transportation context. The handbook defines configuration management, describes current CM practices, and discusses CM processes and plans. The handbook provides guidance on how to establish a formal CM program and concludes with a list of CM resources and tools. Development of this handbook was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/CM%20for%20TMS%20Handbook%20v3.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13885.html, EDL# 13885

Freeway Management and Operations Handbook (FHWA-OP-04-003) (2003)

This handbook provides an overview of the institutional and technical issues associated with the planning, design, implementation, and management of a freeway network. The 2003 edition is an update of the 1997 edition and is the third update to be published by FHWA. The handbook examines a wide variety of strategies, tools, and technologies that can be used to support management and operation of the freeway

network. Development of this handbook was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/freewaymgmt/publications/frwy_mgmt_handbook/fmoh_complete_all.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/freewaymgmt/publications/frwy_mgmt_handbook/index.htm

Managing Travel for Planned Special Events (2003)

This series of documents presents a wide range of information on planning for and managing transportation for planned special events. A handbook presents a recommended set of policies, regulations, processes, impact mitigation strategies, equipment and personnel resources and technology applications used in planned special events traffic management. A frequently asked questions (FAQ) sheet summarizes the information in the handbook into a list of 33 questions with answers. A two-page fact sheet encapsulates the essential information even further and lists available resources including training opportunities. A presentation guides readers through the special events traffic management planning process. Finally, a tri-fold brochure contains an overview of planned special events traffic management, as well as quotes from transportation operators who have used these techniques with success. Development of these materials was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the following website addresses:

- Handbook (FHWA-OP-04-010)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/handbook/handbook.pdf

- Handbook—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13883.html, EDL# 13883 or http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/handbook/index.htm
- Frequently Asked Questions—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/faq/faq.pdf
- Frequently Asked Questions—HyperText Markup Language format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/faq/faq.htm
- Fact Sheet (FHWA-OP-04-033)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/fact_sheet/factsheet.pdf
- Fact Sheet—HyperText Markup Language format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/fact_sheet/fact_sheet.htm
- Presentation—HyperText Markup Language format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/presentation/presentation.htm
- Presentation—MS PowerPoint format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/presentation/presentation.ppt
- Brochure (FHWA-OP-04-033)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/brochure/brochure.pdf
- Brochure—HyperText Markup Language format: http://www.ops.fhwa.dot.gov/program_areas/sp-events-mgmt/brochure/brochure.htm

Guidelines for Transportation Management Systems Maintenance Concept and Plans (FHWA-OP-04-011) (2002)

This report provides an overview of the institutional, procedural, programmatic, and technical issues associated with the maintenance of a transportation management center system. The report describes the importance of developing a maintenance concept, maintenance program, and a multiyear

maintenance plan. The report also provides guidance on how to develop these materials and to integrate maintenance considerations into all phases of the transportation management system life cycle. Development of this report was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/Guidelines%20for%20TMS%20Maintenance.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13882.html, EDL# 13882

4th Conference on Integrated Transportation Management Systems: Proceedings and White Papers (2002)

These documents provide a summary of the 4th Integrated Transportation Management Systems (ITMS) Conference, held July 15-18, 2002, in Newark, New Jersey. The symposium was sponsored by the Transportation Research Board (TRB) and FHWA, in cooperation with the Institute of Transportation Engineers (ITE), the Intelligent Transportation Society of America (ITS America) and the American Association of State Highway and Transportation Officials (AASHTO). The goal of the conference was to identify potential initiatives and opportunities to help advance the state-of-the-art in planning, designing, deploying, operating, and evaluating ITMS. Seven white papers were prepared prior to the conference to help frame key issues. The proceedings summarize the presentations from the general and breakout sessions.

Cost: Free

To Access This Resource: Access the following website addresses:

- Proceedings: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13661.pdf, EDL# 13661
- White Papers: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13662.pdf, EDL# 13662

Traffic Control System Operations: Installation, Management and Maintenance (2000)

This manual presents a general tutorial on traffic system maintenance-related issues in traffic control and traffic management. The manual updates and expands information contained in the 1989 edition to address ITS and other new traffic signal control operations strategies. The manual provides guidelines on design and installation techniques that require minimal maintenance, contains helpful suggestions for maintenance personnel, and addresses staffing and budgeting issues.

Cost: $50 for members of the Institute of Transportation Engineers (ITE); $75 for nonmembers

To Access This Resource: Contact the ITE Bookstore, http://www.ite.org/bookstore/index.asp, (202) 289-0222 x130, fax: (202) 289-7722, publications@ite.org.

Metropolitan Transportation Management Center—Concepts of Operations: A Cross-Cutting Study (FHWA-JPO-99-020/FTA-TRI-11-99-10) (1999)

This report, one in a series designed to educate public sector managers about particular ITS technologies, examines how several locations across North America are designing, installing, and operating transportation management centers (TMCs). The report discusses successful practices and lessons learned in training, documentation, staffing, coordination (within agencies, between agencies, and with the media), and

maintenance, design, and procurement. The study stresses the importance of documenting the common understanding of all partners in the design, implementation, operation, and maintenance of the TMC in a concept of operations.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/10923.pdf, EDL# 10923. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Metropolitan Transportation Management Center—Concepts of Operations: Case Studies (1999)

These reports are part of a series designed to educate public sector managers about particular ITS technologies. These case studies present the particular choices made in the design, implementation, operations, and maintenance of eight metropolitan transportation management centers across North America.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Arizona TrailMaster (FHWA-OP-99-010/FTA-TRI-11-99-15): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/10943.pdf, EDL# 10943
- Boston Central Artery/Tunnel Integrated Project Control System (FHWA-OP-99-003/FTA-TRI-11-99-16): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/11063.pdf, EDL# 11063
- COMPASS (FHWA-OP-99-004/FTA-TRI-11-99-17): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/10944.pdf, EDL# 10944
- Houston TranStar (FHWA-OP-99-005/FTA-TRI-11-99-18): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/10963.pdf, EDL# 10963
- Long Island INFORM (FHWA-OP-99-006/FTA-TRI-11-99-19): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/10983.pdf, EDL# 10983

- Michigan Intelligent Transportation Systems (FHWA-OP-99-007/FTA-TRI-11-99-20): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/11103.pdf, EDL# 11103
- Milwaukee MONITOR (FHWA-OP-99-008/FTA-TRI-11-99-21): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/11123.pdf, EDL# 11123
- Georgia NaviGAtor (FHWA-OP-99-009/FTA-TRI-11-99-22): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/11124.pdf, EDL# 11124

Metropolitan Transportation Management Center—Concepts of Operation: Implementation Guide (FHWA-OP-99-029/FTA-TRI-11-99-23) (1999)

This report is one in a series designed to provide public sector project managers with practical "how to" advice on the implementation of selected ITS technologies. This report examines several aspects of metropolitan transportation management centers (TMCs), including the rationale of building a TMC and the different types and functions of a TMC. The report presents choices that many agencies have faced when building or expanding a TMC—such as manual versus automated operation and in-house versus outsourced staffing—and discusses the advantages and disadvantages of each option. The report stresses the importance of documenting the common understanding of all partners of the design, implementation, operation, and maintenance of the TMC in a concept of operations.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/rept_mis/11494.pdf, EDL# 11494. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Transportation Security Points-of-Contact

- Kate Hartman, ITS Joint Program Office, (202) 366-2742, Kate.Hartman@dot.gov
- Dave Helman, FHWA Office of Transportation Operations, (202) 366-8042, David.Helman@dot.gov
- Mike Onder, FHWA Office of Freight Management and Operations, (202) 366-2639, Michael.Onder@dot.gov
- Henry Lieu, FHWA Office of Research, Development and Technology, (202) 493-3273, Henry.Lieu@dot.gov
- Greg Jones, FHWA Resource Center, (404) 562-3906, GregM.Jones@dot.gov
- Jeff Loftus, FMCSA Office of Research and Analysis, (202) 385-2363, Jeff.Loftus@dot.gov
- Amy Houser, FMCSA Office of Research and Analysis, (202) 385-2382, Amy.Houser@dot.gov
- Joe Delorenzo, FMCSA Midwestern Service Center, (708) 283-3572, Joseph.Delorenzo@dot.gov

Emergency Transportation Operations Section of the FHWA Office of Operations Website

This site is a compilation of resources related to maintaining the security of transportation operations during natural and manmade disasters, defining a new concept called "emergency transportation operations preparedness." The site outlines the FHWA Office of Operations perspective, vision, and role, as well as lists components and activities of the program. The site provides guidance materials on obtaining Federal funding for transportation security operations. The site also contains a comprehensive list of introductory materials on this topic with special emphasis on the protection of electronic infrastructure, as well as contacts and related links.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/OpsSecurity/index.htm.

FTA's Safety & Security Website

This site is a compilation of resources related to safety and security of all aspects of public transportation. Sponsored by the FTA Office of Safety & Security, the site contains listings of publications, training courses, and upcoming conferences. Topics addressed include rail safety, bus safety, emergency management, fire safety, and human factors, as well as the Drug and Alcohol Management Information Statistics (DAMIS) and Safety Management Information Statistics (SAMIS) programs. In response to the terrorist attacks on the World Trade Center and Pentagon on September 11, 2001, the site includes a "Dear Colleague" letter from the FTA Administrator outlining public transportation security resources that FTA has made available or are in development. Available transit security resources include a one-page primer on lessons learned by transit agencies in emergency response in New York City and Washington, DC; a registration form to sign up for a mailing list with information on upcoming security awareness and training workshops; and a transit security survey that FTA is asking the members of the community to fill out. The "Dear Colleague" letter also describes a Safety and Security Tool Kit mailed to transit agencies in October 2001 containing several key transit security publications and other resources.

Cost: Free

To Access This Resource: Access the website address http://transit-safety.volpe.dot.gov.

FMCSA's Motor Carrier Security Website

This site is a compilation of resources developed to help law enforcement and commercial vehicle owners and operators to maintain motor carrier security, especially the secure shipment of hazardous materials (hazmat). Reference documents available on the website include: a guide to developing a hazmat security plan, list of steps that should be taken by hazmat workers and companies in light of the current threat advisory level as determined by the Department of Homeland Security (DHS), anti-terrorism and anti-hijacking tips for hazmat drivers and companies, a flier issued by the Federal Bureau of Investigation (FBI) "If you receive a suspicious letter or package, what you should do," a checklist that law

enforcement can use to perform a security assessment of a commercial vehicle operator, and a form to request free FMCSA training in motor carrier security risk assessment. The site also contains related links, including the National Hazardous Material Route Registry (NHMRR).

Cost: Free

To Access This Resource: Access the website address http://www.fmcsa.dot.gov/security/index.asp.

http://

Transportation Research Board's Surface Transportation Security Website

This site is a compilation of resources related to the security of all transportation modes, including aviation, surface transportation, and seaport and maritime transportation. Sponsored by the Transportation Research Board (TRB) Task Force on Critical Infrastructure Protection, the site contains an extensive archive of news articles, interviews, and reports, as well as an annotated list of related links.

Cost: Free

To Access This Resource: Access the website address http://www4.trb.org/trb/homepage.nsf/web/security.

http://

Association of American State Highway and Transportation Officials' Special Committee on Transportation Security Website

This site is the official website of the Association of American State Highway and Transportation Officials' (AASHTO) Special Committee on Transportation Security. The site is a compilation of resources focusing on three particular aspects of transportation security: physical features of the highway system, information systems used to manage traffic operations, and commercial vehicle operations. The site contains key materials related to the task force, including its charge, membership roster, action items, and target dates for completing these actions. The site also includes a compilation of key transportation security documents, points-of-contact, and related links.

Cost: Free

To Access This Resource: Access the website address http://security.transportation.org.

Institute of Transportation Engineers' Transportation Security Website

This site is a compilation of resources available to help transportation professionals respond to transportation security emergencies. The site contains articles, assessment tools, planning guides, case studies, and slide shows, as well as seminars, workshops, and other training opportunities related to transportation security. The "Safety and Security" section of the website contains resources highlighting the relationship between traffic incident management, public safety, and emergency preparedness and includes example documents from Washington State and the District of Columbia, as well as guidance documents from the Federal Emergency Management Agency (FEMA).

Cost: Free

To Access This Resource: Access the website address http://www.ite.org/security/index.asp.

Simplified Guide to the Incident Command System for Transportation Professionals (FHWA-HOP-06-004/ FHWA-NHI-06-007) (2006)

This guide provides an introduction to the Incident Command System, a systematic tool used for the command, control, and coordination of emergency response. ICS allows agencies to work together using common terminology and operating procedures for controlling personnel, facilities, equipment, and communications at a single incident scene. ICS is part of a broader incident management system as outlined in the Department of Homeland Security's National Incident Management System (NIMS). Topics covered in the guide include ICS organizational structure, characteristics of unified command, strategies and tools that support the development of an ICS framework for day-to-day highway incident management, considerations for the on-scene management

of highway incidents, and the benefits of ICS. The guide also summarizes NIMS requirements for resource management, communications, and information management.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/publications/ics_guide/ics_guide.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/publications/ics_guide/index.htm

http://

Effects of Catastrophic Events on Transportation Systems Management and Operations (2002-2004)

This series of reports explores the effects of catastrophic events on transportation systems management and operations. Six case studies examine how transportation systems operators responded to challenges created by recent catastrophic events in the U.S.: the Northridge earthquake in the Los Angeles, California area in 1994, a rail tunnel fire involving hazardous materials in Baltimore in 2001, the terrorist attacks on the World Trade Center and Pentagon on September 11, 2001, and the blackout in New York City and the Great Lakes Region in 2003. An Executive Summary report on the 2003 blackout is available, as well as a cross-cutting study that documents the lessons learned from the events prior to 2002 and a comparative analysis that document lessons learned from all these events.

Cost: Free

To Access This Resource: Access the following website addresses:

- Northridge Earthquake, January 17, 1994 (2002)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13775_files/13775.pdf
- Northridge Earthquake, January 17, 1994—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13775.html, EDL# 13775

- Howard Street Tunnel Fire, Baltimore City, Maryland July 18, 2001 (2002)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13754_files/13754.pdf
- Howard Street Tunnel Fire, Baltimore City, Maryland July 18, 2001—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13754.html, EDL# 13754
- September 11, 2001: Pentagon (2002)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14119_files/14119.pdf
- September 11, 2001: Pentagon—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14119.htm, EDL# 14119 or http://www.ops.fhwa.dot.gov/opssecurity/case_studies/pentagon911.htm
- September 11, 2001: World Trade Center (2002)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14129_files/14129.pdf
- September 11, 2001: World Trade Center—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14129.htm, EDL# 1429 or http://www.ops.fhwa.dot.gov/opssecurity/case_studies/nycprelim.htm
- August 2003 Northeast Blackout: Great Lakes Region (2004)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14021.pdf
- August 2003 Northeast Blackout: Great Lakes Region—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14021.htm, EDL# 14021
- August 2003 Northeast Blackout: New York City (2004)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14023.pdf
- August 2003 Northeast Blackout: New York City—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14023.htm, EDL# 14023

- August 2003 Northeast Blackout: Executive Summary (2004)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14022_files/14022.pdf
- August 2003 Northeast Blackout: Executive Summary—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14022.htm, EDL# 14022
- Cross-Cutting Study (2002)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13780_files/13780.pdf
- Cross-Cutting Study—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13780.html, EDL# 13780
- Comparative Analysis (2004)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14024.pdf
- Comparative Analysis—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14024.htm, EDL# 14024

Recommendations for Bridge and Tunnel Security (2003)

The report contains the recommendations of a Blue Ribbon Panel (BRP), sponsored jointly by the FHWA and the American Association of State Highway and Transportation Officials (AASHTO). The BRP—composed of bridge and tunnel experts from professional practice, academia, Federal and state agencies, and toll authorities—was charged with examining bridge and tunnel security and developing strategies for deterring, disrupting, and mitigating potential terrorist attacks on bridges and tunnels. In the report, the BRP shows how the nation's bridges and tunnels are vulnerable to terrorist attacks. This report recommends policies and actions to reduce the probability of catastrophic structural damage that could result in substantial human casualties, economic losses, and sociopolitical damage.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://security.transportation.org/sites/security/brpt/brp.pdf
- HyperText Markup Language (HTML) format: http://security.transportation.org/sites/security/brpt/brptoc.asp

The National Strategy for the Physical Protection of Critical Infrastructures and Key Assets (2003)

This document identifies national goals, objectives, guiding principles, and specific actions to protect critical infrastructure and key assets in the U.S. from terrorist attack. This document stresses that homeland security, unlike national security that is almost entirely a Federal responsibility, is a cooperative effort among Federal, state, and local governments, the private sector, and individuals. The section on transportation infrastructure lists challenges and initiatives specific to aviation, rail, pipelines, maritime, highway, trucking, and bus modes.

Cost: Free

To Access This Resource: Access the website address http://www.dhs.gov/xlibrary/assets/Physical_Strategy.pdf.

A Guide to Highway Vulnerability Assessment for Critical Asset Identification and Protection (2002)

This guide was developed as a tool for state departments of transportation to assess the vulnerabilities of their physical transportation assets (such as bridges and tunnels), develop countermeasures to detect, deter, and delay the consequences of terrorist threats to these assets, estimate the capital and operating costs of such countermeasures, and improve operational planning for transportation security.

Cost: Free

To Access This Resource: Access the following website addresses:

- Full Report: http://security.transportation.org/sites/security/docs/guide-VA_FinalReport.pdf
- Appendices: http://security.transportation.org/sites/security/docs/guide-VA_Appendices.pdf

Electronic Cargo Seals: Context, Technologies and Marketplace (2002)

This paper provides an overview of the current marketplace for electronic cargo seals. The paper examines the motivation for using electronic seals, the expectations of users, and the characteristics of such seals. In matrix format, the paper lists key characteristics of 20 electronic seals and locks, offered by 24 firms, representing four key technology types: radio frequency identification (RFID), infrared, remote communications, and very-short-range or contact technologies.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/freight/publications/eseal_wp_final_july12/eseal_wp_final_01.htm.

Homeland Security and ITS: Using Intelligent Transportation Systems to Improve and Support Homeland Security (2002)

This 30-page report serves both as a formal advice from the Intelligent Transportation Society of America (ITS America) to the U.S. Department of Transportation and as a supplement to *The National Intelligent Transportation Systems Program Plan: A Ten-Year Vision* focusing on homeland security. This supplement reiterates ITS America's vision for the future while updating the *Program Plan's* goal regarding transportation security, assesses the opportunities for the ITS community to address homeland security issues, including challenges and projected benefits, identifies research, program, and institutional actions necessary to overcome challenges and

experience the benefits, and suggests appropriate roles for a broad range of stakeholders.

Cost: Free

To Access This Resource: Access the website address http://www.itsa.org/itsa/files/pdf/Homeland%20Security%20Supplement.pdf. To order a hardcopy, contact Regina Parker, ITS America, (202) 721-4238, RParker@itsa.org.

Security and Emergency Response Survey of State Transportation Agencies: Preliminary Results (2002)

This presentation presents the results of a survey of state transportation agencies taken in the fall of 2001 regarding their security and emergency response capabilities and resources. Sponsored jointly by the Association of American State Highway and Transportation Officials (AASHTO) Task Force on Transportation Security and the Transportation Research Board's Task Force on Critical Infrastructure Protection, among the survey's many conclusions is that while 98 percent of respondents have emergency response plans for natural disasters, only 70 percent have plans for terrorist attacks. The presentation also identifies areas of research and technical assistance in transportation security that are the highest priorities for state departments of transportation.

Cost: Free

To Access This Resource: Access the website address http://security.transportation.org/sites/security/docs/Security_Emergency.pdf.

Intelligent Transportation Systems (ITS) Information Security Analysis (FHWA-JPO-98-009) (1997)

This document presents the results from an information security analysis based on the National ITS Architecture. The analysis identified and characterized threats to National ITS Architecture subsystems and the exchange of information between subsystems and their supporting communications

infrastructure. This report also recommends solutions, such as security services, that can be employed to reduce or eliminate these threats. The report also provides background information and a general understanding of information security.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Protecting Our Transportation Systems: An Information Security Awareness Overview (FHWA-JPO-98-005) (1997)

This report provides an overview of information security from an ITS perspective. The report explains the importance of being concerned about information security threats. The report recounts news stories from around the world of how information security violations have damaged the public and private sector's ability to provide ITS products and services. Finally, the report describes technical and non-technical solutions to these problems. The report also contains frequently asked questions (with answers), a detailed bibliography, and contact information for organizations that are resources on information security.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/3243.pdf, EDL# 3243. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

System Security Awareness and Security Incident Management

This series of four courses is designed to help transit systems better handle a potential terrorist incident as well as improve their security and reduce crime on their properties. Participants will learn how to improve their innate common sense abilities to observe, determine, and report people and things that are suspicious or out of place. Separate courses are available for employees of commuter railroads, passenger vessels, transit and transportation agencies. The course emphasizes prioritizing

actions that must be taken at the scene of a threat or incident. Target Audience: Frontline employees and supervisors who have direct contact with the public for the vehicles and facilities used by the public. A train-the-trainer option for all four courses is available. Course Length: Three to four hours for the regular version; five to six hours for the train-the-trainer version.

Cost: Free

To Access This Resource: Access the following website addresses:

- System Security Awareness for Commuter Railroad Employees: http://www.ntionline.com/CourseInfo.asp?CourseNumber=SA001a
- System Security Awareness for Passenger Vessel Employees: http://www.ntionline.com/CourseInfoasp?CourseNumber=SA001
- System Security Awareness for Transit Employees: http://www.ntionline.com/CourseInfo.asp?CourseNumber=WP028i
- System Security Awareness for Transportation Employees http://www.ntionline.com/CourseInfo.asp?CourseNumber=SA005
- Alternatively, contact Coleen Meyer, National Transit Institute, (732) 932-1700 x231, CMeyer@rutgers.edu. Agencies can request that the course be customized for employees. To download the request form, access the website address http://www.ntionline.com/documents/CFRWEB.pdf.

Travel Demand Management Points-of-Contact

- Wayne Berman, FHWA Office of Transportation Management, (202) 366-4069, Wayne.Berman@dot.gov
- Allen Greenberg, FHWA Office of Transportation Management, (202) 366-2425, Allen.Greenberg@dot.gov
- Grant Zammit, FHWA Resource Center, (404) 562-3575, Grant.Zammit@dot.gov

Commuter Choice Decision Support System

This software provides an interactive way to design a commuter choice program that meets the specific needs and characteristics of an employment site. Building upon traditional travel demand management (TDM) strategies, the software allows employers to take advantages of the full spectrum of commute options, including how commuters get to work (mode choice), when they travel (time choice), where they work (location choice), and which way they travel (route choice).

Cost: Free

To Access This Resource: The Commuter Choice Decision Support System software is available when ordering a hardcopy of the document *Commuter Choice Primer: An Employer's Guide For Implementing Effective Commute Choice Programs*. To order the document and CD-ROM package, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

A Guide for HOT Lane Development (FHWA-OP-03-009) (2003)

This guide provides information on a wide range of policy and technical issues associated with high-occupancy toll (HOT) lanes, focusing on how these activities are likely to differ from those associated with more traditional highway improvements. This guide includes case studies of the four existing HOT lane facilities in the U.S., as well as two recent HOT lane studies that are indicative of current trends.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13668_files/images/13668.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13668.html, EDL# 13668

Commuter Choice Primer: An Employer's Guide for Implementing Effective Commute Choice Programs (FHWA-OP-03-007) (2003)

This document shows employers how to apply travel demand management (TDM) strategies to help alleviate transportation problems affecting the worksite, such as congestion, accessibility, parking, and mobility. Building upon traditional TDM strategies, the document introduces the broader concept of commuter choice, which includes the full spectrum of travel options: how commuters get to work (mode choice), when they travel (time choice), where they work (location choice), and which way they travel (route choice). The hardcopy also contains the Commuter Choice Decision Support System software on CD-ROM.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/13669/CommuterChoicePrimer.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/13669.html, EDL# 13669

Traveler Information Points-of-Contact

- Bob Rupert, FHWA Office of Transportation Management, (202) 366-2194, Robert.Rupert@dot.gov
- Jimmy Chu, FHWA Office of Transportation Management, (202) 366-3379, Jimmy.Chu@dot.gov
- James Pol, FHWA Office of Transportation Management, (202) 366-4374, James.Pol@dot.gov
- Mac Lister, FHWA Resource Center, (708) 283-3532, Mac.Lister@dot.gov
- Charlene Wilder, FTA Service Innovation Division, (202) 366-1077, Charlene.Wilder@dot.gov

Real-Time Traveler Information Program Section of the FHWA Office of Operations Website

This website is a compilation of resources for the Traveler Information program, including 511—America's Traveler Information Telephone Number. These resources focus on all aspects of traveler information: how the information is collected, how it is processed, how it is provided to travelers, and how transportation system operators may use it.
The website links to practitioner tools and resources, and showcases the National Traffic and Road Closure Information database. The website also contains informational and other related links.

Cost: Free

To Access This Resource: Access the website address http://ops.fhwa.dot.gov/TravelInfo/index.htm.

National Traffic and Road Closure Information Website

This website is compilation of traveler information websites for traffic and road closure information. The website shows a U.S. map that serves as a postal to traffic information and road closure websites sponsored by the state departments of transportation and other public and private organizations. The site also links to national and regional websites with construction, weather, and traffic information.

Cost: Free

To Access This Resource: Access the website address http://www.fhwa.dot.gov/trafficinfo/index.htm.

511 Travel Information Telephone Services Section of the FHWA Office of Operations Website

This website is a compilation of resources related to 511—the national three-digit traveler information number designated by the Federal Communications Commission (FCC) in 2000. The website provides information about the status of 511 deployment, including the 511 Planning Assistance Program that provided Federal funding to help states develop approaches to implementation. The website shows a map with states color-coded by their status of 511 deployment. The website also includes links and "backdoor" telephone numbers to active 511 systems, so that users can hear how the various services function.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/511/index.htm.

511 Website

The 511 Deployment Coalition is a partnership between the U.S. DOT and several professional associations representing state departments of transportation (DOTs), public transportation agencies, and the private sector. This website is a compilation of resources related to 511 compiled by Coalition members, including a map showing the current state-by-state status of 511 deployment across the U.S., materials and tips on how to market a 511 service, implementation guidelines, guidelines on how to evaluate the success of a 511 service and evaluation results showing usage statistics. The website also contains Coalition reports and minutes of Coalition general membership and subgroup meetings. The contacts section provides contact information for all participating state DOTs, the member professional associations and U.S. DOT, as well as instructions on how to join a Yahoo® discussion group that focuses on 511 deployment issues.

The links section provides links to the 511 websites of all participating state DOTs.

Cost: Free

To Access This Resource: Access the website address http://www.deploy511.org.

TransitWeb

This website is a compilation of information designed to help transit agencies that provide advanced traveler information services (ATIS) to their customers. Resources available through the website include guidelines on the usability of transit websites, a discussion of transit website characteristics, a report on the customer preferences for transit ATIS, guidelines on the use of light-emitting diodes (LEDs) in bus signage, and related links.

Cost: Free

To Access This Resource: Access the website address http://www.transitweb.its.dot.gov.

Advanced Parking Management Systems: A Cross-Cutting Study (FHWA-JPO-07-011) (2007)

This report is one in a series designed to educate public sector managers about particular ITS technologies. This report explains how ITS technologies can be used to inform travelers about where the best parking locations are, what hours they are open, what fees they change, and, most importantly, whether a parking space will be available when they arrive. This report presents the full range of advanced parking management systems (APMS) technologies, from low-tech solutions such as a parking information website to cutting-edge parking reservation systems that enable drivers to locate, reserve, and pay for a parking space all through wireless communications. The report profiles advanced parking management systems in Washington State, Illinois, and Maryland. The study concludes with a summary of the benefits and costs of this new technology, as well as lessons learned in the areas of policy and planning, design and deployment, and management and operations.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14318_files/14318.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14318.htm, EDL# 14318

Intelligent Transportation Systems for Traveler Information: Deployment Benefits and Lessons Learned (FHWA-JPO-07-002) (2007)

This leaflet is one in a series that shows how ITS technologies can reduce congestion, in support of the U.S. Department of Transportation's Congestion Initiative. This leaflet summarizes the benefits, costs, extent of deployment and lessons learned about the use of ITS for providing accurate, timely traveler information. The online version contains a full list of sources, so that all information in the leaflet's brief four pages is backed up with supporting documentation.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.its.dot.gov/jpodocs/repts_te/14319_files/14319.pdf
- HyperText Markup Language (HTML) format: http://www.its.dot.gov/jpodocs/repts_te/14319.htm, EDL# 14319

Priority, Market-Ready Technologies and Innovations: 511 Traveler Information (2006)

This brochure provides a broad overview of 511 systems, describing the problem 511 was designed to address, what Federal assistance is available to deploy 511, how a typical 511 program works, how a typical 511 program is funded, and the national 511 deployment goal and current status (as of 2006) towards reaching that goal. The brochure concludes with a listing of helpful websites and Federal points-of-contact.

Cost:

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.fhwa.dot.gov/crt/marketready/511traveler.pdf
- HyperText Markup Language (HTML) format: http://www.fhwa.dot.gov/crt/lifecycle/511.cfm

Final Report: Model Deployment of a Regional Multi-Modal 511 Traveler Information System (2005)

This report documents the findings of an evaluation of a model deployment of the 511 telephone information system in Phoenix, Arizona. The 511 system tested in Phoenix included several enhancements over traditional 511 technologies, including voice recognition, automated operation for common information requests, and provision of informaiton on major transportation events such as incidents, construction, transit service disruptions, special events and abnormal weather conditions. The report concludes with recommendations based on lessons learned in the areas of voice recognition, marketing, partnerships, and feedback from users.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14248_files/14248.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14248.htm, EDL# 14248

Implementation and Operational Guidelines for 511 Services Version 3.0 (2005)

These guidelines were designed to assist those wishing to implement and operate a three-digit traveler information number—511—as the main traveler information number in their region. The guidelines emphasize development of high-quality traveler information systems and compatibility with 511 systems nationwide. The guidelines also address two key aspects of service quality: content and consistency.

Cost: Free

To Access This Resource: Access the website address http://www.deploy511.org/docs/511%20Guidelines%20Version%203.0.pdf.

Travel Time Messaging Case Studies (2005)

These case studies examine how four locations in the U.S. provide travel time messages on dynamic message signs. The case studies document the decision processes, system configuration, travel time calculation algorithms, and lessons learned.

Cost: Free

To Access This Resource: Access the following website addresses:

- Chicago: http://www.ops.fhwa.dot.gov/publications/travel_time_study/chicago/chicago_ttm.htm
- Houston: http://www.ops.fhwa.dot.gov/publications/travel_time_study/houston/houston_ttm.htm

- Nashville: http://www.ops.fhwa.dot.gov/publications/travel_time_study/nashville/nashville_ttm.htm
- Portland, Oregon: http://www.ops.fhwa.dot.gov/publications/travel_time_study/portland/portland_ttm.htm

AMBER, Emergency, and Travel Time Messaging Guidelines for Transportation Agencies (2004)

This report provides guidelines to transportation agencies on the content of dynamic message signs (DMS), specifically related to America's Missing: Broadcast Emergency Response (AMBER) alerts, emergency situations, and travel times. The guidelines are based on a review of current practice by transportation agencies from around the country. The report appendices contain the results of a survey conducted among transportation agencies, as well as an annotated bibliography on DMS usage.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/TravelINfo/resources/cms_rept/cmspractices.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/TravelINfo/resources/cms_rept/cmspractices.htm

The Evaluation of Advanced Traveler Information Services (ATIS) Impacts on Truck Travel Time Reliability (2004)

This report evaluates the ability of advanced traveler information systems (ATIS) to improve the on-time reliability of commercial vehicles in an urban setting. The evaluation uses the Heuristic On-Line Web-Linked Arrival Time Estimation (HOWLATE) simulation model to evaluate the impacts of ATIS on freight movements at an international terminal in Los Angeles, California. The study provides dollar value estimates of the benefits of ATIS and concludes that, for commercial vehicle operators with stringent on-time requirements who

face considerable travel time variability, ATIS is a useful and high-value service.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13988_files/13988.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13988.html, EDL# 13988

Traveler Information and Tourism: Assessment of Traveler Information and 511 Impacts upon Tourist Destinations and National Parks (2004)

This report documents the findings of a study that examined the impact of traveler information on four tourist areas: Acadia National Park in Maine; Branson, Missouri; the I-81 Corridor in the Shenandoah Valley of Virginia; and Salt Lake City, Utah. The report examines the impacts of traveler information at each of the four sites in depth, and then concludes with cross-cutting findings and recommendations on how to improve traveler information operations in tourist areas.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14054_files/14054.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14054.htm, EDL# 14504

Understanding Key Tradeoffs for Cost-Effective Deployment of Surveillance to Support Advanced Traveler Information Systems (ATIS) (2004)

This report presents the findings of research, conducted through simulation models, into two types of transportation surveillance investments, comparing the relative costs and benefits for use in advanced traveler information systems (ATIS). The two types of investments are: expansion of surveillance coverage to include additional miles of roadway, and improving the accuracy of the information provided on roadways already covered by surveillance. The research concludes that the point at which the benefits of additional investment no longer exceed the costs is 50 to 60 percent of full network coverage for increasing coverage and a 5 percent error rate for increasing accuracy.

Cost: Free

To Access This Resource: Access the following website addresses:.

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13991_files/13991.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13991.html, EDL# 13991.

511 America's Traveler Information Number Deployment Assistance Reports (2002-2003)

This series of reports was published by the 511 Deployment Coalition to provide both technical and institutional information to agencies considering, planning, or implementing 511 systems. The reports address issues such as business models, linkages with public safety and homeland security, regional interoperability, and several different types of 511 content, including public transportation, weather information, and roadway conditions.

Cost: Free

To Access This Resource: Access the following website addresses:

- Report #1: Business Models and Cost Considerations (2002)—Adobe Acrobat format: http://www.its.dot.gov/511/PDF/511bmCst.pdf
- Report #1: Business Models and Cost Considerations—HyperText Markup Language (HTML) format: http://www.its.dot.gov/511/511_Costs.htm
- Report #2: Transfer of 511 Calls to 911 (2002): http://www.its.dot.gov/511/511to911.htm
- Report #3: 511 and Homeland Security (2002)—Adobe Acrobat format: http://www.its.dot.gov/511/PDF/511secur.pdf
- Report #3: 511 and Homeland Security—HyperText Markup Language (HTML) format: http://www.its.dot.gov/511/511secur.htm
- Report #4: Regional Interoperability Issues (2003)—Adobe Acrobat format: http://www.its.dot.gov/511/PDF/511inter.pdf
- Report #4: Regional Interoperability Issues—HyperText Markup Language (HTML) format: http://www.its.dot.gov/511/511inter.htm
- Report #5: Public Transportation Content on 511 Services (2003)—Adobe Acrobat format: http://www.its.dot.gov/511/PDF/511ptrns.pdf
- Report #5: Public Transportation Content on 511 Services—HyperText Markup Language (HTML) format: http://www.its.dot.gov/511/511ptrns.htm
- Report #6: Weather and Environment Content on 511 Services (2003)—Adobe Acrobat format: http://www.its.dot.gov/511/PDF/511weath.pdf
- Report #6: Weather and Environment Content on 511 Services—HyperText Markup Language (HTML) format: http://www.its.dot.gov/511/511weath.htm
- Report #7: Roadway Content Quality on 511 Services (2003)—Adobe Acrobat format: http://www.its.dot.gov/511/PDF/511road.pdf

- Report #7: Roadway Content Quality on 511 Services—HyperText Markup Language (HTML) format: http://www.its.dot.gov/511/511road.htm

Customer Preferences for Transit ATIS: Research Report (FTA-OH-26-7015-2003-1) (2003)

This report presents findings from a series of customer preference workshops on the topic of transit information. Twelve (12) workshops were held in four metropolitan areas with more than 250 transit customers in November 2002. The study found that riders prefer traditional forms of paper-based information and traditional wayside signage such as schedules, maps, and fares. Inaccurate information was perceived as worse than no information, and high-quality traditional forms of information were considered more important than high-technology delivery media. Awareness of advanced transit information services was low, even in geographic areas where these services are available, suggesting that transit agencies need to do more to promote their existing information services.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.its.dot.gov/transit_dev/ATIS_NOW/ATIS.pdf
- HyperText Markup Language (HTML) format: http://www.its.dot.gov/transit_dev/ATIS_NOW/ATIS.htm

Guidance for Developing and Deploying Real-Time Traveler Information Systems for Transit (FTA-OH-26-7017-2003-1) (2003)

This document offers guidance to transit agencies on the development and deployment of real-time transit information systems. The report presents the current state-of-the-practice in real-time transit information systems, components of successful systems, deployment issues and challenges,

recommended practices for successful deployment, and a look toward the future of this promising technology.

Cost: Free

To Access This Resource: Access the website address http://ntl.bts.gov/lib/23000/23600/23663/RTTIS_Final.pdf.

Traveler Information Systems in Europe (FHWA-PL-03-005) (2003)

This report presents the findings of the study team that participated in an International Technology Scanning Program tour of Spain, Germany, Sweden, Scotland, and England to learn about multimodal traveler information systems. Among the aspects of traveler information included in the report are information content, customer needs, business and cost recovery models, technology applications, consistency and standards, and legal and policy issues. The report concludes with recommendations for how European best practices can be applied in the U.S.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://international.fhwa.dot.gov/travelinfo/traveler_information.pdf
- HyperText Markup Language (HTML) format: http://international.fhwa.dot.gov/travelinfo/index.htm

511 Case Studies (2001)

These case studies examine the transition made by several states and regions to the nationally designated three-digit traveler information number—511—as the main traveler information number for the area. The case studies document progress made to date and conclude with lessons learned.

Cost: Free

To Access This Resource: Access the following website addresses:

- Arizona: http://www.its.dot.gov/511/PDF/Arizona.pdf
- Detroit, Michigan: http://www.its.dot.gov/511/Mich_cs.htm

- Kentucky: http://www.its.dot.gov/511/PDF/Kentucky.pdf
- Minnesota: http://www.its.dot.gov/511/Minn_cs.htm
- San Francisco: http://www.its.dot.gov/511/Travinfo.htm
- Utah CommuterLink: http://www.its.dot.gov/511/Utah_cs.htm
- Shenandoah Valley, Virginia: http://www.its.dot.gov/511/travshen.htm

Sharing Data for Public Information: Practices and Policies of Public Agencies (2002)

This report documents the current state-of-the-practice of public agencies sharing digital, video, and verbal forms of data and information about travel conditions. The particular aspects of a public agency's data-sharing practices can have a powerful effect on deployment of 511 telephone numbers and other types of traveler information services. This report describes how both the public and private sectors address the issues of data ownership and data sharing. This report also examines policies that seek to encourage data sharing and how these policies might improve the quality and quantity of information provided to travelers.

Cost: Free

To Access This Resource: Access the website address http://ops.fhwa.dot.gov/travelinfo/resources/datashare/datshare.htm.

ATIS U.S. Business Models Review (2001)

This report documents the findings of an extensive review of advanced traveler information systems (ATIS) business models, jointly sponsored by the Intelligent Transportation Society of America (ITS America) and the U.S. DOT and conducted from 1997 through 1999. This report examines various business models identified in the review and identifies factors that would lead a region to choose one particular model over another.

Cost: Free

To Access This Resource: Access the website address http://ops.fhwa.dot.gov/travelinfo/resources/atis_bm.htm.

511 for Traveler Information: Implementation Issues (2000)

This document provides state and local transportation agencies with an explanation of the Federal Communication Commission's (FCC) assignment of 511 as a three-digit nationwide telephone number for traveler information. The document explores the impacts of the FCC decision and some of the key issues related to how a transportation agency would implement 511 in its own region. The document discusses potential involvement with telephone local exchange carriers (LECs), wireless communications carriers, and state regulatory agencies such as public utilities commissions (PUCs), state commerce commissions (SCCs), and public service commissions (PSCs).

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/511/pdf/traveler.pdf.

Summary of the Metropolitan Model Deployment Initiative (MMDI) Advanced Traveler Information Systems (ATIS) Symposium and ATIS Data Collection Guidelines Workshop (2000)

This document provides a summary of the Metropolitan Model Deployment Initiative (MMDI) Advanced Traveler Information Systems (ATIS) Symposium and ATIS Data Collection Guidelines Workshop, held February 8-10, 2000, in Scottsdale, Arizona. The symposium focused on the experiences of the MMDI to provide guidelines and recommendations to public sector agencies considering the deployment or improvement of their ATIS services. In addition, the symposium highlighted successful institutional approaches to ATIS deployment, and best practices for the collection and dissemination of ATIS data. The online proceedings link to presentations given at the workshop, related white papers, and other reference documents.

Cost: Free

To Access This Resource: Access the website address http://www.ntoctalks.com/jpo/atis_summ.html.

What Have We Learned about Intelligent Transportation Systems? Chapter 4: What Have We Learned about Advanced Traveler Information Systems and Customer Satisfaction? (2000)

This document is an excerpt from a compendium report that looks back on the 10 years of the National ITS Program to examine which ITS technology applications have been successful, which have not been successful, and what the underlying factors that determine success versus failure are. This section examines consumer acceptance of advanced traveler information systems (ATIS).

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13320.pdf, EDL# 13320.

Intelligent Transportation Systems Field Operational Test Cross-Cutting Study: Advanced Traveler Information Systems (FHWA-JPO-99-038) (1998)

This reports summarizes and interprets the results of several field operational tests (FOTs) that tested advanced traveler information systems (ATIS). Topics covered include impacts, user response, technical lessons learned, institutional challenges and resolutions, and implementation costs.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/6323.pdf, EDL# 6323. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Strategies for Improved Traveler Information (TCRP Report# 92) (2003)

This report summarizes the state of the practice in the provision of advanced traveler information services (ATIS) to transit riders. This report identifies transit traveler information

needs, assesses the state of the art in providing transit traveler information, contains examples of customer information systems for both within and outside the transit industry, discusses transit traveler information as part of a larger continuity of information systems, and looks to the future of this promising new facet of the transit industry.

Cost: $22 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TC092," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://trb.org/publications/tcrp/tcrp_rpt_92.pdf.

Scheduled Lives, Stressful Drives (FHWA-OP-01-039) (2001)

This video shows how advanced traveler information systems (ATIS) empower travelers to use their time more effectively. The video also calls for new ways to measure performance of transportation networks that reflect time budgeting and ATIS. The target audience for the video includes transportation professionals as well as the general public.

Cost: Free

To Access This Resource: To order a copy of the video, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Work Zones Points-of-Contact

- Brian Cronin, ITS Joint Program Office, (202) 366-8841, Brian.Cronin@dot.gov
- Chung Eng, FHWA Office of Transportation Operations, (202) 366-8043, Chung.Eng@dot.gov
- Tracy Scriba, FHWA Office of Transportation Operations, (202) 366-0855, Tracy.Scriba@dot.gov
- Deborah Curtis, FHWA Office of Research, Development and Technology, (202) 493-3267, Deborah.Curtis@dot.gov
- Daniel Grate, FHWA Resource Center, (404) 562-3912, Daniel.Grate@dot.gov
- Ken Wood, FHWA Resource Center, (708) 283-4340, Ken.Wood@dot.gov

Work Zone Mobility and Safety Program Section of the FHWA Office of Operations Website

This site is the official website of the FHWA Office of Operations Work Zone Mobility and Safety Program. The website provides tools to transportation practitioners, including key reference documents, decision support tools, a featured innovative work zone practice that is updated monthly, and a calendar of events including FHWA-sponsored information exchange workshops. The website also contains the full text of applicable Federal regulations and policies, statistics that make the case for improving safety and mobility in work zones, and related links.

Cost: Free

To Access This Resource: Access the website address http://ops.fhwa.dot.gov/wz/index.asp.

Compendium of Work Zone Research, Development, and Technology Transfer

This compendium, available in CD-ROM format, is a database of recent research, development and technology transfer projects pertaining to transportation work zones. The database profiles 332 projects, including such information

as the project title, project description, contributing agency, performing agency, year of completion, point of contact, and related reference documents. Users can search the database by keyword, by the different phases of work zone activity (e.g., design, operations, etc.) and by specific subject areas (e.g., worker safety, traffic management, etc.).

Cost: Free

To Access This Resource: To order a copy of the CD-ROM, contact workzonepubs@dot.gov.

QuickZone Version 2.0

QuickZone enables state and local traffic, construction, operations, and planning staff, and construction contractors, to estimate traveler delay due to work zones. QuickZone was designed to be easy to learn and use, and is suitable for both urban and interurban corridor analysis. QuickZone quantifies corridor delay resulting from capacity decreases in work zones, identifies delay impacts of alternative phasing programs, and supports trade-off analysis between construction costs and delay costs. QuickZone also enables users to consider alternative phasing schedules, assess the impacts of delay mitigation strategies, and calculate work completion incentives.

Cost: $195

To Access This Resource: Order QuickZone through the McTrans Center for Microcomputers in Transportation at the University of Florida, (352) 392-0378, fax: (352) 392-3224, mctrans@ce.ufl.edu, http://mctrans.ce.ufl.edu.

Intelligent Transportation Systems for Work Zones: Deployment Benefits and Lessons Learned (FHWA-JPO-07-003) (2007)

This leaflet is one in a series that shows how ITS technologies can reduce congestion, in support of the U.S. Department of Transportation's Congestion Initiative. This leaflet summarizes the benefits, costs, extent of deployment and lessons learned about the use of ITS in work zones. The online version contains a full list of sources, so that all information in the leaflet's brief four pages is backed up with supporting documentation.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.its.dot.gov/jpodocs/repts_te/14320_files/14320.pdf
- HyperText Markup Language (HTML) format: http://www.its.dot.gov/jpodocs/repts_te/14320.htm, EDL# 14320

Coordinated Freeway and Arterial Operations Handbook (FHWA-HRT-06-095) (2006)

This handbook provides direction, guidance and recommendations on how to coordinate freeway and arterial operations in a proactive and comprehensive manner. The handbook defines coordinated freeway and arterial operations (CFA) and discusses how to apply CFA to four areas of high pay-off: traffic incident management, work zone management, planned special events management, and day-to-day (or recurring) operations. The handbook concludes with a discussion of new technologies such as ITS and an example of CFA in an incident management program in Northern Virginia. Development of this handbook was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the website address http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/06095.pdf.

Developing and Implementing Transportation Management Plans for Work Zones (FHWA-HOP-05-066) (2006)

This document is designed to help transportation agencies develop and implement Transportation Management Plans (TMPs) for work zones. A TMP lays out a set of work zone

management strategies and describes how the strategies will be used to manage the safety and mobility impacts of a road construction or maintenance work zone. The document includes a general approach that can be used to develop TMPs, a list of components that might be included in a TMP, tips for developing effective TMPs, descriptions of work zone management strategies, and examples and best practices from agencies that are currently using TMPs. Developing and implementing TMPs is a key part of compliance with 23 Code of Federal Regulations 630 Subpart J, referred to as the "Work Zone Safety and Mobility Rule," which was updated in 2004 and goes into effect in October 2007.

Cost: Free

To Access This Resource: To order a hardcopy, contact workzonepubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/resources/publications/trans_mgmt_plans/trans_mgmt_plans.pdf
- HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/wz/resources/publications/trans_mgmt_plans/index.htm

Frequently Asked Questions for the Work Zone Safety and Mobility Rule (2006)

This set of frequently asked questions (FAQs) contains questions and answers on a number of popular topics related to 23 Code of Federal Regulations 630 Subpart J, referred to as the "Work Zone Safety and Mobility Rule." Questions and answers were included in this document based on questions received during webcasts and presentations on the Rule and from inquiries the FHWA has received regarding the Rule. This "living" document is being updated continuously as FHWA receives new questions on the Rule.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/resources/final_rule/pdf/rule_faqs.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/wz/resources/final_rule/rule_faqs.htm

Work Zone Impacts Assessment: An Approach to Assess and Manage Work Zone Safety and Mobility Impacts of Road Projects (FHWA-HOP-05-068) (2006)

This document is designed to help transportation agencies develop and update their own policies, processes and procedures for assessing and managing the work zone impacts of road construction and maintenance projects. The document includes a general approach for assessing the potential impacts of road projects and can be used as a decision support tool. The approach is organized along the major activities of program delivery: policy, systems planning, preliminary engineering, design, construction, performance assessment, and maintenance and operations. The document provides both generic and real-world examples to help put discussions in context and refers to resources where more information on specific topics can be obtained. Assessing the impacts of work zones is a key part of compliance with 23 Code of Federal Regulations 630 Subpart J, referred to as the "Work Zone Safety and Mobility Rule," which was updated in 2004 and goes into effect in October 2007.

Cost: Free

To Access This Resource: To order a hardcopy, contact workzonepubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/resources/final_rule/wzi_guide/wzi_guide.pdf
- HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/wz/resources/final_rule/wzi_guide/index.htm

Final Rule on Work Zone Safety and Mobility Brochure (FHWA-HOP-05-010) (2005)

This brochure provides an overview of the 23 Code of Federal Regulations 630 Subpart J, referred to as the "Work Zone Safety and Mobility Rule." The Rule was updated in 2004 and becomes effective in 2007. The Rule requires all state and local governments that receive Federal-aid highway funding to develop an agency-level work zone safety and mobility policy to support systematic consideration of work zone impacts across all stages of project development. This brochure describes why the rule was updated, the goals of the rule and its primary components. The Adobe Acrobat version of the brochure also provides a flow diagram illustrating how the rule can be applied to the project delivery process.

Cost: Free

To Access This Resource: To order a hardcopy, contact workzonepubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/resources/fr_brochure.pdf
- HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/wz/resources/fr_brochure.htm

Final Rule on Work Zone Safety and Mobility Fact Sheets (2005)

This series of four fact sheets provides an overview and explores three key aspects of the 23 Code of Federal Regulations 630 Subpart J, referred to as the "Work Zone Safety and Mobility Rule." The Rule was updated in 2004 and becomes effective in 2007. The Rule requires all state and local governments that receive Federal-aid highway funding to develop an agency-level work zone safety and mobility policy to support systematic consideration of work zone impacts across all stages of project development. An overview fact sheet describes why the rule was update, and how the rule should be applied at the policy, statewide, and project levels. It also lists technical assistance resources available from FHWA. Three other fact sheets explore aspects of the rule regarding work zone impacts assessment, transportation management plans (TMPs), and public information and outreach strategies.

Cost: Free

To Access This Resource: To order a hardcopy, contact workzonepubs@dot.gov. For the online version, access the following website addresses:

- Overview (FHWA-HOP-05-011)—Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/resources/fr_factsheet.pdf
- Overview—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/wz/resources/impact_factsheet.htm
- Work Zone Impacts Assessment (FHWA-HOP-05-023)—Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/resources/impact_factsheet.pdf
- Work Zone Impacts Assessment—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/wz/resources/impact_factsheet.htm
- Transportation Management Plans (TMPs) for Work Zones (FHWA-HOP-05-022)—Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/resources/tmp_factsheet.pdf
- Transportation Management Plans (TMPs) for Work Zones—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/wz/resources/tmp_factsheet.htm

- Public Information and Outreach Strategies for Work Zones (FHWA-HOP-05-021)—Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/resources/outreach_factsheet.pdf
- Public Information and Outreach Strategies for Work Zones—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/wz/resources/outreach_factsheet.htm

Implementing the Rule on Work Zone Safety and Mobility (2005) (FHWA-HOP-05-065)

In September 2004, FHWA published updates to the work zone regulations 23 Code of Federal Regulations 630 Subpart J, referred to as the "Work Zone Safety and Mobility Rule." The Rule requires all state and local governments that receive Federal-aid highway funding to develop an agency-level work zone safety and mobility policy to support systematic consideration of work zone impacts across all stages of project development. The Rule will become effective October 12, 2007. This document provides a general overview of the Rule and overarching guidance on how to implement its provisions. This document includes guidelines, sample approaches, examples of transportation agencies that use practices that relate to the Rule, and sources for more information.

Cost: Free

To Access This Resource: To order a hardcopy, contact workzonepubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/rule_guide/rule_guide.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/wz/rule_guide/index.htm

Work Zone Public Information and Outreach Strategies (FHWA-HOP-05-067) (2005)

This document is designed to help transportation agencies plan and implement effective public information and outreach campaigns to mitigate the negative effects of road

construction work zones. Developing and implementing such plans is a key part of compliance with 23 Code of Federal Regulations 630 Subpart J, referred to as the "Work Zone Safety and Mobility Rule," which was updated in 2004 and goes into effect in October 2007. The document outlines an eight-step process for developing and evaluating these plans. The document also provides examples for each of the eight steps, a checklist of typical actions that are part of developing these plans. The document also presents specific communication strategies and provides example of how these strategies have been used.

Cost: Free

To Access This Resource: To order a hardcopy, contact workzonepubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/info_and_outreach/public_outreach_guide.pdf
- HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/wz/info_and_outreach/index.htm

Full Closure for Work Zone Operations: Case Studies (2004)

These reports are part of a series designed to educate public sector managers about the applications and benefits of full road closure for work zones, as an alternative to the traditional practice of part-width construction. These case studies examine how transportation authorities in Delaware, Michigan and Oregon detoured traffic from one or both directions of the roadway for the purpose of performing road work. Each case study describes why a full closure approach was selected, the planning efforts involved, the benefits gained, deployment considerations, and lessons learned.

Cost: Free

To Access This Resource: To order a hardcopy, contact workzonepubs@dot.gov. For the online version, access the following website addresses:

- Reducing the Impact of Construction During the Rehabilitation of a Major Interstate Highway: Interstate 95 in Wilmington, Delaware (FHWA-OP-05-012)—Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/docs/Delaware_v3/full_closure_delawar.pdf
- Reducing the Impact of Construction During the Rehabilitation of a Major Interstate Highway: Interstate 95 in Wilmington, Delaware—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/wz/docs/Delaware_v3/index.htm
- Accelerating Construction and Reducing Crashes During Rehabilitation of a Major Downtown Route: M-10 Lodge Freeway in Detroit, Michigan (FHWA-OP-05-013)—Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/docs/Detroit_v5/full_closure_detroit.pdf
- Accelerating Construction and Reducing Crashes During Rehabilitation of a Major Downtown Route: M-10 Lodge Freeway in Detroit, Michigan—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/wz/docs/Detroit_v5/index.htm
- Using Weekend Closures to Expedite Road Rehabilitation and Minimize the Impacts on Motorists and Road Builders: I-84 Banfield Freeway in Portland, Oregon (FHWA-OP-05-014) —Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/docs/Portland_v3/full_closure_portlan.pdf
- Using Weekend Closures to Expedite Road Rehabilitation and Minimize the Impacts on Motorists and Road Builders: I-84 Banfield Freeway in Portland, Oregon—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/wz/docs/Portland_v3/index.htm

Intelligent Transportation Systems in Work Zones: Case Studies (2004)

These four reports are part of a series designed to educate public sector managers about particular ITS technologies. These case studies examine how transportation authorities in Arizona, Illinois, Michigan, and New Mexico used ITS in their work zones to improve mobility and reduce crashes. Each case study describes the work zone, how the ITS system was selected, how it worked, the benefits experienced, and lessons learned.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or workzonepubs@dot.gov. For the online version, access the following website addresses:

- Work Zone Traffic and Incident Management System (FHWA-OP-04-072)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/technologies/albuquerque/its_albuquerque.pdf
- Work Zone Traffic and Incident Management System—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13941.html, EDL# 13941 or http://www.ops.fhwa.dot.gov/wz/technologies/albuquerque/index.htm
- Work Zone Travel Time System (FHWA-HOP-04-032)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/technologies/arizona/arizona.pdf
- Work Zone Travel Time System—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14001.htm, EDL# 14001 or http://www.ops.fhwa.dot.gov/wz/technologies/arizona/index.htm
- Dynamic Lane Merge System (FHWA-HOP-04-033)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/technologies/michigan/michigan.pdf
- Dynamic Lane Merge System—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14011.htm, EDL# 14011 or http://www.ops.fhwa.dot.gov/wz/technologies/michigan/index.htm

- Real-Time Work Zone Traffic Control System (FHWA-HOP-04-018)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/technologies/springfield/springfield.pdf
- Real-Time Work Zone Traffic Control System—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13984.htm, EDL# 13984 or http://ops.fhwa.dot.gov/wz/technologies/springfield/index.htm

Work Zone Mobility and Safety Fact Sheets (2000-2004)

This series of fact sheets shows activities for improving mobility and safety through construction and maintenance work zones. These fact sheets highlight innovative technologies and best practices; introduce new methods, products, and tools; and share lessons learned from the real-world applications that they examine.

Cost: Free

To Access This Resource: To order a hardcopy, contact workzonepubs@dot.gov. For the online version, access the following website addresses:

- Fact Sheet 1: Oregon's QuickFax Service (FHWA-OP-00-022) (2000)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/pdfs/factsheet1.pdf
- Fact Sheet 1: Oregon's QuickFax Service—HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/factsheet1.htm
- Fact Sheet 2: Customer Driven Construction in Illinois (FHWA-OP-00-023) (2000)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/pdfs/factsheet2.pdf
- Fact Sheet 2: Customer Driven Construction in Illinois—HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/factsheet2.htm

- Fact Sheet 3: Work Zone Safety Awareness Week (FHWA-OP-00-024) (2000)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/pdfs/factsheet3.pdf
- Fact Sheet 3: Work Zone Safety Awareness Week—HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/factsheet3.htm
- Fact Sheet 4: Delaware's Survival Plan for the I-95 Shutdown (FHWA-OP-00-025) (2000)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/pdfs/factsheet4.pdf
- Fact Sheet 4: Delaware's Survival Plan for the I-95 Shutdown—HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/factsheet4.htm
- Fact Sheet 5: Innovation During Bridge Rehabilitation Improves Mobility (FHWA-OP-01-008) (2001)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/pdfs/factsheet5.pdf
- Fact Sheet 5: Innovation During Bridge Rehabilitation Improves Mobility—HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/factsheet5.htm
- Fact Sheet 6: Work Zone Best Practices Guidebook (FHWA-OP-00-009) (2001)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/pdfs/factsheet6.pdf
- Fact Sheet 6: Work Zone Best Practices Guidebook—HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/factsheet6.htm
- Fact Sheet 7: Compendium of Work Zone Research, Development, and Technology Transfer (FHWA-OP-02-054) (2002)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/pdfs/factsheet7.pdf

- Fact Sheet 7: Compendium of Work Zone Research, Development, and Technology Transfer—HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/factsheet7.htm
- Fact Sheet 8: Ohio Keeps Motorists and Road Rehabilitation Moving Forward (FHWA-OP-03-190) (2003)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/pdfs/factsheet8.pdf
- Fact Sheet 8: Ohio Keeps Motorists and Road Rehabilitation Moving Forward—HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/wz/practices/factsheets/factsheet8.htm
- Fact Sheet 9: Arkansas Uses Public Outreach to "Pave The Way" During Interstate Rehabilitation (FHWA-HOP-04-031) (2004)—Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/practices/factsheets/pdfs/factsheet9.pdf
- Fact Sheet 9: Arkansas Uses Public Outreach to "Pave The Way" During Interstate Rehabilitation—HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/wz/practices/factsheets/factsheet9.htm

Full Road Closure for Work Zone Operations: A Cross-Cutting Study (FHWA-OP-04-009) (2003)

These reports are part of a series designed to educate public sector managers about the applications and benefits of full road closure for work zones, as an alternative to the traditional practice of part-width construction. Full road closures involve detouring traffic, from one or both directions of the roadway, for the purpose of performing road work. By examining full road closure projects in Delaware, Kentucky, Michigan, Ohio, Oregon, and Washington, the report discusses: why a full closure approach was selected for those projects, what benefits can be expected from using full closure, what factors should be taken into consideration during the planning and operations stages, and what lessons were learned.

Cost: Free

To Access This Resource: To order a hardcopy, contact workzonepubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/resources/publications/FullClosure/CrossCutting/FullClosureX-CuttingRpt.pdf
- HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/wz/resources/publications/FullClosure/CrossCutting/its.htm

Shorter Duration, Safer Work Zones, More Satisfied Travelers: Successful Applications of Full Road Closure in Work Zones (FHWA-OP-03-086) (2003)

These reports are part of a series designed to educate public sector managers about the applications and benefits of full road closure for work zones, as an alternative to the traditional practice of part-width construction. The brochure highlights full road closure projects in Delaware, Kentucky, Michigan, Oregon, and Ohio, providing both numerical data and quotes from officials on the benefits these areas experienced.

Cost: Free

To Access This Resource: To order a hardcopy, contact workzonepubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/docs/Full%20Closure_BRO-final.pdf
- HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/wz/resources/publications/FullClosure/index.htm

Intelligent Transportation Systems in Work Zones: A Cross-Cutting Study (FHWA-OP-02-025) (2002)

This report is one in a series designed to educate public sector managers about particular ITS technologies. This report examines how transportation departments in Illinois, Michigan, New Mexico, and Arkansas used ITS in their work zones and recounts the benefits they experienced. The report also profiles other ITSrelated work zone products, systems, and techniques.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/docs/ITSWorkzones.pdf or http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13600_files/13600.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13600.html, EDL#14128

Informed Motorists, Fewer Crashes—Using Intelligent Transportation Systems in Work Zones (FHWA-OP-01-043) (2001)

This brochure, one in a series designed to encourage decision-makers to invest their own budget resources in ITS, examines the safety and mobility benefits of the use of ITS in work zones. The brochure quotes elected officials and transportation professionals from around the country about the benefits they have experienced from using ITS in work zones.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13584/13584.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13584.html, EDL# 13584

Maintenance and Construction Operations User Service: An Addendum to the ITS Program Plan (2001)

This document provides a detailed description of the maintenance and construction operations user service. This document serves as an addendum to the *National ITS Program Plan* in describing the 32nd ITS user service and establishes the need for including maintenance and construction operations in the National ITS Architecture, focusing on four specific functions: maintenance vehicle fleet management, roadway management, work zone management and safety, and roadway maintenance conditions and work plan dissemination.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/13465.pdf, EDL# 13465.

Phoenix's Roadway Closure and Restriction System: Lessons Learned from the Metropolitan Model Deployment Initiative (FHWA-OP-01-036) (2001)

This is one in a series that documents lessons learned from the Metropolitan Model Deployment Initiative (MMDI). This report documents the benefits of integration between traffic management and traveler information.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13221.pdf, EDL# 13221.

Methods and Practices to Reduce Motorist Delays in European Work Zones (FHWA-PL-00-001) (2000)

This report presents the findings of a scanning tour of several European countries to examine how these countries manage traffic flow through temporary work zones. The European highway agencies were found to adopt a customer-oriented approach towards work zones. The report concludes with several recommendations for improvement of work zone operations in the U.S.

Cost: Free

To Access This Resource: Access the website address http://www.international.fhwa.dot.gov/Pdfs/workzonebook.pdf.

Work Zone Operations Best Practices Guidebook: Improving Mobility and Safety on Both Sides of the Barrel (FHWA-JPO-00-010) (2000)

This guidebook documents over 250 best practices for minimizing the impacts of road construction and maintenance on mobility and safety. These best practices were observed during a scanning tour of 26 states and consist of approaches, procedures, and technologies, including advanced technologies such as ITS. The guidebook is available in hardcopy, on CD-ROM, and online as a searchable, interactive database. Readers are invited to contribute new best practices, and the website, hardcopy, and CD-ROM versions of the guidebook all have instructions on how to do so.

Cost: Free

To Access This Resource: To order the hardcopy or CD-ROM, contact workzonepubs@dot.gov. For the online version, access the following website addresses:

- Searchable interactive version: http://www.ops.fhwa.dot.gov/wz/practices/best/Default.htm
- Adobe Acrobat version: http://www.ops.fhwa.dot.gov/wz/practices/best/Documents/workzoneguidebook.pdf

Meeting the Customer's Needs for Mobility and Safety During Construction and Maintenance Operations (FHWA-HPQ-98-1) (1998)

This report presents the findings of a quality improvement review to assess the effectiveness of FHWA and state departments of transportation policies and procedures for reducing traffic congestion and delays during construction and maintenance operations. The report describes the current state-of-the-practice in work zones (as of 1998), identifying best practices that can help an agency achieve the state-of-the-art in this area. This report has served as a guiding document for FHWA's Work Zone Mobility and Product Safety Team.

Cost: Free

To Access This Resource: Access the website address http://www.fhwa.dot.gov/reports/bestprac.pdf.

Safety

Commercial Vehicle Information Systems and Networks Points-of-Contact

- Kate Hartman, ITS Joint Program Office, (202) 366-2742, Kate.Hartman@dot.gov
- Jeff Secrist, FMCSA Office of Research and Analysis, (202) 385-2367, Jeff.Secrist@dot.gov
- Quon Kwan, FMCSA Office of Research and Analysis, (202) 385-2389, Quon.Kwan@dot.gov
- Julie Lane, FHWA Office of Research and Analysis, (202) 385-2391, Julie.Lane@dot.gov

http://

Commercial Vehicle Information Systems and Networks (CVISN) Website

This site is the official website of the Commercial Vehicle Information Systems and Networks (CVISN) program and is a repository of documents pertaining to the program. The site contains documents pertaining to CVISN workshops, the National ITS Architecture, the CVISN architecture and standards, the three CVISN components (safety information exchange, credentials administration, and electronic screening), interoperability testing, expanded CVISN capabilities, and training. The website also contains contact information and related links.

Cost: Free

To Access This Resource: Access the website address http://cvisn.fmcsa.dot.gov.

http://

CVISN Collaboration: CVISN_GrantInfo

This website is a compilation of documents relating to the application process for Federal funds under the Commercial Vehicle Information Systems and Networks (CVISN) program. The website contains the *Commercial Vehicle Information Systems and Networks (CVISN) National Program Management Plan*, a brochure listing examples of acceptable and unacceptable sources of matching funds, and the Grants.gov newsletter. The purpose of the website is to assist CVISN program partners, such as state governments, in applying for CVISN funds.

Cost: Free

To Access This Resource: Access to the website is restricted to CVISN program partners. To apply for a username and password, contact Nancy Magnusson of the Johns Hopkins University Applied Physics Laboratory, (443) 778-7033, nancy.magnusson@jhuapl.edu.

Electronic Toll Collection/Electronic Screening Interoperability Pilot Project Final Report Synthesis (2005)

This report documents the findings of a pilot test of regional interoperability between electronic toll collection (ETC) and commercial vehicle electronic screening (E-Screening). Tests of key integration technologies, developed in the earlier stages of the project, took place in Connecticut, Maryland and New York State in 2004. The test also found that the integration of ETC and E-Screening does not result in quantifiable mobility and efficiency benefits to the motor carrier industry, but does result in significant environmental benefits through reduced truck idling and emissions.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14256_files/14256.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14256.htm, EDL# 14256

Expanded Commercial Vehicle Information Systems and Networks (CVISN) (2005)

This series of reports documents the progress of the Expanded Commercial Vehicle Information Systems and Networks (Expanded CVISN) Initiative through June 2005. Expanded CVISN builds on core CVISN capabilities to continue to enhance the safety, security, and productivity of commercial vehicle operations. In 2004, FMCSA engaged stakeholders

to identify the capabilities necessary to achieve the goals of Expanded CVISN. To this end, FMCSA established program area working groups—Driver Information Sharing, Enhanced Safety Information Sharing, Smart Roadside, and Expanded E-Credentialing—and eight high-priority capabilities needed for Expanded CVISN. The findings of the work groups for each of the high-priority capabilities are presented in a separate report that include detailed capability descriptions, proposed technical solutions, potential costs and benefits, and proposed deployment strategies. A summary report highlights common themes that emerged within the working groups and outlines steps that must be taken to provide direct support for the Expanded CVISN Initiative.

To Access This Resource: Access the following website addresses:

- Summary Report: http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/reports/Expanded_CVISN_Summary_Report_draft.pdf
- Driver Snapshots: http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/reports/Driver_Snapshots_v1_report.pdf
- Safety Data Quality: http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/reports/Safety_%20Data_Quality_v1_report.pdf
- Roadside Access to Data: http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/reports/Roadside_Access_to_Data_v1_report.pdf
- Access to Credentials Data: http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/reports/Access_to_Credentials_Data_v1_report.pdf
- Access to Driver Data: http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/reports/Access_to_Driver_Data_v1_report.pdf
- Carrier Access to Safety Data: http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/reports/Carrier_Access_to_Safety_Data_v1_report.pdf
- Virtual Roadside Sites: http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/reports/Virtual_Roadside_Sites_v1_report.pdf
- Better E-Credentialing: http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/reports/Better_E-Credentialing_v1_report.pdf

CVISN for Commercial Vehicles (2004)

These two reports are part of a series designed to educate public and private sector managers about particular ITS technologies. These case studies provide an in-depth view of the deployment of Commercial Vehicle Information Systems and Networks (CVISN) electronic credentialing and safety information exchange in Washington State and Connecticut. These studies describe benefits, successful practices, and lessons learned in operations and management from the point of view of early CVISN-adopting states.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- CVISN Electronic Credentialing for Commercial Vehicles in Washington State: A Case Study (FHWA-JPO-04-029/FMCSA-RT-04-001)—Adobe Acrobat format: http//www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13980_files/washington.pdf
- CVISN Electronic Credentialing for Commercial Vehicles in Washington State: A Case Study—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13980.htm, EDL# 13980
- CVISN Safety Information Exchange for Commercial Vehicles in Connecticut: A Case Study (FHWA-JPO-04-030/FMCSA-RT-04-002)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13981_files/Connecticut.pdf
- CVISN Safety Information Exchange for Commercial Vehicles in Connecticut: A Case Study—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13981.htm, EDL# 13981

CVISN: Partnerships for Safer, Simpler and Smarter Transportation Systems (2004)

This brochure provides a brief overview of the Commercial Vehicle Information Systems and Networks (CVISN) program, emphasizing that partnerships among the Federal government, state governments, and the private sector are key to CVISN's

success. The brochure describes the CVISN program and its goals, outlines a three-step process for CVISN development, and lists expected benefits. The brochure also discusses how CVISN can enhance the security of interstate motor carrier transportation.

Cost: Free

To Access This Resource: Contact Jeff Secrist, FMCSA Office of Research and Analysis, (202) 385-2367, Jeff.Secrist@dot.gov.

CVISN Guide Series (2000-2002)

This series of eight documents provides a broad overview of the Commercial Vehicle Information Systems and Networks (CVISN) effort, as well as lessons learned from previous CVISN deployments. The eight documents are classified into three types. Management guides (an introductory guide and guides on program and project planning and phase planning and tracking) describe how to apply proven project management methods to organize and execute a state CVISN deployment project. Technical process guides (on top-level design and integration and testing) describe how to apply system engineering methods to the problem of designing, testing, and integrating CVISN Level 1 capabilities in a state. Technical application guides (on safety information exchange, credentials administration, and electronic screening) address how to apply the National ITS Architecture and the experience gained from previous CVISN deployments to a particular CVISN Level 1 application area. The latest versions of all guides are available at http://cvisn.fmcsa.dot.gov/default.aspx?PageID=guides.

Cost: Free

To Access This Resource: Access the following website addresses:

- Introductory Guide to CVISN (2000): http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/guides/intro_p2/pdf_all1/intro_p2full.pdf
- CVISN Guide to Program and Project Planning (2001): http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/guides/plan_v1/pdf_all1/planning_v1.pdf
- CVISN Guide to Phase Planning and Tracking (2001): http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/guides/pptrk_v1/pdf_all1/tracking_v1.pdf

- CVISN Guide to Top-Level Design (2001): http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/guides/toplvl_v1/pdf_all1/tl_v1pdf.pdf
- CVISN Guide to Integration and Test (2001): http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/guides/intstguide_d1/intestd1full.pdf
- CVISN Guide to Safety Information Exchange (2002): http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/guides/safety_v1/pdf_all1/v1_safetyexg.pdf
- CVISN Guide to Credentials Administration (2000): http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/guides/cred_p2/pdf_all1/ca_p2pdf.pdf
- CVISN Guide to Electronic Screening (2002): http://cvisn.fmcsa.dot.gov/downdocs/cvisndocs/guides/escrn_v1/pdf_all1/es_v1pdf.pdf

Evaluation of the Commercial Vehicle Information Systems and Networks (CVISN) Model Deployment Initiative (2002)

Commercial Vehicle Information Systems and Networks (CVISN) is a collection of information systems and communication networks used by government agencies, motor carriers, and other stakeholders involved in commercial vehicle operations (CVO). A CVISN Model Deployment Initiative was launched in 1996 to demonstrate the technical and institutional feasibility of CVISN, as well as determining its costs and benefits, thus encouraging further deployment. The initial participants included two prototype states—Maryland and Virginia—and eight pilot states—California, Colorado, Connecticut, Kentucky, Michigan, Minnesota, Oregon, and Washington. This report documents the findings of the evaluation in terms of increased highway safety, streamlined government credentialing operations, and increased productivity and reduced delays for motor carriers.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Volume 1: Final Report—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13677/13677.pdf
- Volume 1: Final Report—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13677.html, EDL# 13677
- Volume 2: Appendices: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13699.pdf, EDL# 13699

What Have We Learned about Intelligent Transportation Systems? Chapter 6: What Have We Learned about ITS for Commercial Vehicle Operations? Status, Challenges, and Benefits of CVISN Level 1 Deployment (2000)

This document is an excerpt from a compendium report that looks back on the 10 years of the National ITS Program to examine which ITS technology applications have been successful, which have not been successful, and what the underlying factors that determine success versus failure are. This section examines commercial vehicle operations (CVO) technologies for safety information exchange, electronic screening, and electronic credentialing.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13322.pdf, EDL# 13322.

Introduction to ITS/CVO and CVISN (CVISN 101)

This Web-based course provides an introduction to the ITS/CVO program and the Commercial Vehicle Information Systems and Networks (CVISN) initiative. The course includes

a short discussion of some of the problems currently existing in CVO, and an overview of the four main areas of the ITS/CVO program: Safety Assurance, Credentials Administration, Electronic Screening, and Carrier Operations. The concepts underlying current and future strategies are described for each of these areas, as well as the technologies used to carry them out. The discussion of CVISN focuses on the Level 1 capabilities (Safety Information Exchange, Electronic Credentialing and Electronic Screening) and the deployment process developed for their implementation. Target Audience: Public sector transportation professionals including Federal engineers, planners, project managers, and field staff and others as appropriate. Transportation professionals from state, regional, and local agencies would also benefit from participation in the course. A blended Web-based version provides online interaction between participants and instructors. Course Length: Six hours.

Cost: $175 per participant for the Web-based version; $150 per participant for the blended version.

To Access This Resource:

- Access the website address http://www.citeconsortium.org/courses/2mod3.html.
- Contact Jeff Secrist, FMCSA Office of Research and Analysis, (202) 385-2367, Jeff.Secrist@dot.gov or Carolyn Temperine, FMCSA Eastern Service Center, (518) 431-4239 x270, Carolyn.Temperine@dot.gov.

Advanced CVISN (CVISN 102)

This comprehensive course builds on the knowledge gained in CVISN 101 by delving into the specifics of the Commercial Vehicle Information Systems and Networks (CVISN) initiative. In this course, students will explore effective outreach strategies for securing ongoing support and buy-in to CVISN and learn how to meet funding challenges throughout the CVISN life cycle. Students will investigate CVISN's primary objective—to develop and deploy information systems that support exciting new capabilities in Safety Information Exchange, Credentials Administration, and Electronic Screening. In addition, the course presents a variety of best practices related to CVISN issues in states. Target Audience: Public sector transportation

professionals including Federal engineers, planners, project managers, and field staff and others as appropriate. Transportation professionals from state, regional, and local agencies would also benefit from participation in the course. A blended Web-based version provides online interaction between participants and instructors. Course Length: Eight to 10 hours.

Cost: $175 per participant for the Web-based version; $150 per participant for the blended version.

To Access This Resource:

- Access the website address http://www.citeconsortium.org/courses/CVISN102.html.
- Contact Jeff Secrist, FMCSA Office of Research and Analysis, (202) 385-2367, Jeff.Secrist@dot.gov or Carolyn Temperine, FMCSA Eastern Service Center, (518) 431-4239 x270, Carolyn.Temperine@dot.gov.

Emergency Management and Public Safety Points-of-Contact

- Linda Dodge, ITS Joint Program Office, (202) 366-8034, Linda.Dodge@dot.gov
- Dave Helman, FHWA Office of Transportation Operations, (202) 366-8042, David.Helman@dot.gov
- David Smith, FHWA Office of Safety, (202) 366-6614, David.Smith@dot.gov
- Charlene Wilder, FTA Service Innovation Division, (202) 366-1077, Charlene.Wilder@dot.gov
- Earl Hardy, NHTSA Traffic Law Enforcement Division, (202) 366-4292, Earl.Hardy@dot.gov
- Laurie Flaherty, NHTSA Office of Emergency Medical Services, (202) 366-2705, Laurie.Flaherty@dot.gov

ITS Public Safety Program Section of the ITS Joint Program Office Website

This website is a compilation of resources related to the ITS Public Safety Program. The site lists the mission, focus areas, and project benefits of the program, an explanation of how the program is administered, and contact information for program staff. The website profiles each of the ITS Public Safety Program's projects, including the Intelligent Transportation Society of America's (ITS America) Public Safety Advisory Group (PSAG), the Wireless Enhanced 9-1-1 (Wireless E9-1-1) Initiative, and the Integrated Incident Management System (IIMS). The website contains several key documents available for downloading, including papers, journal articles, and project final reports such as *Recommendations for ITS Technology in Emergency Medical Services*, and *Model Procedures Guide for Highway Incidents*.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/pubsafety/index.htm.

http://

Emergency Transportation Operations Section of the FHWA Office of Operations Website

This site is a compilation of resources related to maintaining the security of transportation operations during natural and manmade disasters, defining a new concept called "emergency transportation operations preparedness." The site outlines the FHWA Office of Operations perspective, vision, and role, as well as lists components and activities of the program. The site provides guidance materials on obtaining Federal funding for transportation security operations. The site also contains a comprehensive list of introductory materials on this topic with special emphasis on the protection of electronic infrastructure, as well as contacts and related links.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/OpsSecurity/index.htm.

http://

Capital Wireless Integrated Network (CapWIN) Website

This website is a compilation of resources related to the Capital Wireless Integrated Network (CapWIN) project—a partnership in the Washington, D.C., area to develop a wireless information network that integrates criminal justice and transportation management functions. The site contains a description of the project, recent news, project sponsors, goals and objectives (including notes on whether or not the objectives have been met and when they were met), roles of the various project participants, a task list, and a timetable showing milestones reached. The site also contains an archive of key project documents, including two documents developed under the sponsorship of the International Association of Chiefs of Police (IACP) describing best practices for integrated public safety and transportation management.

Cost: Free

To Access This Resource: Access the website address http://www.capwin.org.

Traffic Signal Preemption for Emergency Vehicles: A Cross-Cutting Study (FHWA-JPO-05-010) (2006)

This report is one in a series designed to educate public sector managers about particular ITS technologies. Emergency vehicle preemption (EVP) systems give emergency response vehicles a green light on their approach to a signalized intersection while providing a red light to conflicting approaches. This report examines how transportation, police, fire/rescue and emergency medical services (EMS) officials in three local jurisdictions—Fairfax County, Virginia; Plano, Texas; and St. Paul, Minnesota—used EVP to improve emergency vehicle response time, improve safety and lower costs. The report discusses who is using EVP nationwide and what are the technology options, as well as benefits, costs lessons learned from their implementation.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14097_files/14097.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14097.htm, EDL# 14097

Recommendations for ITS Technology in Emergency Medical Services (2002)

This document was developed by the Public Safety Advisory Group of the Intelligent Transportation Society of America (ITS America), as formal advice to the U.S. DOT on the role of ITS technologies in emergency medical services. New telecommunications and in-vehicle safety devices have entered the market without sufficient input from emergency medical services (EMS) professionals. These new technologies—such as cellular telephones, emergency assistance systems (Mayday systems), and automatic collision notification systems—pose significant challenges to EMS personnel. A secondary purpose of the document is to open a dialogue about the role of ITS

technology in emergency medical services among the EMS community, private sector equipment manufacturers, and public sector transportation agencies, in order to address the challenges posed by these technological advances.

Cost: Free

To Access This Resource: Access the following website addresses:

- Summary: http://www.its.dot.gov/pubsafety/docs/EMSTechBrief.pdf
- Full Report—Adobe Acrobat format: http://www.its.dot.gov/pubsafety/docs/recommendations_itsems.pdf
- Full Report—HyperText Markup Language (HTML) format: http://www.its.dot.gov/pubsafety/EMS_recommendations_ITS.htm

The New York State Wireless Enhanced 9-1-1 Project Reports (2002)

This pair of reports focuses on the implementation of a wireless enhanced 9-1-1 project initiated in New York State in 1999 and funded jointly by NHTSA and the ITS Joint Program Office. The most daunting challenge faced by the project participants in New York State is the same one faced by Public Safety Answering Points (PSAPs) nationwide. The rapid proliferation of wireless telephones has resulted in a steady erosion of the ability to locate 9-1-1 callers, because wireless telephones do not currently provide emergency dispatchers with automated caller location or identification information. Barriers to enhanced 9-1-1 implementation in New York State included call routing, lack of funding for necessary equipment upgrades, and the "closest car" concept. Project participants employed several strategies to overcome these barriers, the most important being the introduction of the medial leadership model and the focus on the patient that this model provided. A lessons learned report documents the lessons learned from the project. An implementation guide builds upon the lessons learned from the project in New York State to provide more generalized advice for other regions wishing to improve their own enhanced 9-1-1 services.

Cost: Free

To Access This Resource: Access the following website addresses:

- Implementation Guide—Adobe Acrobat format: http://www.its.dot.gov/pubsafety/docs/implementationguide.pdf
- Implementation Guide—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13973.html, EDL# 13973 or http://www.its.dot.gov/pubsafety/injury_control_center.htm
- Lessons Learned—Adobe Acrobat format: http://www.its.dot.gov/pubsafety/docs/lessons.pdf
- Lessons Learned—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13972.html, EDL# 13972 or http://www.its.dot.gov/pubsafety/new_york_state_wireless_enhanced_lessons_learnd.htm

How Can We Work Together? A Guidebook to Smart Response through Coordinating Local Public Safety and Transportation, Communications and Technology (FHWA-OP-01-003) (2001)

This guidebook explores how transportation and public safety professionals can coordinate their efforts, using new communications technologies including ITS. The guidebook was a joint venture between FHWA and Public Technology, Inc. (PTI), an organization whose purpose is to further the use of technology among city and county governments in the U.S. The guidebook contains 16 case studies that examine how cities and counties have implemented these new technologies, the benefits they experienced, and the challenges they faced.

Cost: Free

To Access This Resource: Contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

What Have We Learned about Intelligent Transportation Systems? Chapter 2: What Have We Learned about Freeway, Incident, and Emergency Management and Electronic Toll Collection? (2000)

This document is an excerpt from a compendium report that looks back on the 10 years of the National ITS Program to examine which ITS technology applications have been successful, which have not been successful, and what are the underlying factors that determine success versus failure. This section examines freeway, incident, and emergency management and electronic toll collection systems.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13318.pdf, EDL# 13318.

Enhancing Public Safety, Saving Lives—Emergency Vehicle Preemption (FHWA-JPO-99-002) (1999)

This brochure, one in a series designed to encourage decision-makers to invest their own budget resources in ITS, examines the public safety benefits of preemption of traffic signals for emergency vehicles such as fire trucks. The brochure quotes chiefs of transportation and fire departments at several cities around the country about the benefits they have experienced from using these systems.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/6871.pdf, EDL# 6871. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Faster Response Time, Effective Use of Resources—Integrating Transportation and Emergency Management Systems (FHWA-JPO-99-004) (1999)

This brochure, one in a series designed to encourage decision-makers to invest their own budget resources in ITS, examines the safety and efficiency benefits of integrating traffic incident management (typically led by transportation departments) with emergency response (typically run by law enforcement). The brochure quotes leaders in transportation and law enforcement about the benefits they have experienced from co-locating critical functions, sharing communications media, and automating notification to responding agencies.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/6874.pdf, EDL# 6874. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Speeding Response, Saving Lives—Automatic Vehicle Location Capabilities for Emergency Vehicles (FHWA-JPO-99-003) (1999)

This brochure, one in a series designed to encourage decision-makers to invest their own budget resources in ITS, examines the public safety benefits of installing automatic vehicle location (AVL) technology on emergency vehicle fleets, such as ambulances, fire trucks, and police vehicles. The brochure quotes chiefs of transportation, law enforcement, fire, and disaster recovery at cities, states, and private organizations around the country about the benefits they have experienced from using these systems.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/6866.pdf, EDL# 6866. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Intelligent Transportation Systems Field Operational Test Cross-Cutting Study: Emergency Notification and Response (FHWA-JPO-99-033) (1998)

This report summarizes and interprets the results of two field operational tests (FOTs) that tested the use of new technologies for emergency notification and response. Topics covered include impacts, user response, technical lessons learned, institutional challenges and resolutions, and implementation costs.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/6326.pdf, EDL# 6326. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Highway Safety for Emergency Services (2002)

This video provides training for "first responders" to a crash scene—police, fire, and emergency medical services (EMS) personnel—on how to use ITS technologies to improve safety for nearby motorists as well as to protect themselves and their equipment. Produced by the Cumberland Valley Volunteer Fireman's Association (CVVFA) with a grant from the U.S. Fire Administration (USFA), the video highlights the fact that, at present, first responders have little, if any, say in the transportation management strategies employed at the scenes of incidents to which they are responding. One of the purposes of the video is to open a dialogue between first responders and transportation management agencies on this important topic. In addition, the video presents tips for first responders on how to improve safety, from how to park police cars, to whether first responders should direct traffic, to what color clothing they should wear.

Cost: Free

To Access This Resource: To order a copy of the video, contact Steve Austin, Cumberland Valley Volunteer Fireman's Association, (302) 995-0303, SteveAustin@earthlink.net.

Highway-Rail Intersections Points-of-Contact

- Guan Xu, FHWA Office of Safety, (202) 366-5892, Guan.Xu@dot.gov
- Raj Ghaman, FHWA Office of Research, Development and Technology, (202) 493-3270, Raj.Ghaman@dot.gov
- Ron Ries, FRA Office Safety, (202) 493-6288, Ron.Ries@dot.gov
- Jim Smailes, FRA Office of Railroad Development, (202) 493-6360, James.Smailes@dot.gov
- Terrell Williams, FTA Office of Mobility Innovation, (202) 366-0232, Terrell.Williams@dot.gov

FRA's Intelligent Grade Crossing Website

This website gives the FRA's view of the potential applications of ITS at highway-rail intersections (HRIs) and briefly outlines FRA's past accomplishments, current activities, and future plans in this area. Accomplishments include the development of standards for the use of ITS-generated archived data. Current activities include development of standards for the use of ITS at highway-rail intersections and pilot deployments of Positive Train Control (PTC) technology in Michigan, Illinois, and Alaska. Future plans include field tests of prototype ITS equipment that is integrated with PTC, once the pilot deployments of PTC have been completed.

Cost: Free

To Access This Resource: Access the website addresses http://www.fra.dot.gov/us/content/247 or http://www.fra.dot.gov/us/content/1270.

FRA's Five-Year Strategic Plan for Railroad Research, Development, and Demonstrations (2002)

This document outlines a vision for the future of railroads and the emerging technologies needed to support this vision. The document presents the research, development and demonstration projects that the FRA will pursue in the next

five years. The projects are divided into three main areas: railroad research and development, next-generation high-speed rail technology demonstrations, and magnetic levitation technology deployment. The document also presents the statistics-based risk analysis process used by the FRA to prioritize the projects selected, as well as FRA's available and projected funding that will support these projects. Intelligent Railroad Systems, which include ITS technologies used to improve safety and mobility at railroad grade crossings, are also described in the document. The document contains Executive Summary, Introduction, and Conclusion sections that note trends in rail technology as well as rail transportation overall.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.fra.dot.gov/downloads/Research/rdv0202.pdf
- HyperText Markup Language (HTML) format: http://www.fra.dot.gov/us/content/225

Advanced Warning for Railroad Delays in San Antonio: Lessons Learned from the Metropolitan Model Deployment Initiative (FHWA-OP-01-038) (2001)

This is one in a series that documents lessons learned from the Metropolitan Model Deployment Initiative (MMDI). This report documents the benefits of integration of traveler information and highway-rail intersections.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13284.pdf, EDL# 13284. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Intelligent Transportation Systems at Highway-Rail Intersections: A Cross-Cutting Study (FHWA-JPO-01-149) (2001)

This report examines the commonalities and differences among seven projects that use ITS to improve safety and mobility at highway-rail grade crossings. For each project, the report lists what functions were tested, who were the partners involved, where the test was conducted, what was the evaluation methodology used, and what were the test results. This report also lists project costs and sources of funding, if available.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13587/13587.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13587.html, EDL# 13587

ITS Technology at Highway-Rail Intersections: "Putting It to the Test" (2000)

This document serves as proceedings to the ITS Joint Program Office Highway-Rail Intersection Evaluation Workshop, held May 6-7, 1999 in Cambridge, Massachusetts. These proceedings contain summaries of the current deployment status and evaluation findings from seven projects in the U.S. that use ITS technology at highway-rail intersections (HRIs). The proceedings also summarize panel discussions of implementation issues, passive grade crossings, standards, and the Federal role in HRI-ITS deployment.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/proceedn/12363.pdf, EDL# 12363.

Safety at Passive Grade Crossings (1998)

Passive highway-rail grade crossings (those without electronic traffic control devices, such as bells, gates, and lights) present a daunting safety challenge. The crash rate per vehicle miles traveled is higher at passive than at active crossings, and crashes at passive crossings are more likely to be fatal. However, the cost of eliminating a crossing or upgrading it from passive to active is very high. In this report, the National Transportation Safety Board (NTSB) explores several alternatives to crossing elimination and upgrade that could improve safety at passive crossings. Volume 1 discusses problems drivers encounter at passive crossings, then presents the NTSB's analysis, conclusions, and recommendations. Volume 2 contains case summaries of the 60 crashes investigated by the NTSB for this study.

Cost: Free

To Access This Resource: Access the following website addresses:

- Volume 1: Analysis: http://www.ntsb.gov/Publictn/1998/SS9802.pdf
- Volume 2: Case Summaries: http://www.ntsb.gov/Publictn/1998/SS9803.pdf

Highway-Rail Intersection User Service (1996)

This document provides a detailed description of the highway-rail intersection ITS user service. This document serves as an addendum to the *National ITS Program Plan* in describing the 30th ITS user service and establishes the need for including highway-rail grade crossing safety in the National ITS Architecture.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/12503.pdf, EDL# 12503. This document is also included as an appendix in the *National Intelligent Transportation Systems Program Plan: Five-Year Horizon.*

Railroad-Highway Grade Crossing Improvement Program (NHI# 380005)

This course presents a broad overview of various options for improving highway-rail intersections, also called railroad grade crossings. The course covers historical background, definition of grade crossing components, collection and maintenance of data, assessment of crossing safety and operations, identification and selection of improvement alternatives, program and project development and implementation, maintenance, private crossings, and the Operation Lifesaver program. The workshop format enables participants to apply the material in a series of exercises. Target Audience: Representatives of Federal, state, and local transportation agencies responsible for the design, construction and maintenance of highway-rail intersections. Also, state and local traffic engineers responsible for highway-railroad grade crossing safety. Course Length: Two days.

Cost: $270 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "380005."

Intelligent Safety Systems Points-of-Contact

- Kate Hartman, ITS Joint Program Office, (202) 366-2742, Kate.Hartman@dot.gov
- Raymond Resendes, NHTSA Office of Vehicle Safety Research, (202) 366-2619, Ray.Resendes@dot.gov
- Michael Perel, NHTSA Office of Applied Vehicle Safety Research, (202) 366-5675, Michael.Perel@dot.gov
- Robert Ferlis, FHWA Office of Operations Research, Development and Technology, (202) 493-3268, Robert.Ferlis@dot.gov
- Gene McHale, FHWA Office of Research, Development and Technology, (202) 493-3275, Gene.McHale@dot.gov
- Mary McDonough, FHWA Office of Safety, (202) 366-2175, Mary.McDonough@dot.gov
- Tamara Redmon, FHWA Office of Safety, (202) 366-8044, Tamara.Redmon@dot.gov
- George E. Rice, FHWA Office of Safety, (202) 366-9064, Ed.Rice@dot.gov
- Davey Warren, FHWA Office of Safety, (202) 366-4668, Davey.Warren@dot.gov
- Sebastian Renaud, FTA Office of Mobility Innovation, (202) 366-4991, Sebastian.Renaud@dot.gov
- Amy Houser, FMCSA Office of Research and Analysis, (202) 385-2382, Amy.Houser@dot.gov

Improving Highway Safety with Intelligent Transportation Systems (ITS) (NHI Course# 137044)

The goal of this course is to increase awareness of the highway safety benefits offered by ITS technologies. Highway safety benefits may be experienced at the highway system, mainstream (highway improvement project) and stand-alone project level. The course surveys the participants on their experiences deploying ITS for highway safety improvements and reviews procedures and requirements of safety strategic planning and the ITS deployment process. Ideally, participants

will comprise a 50/50 split between safety and ITS personnel so that experiences, expectations and contributions will be shared. This course is available in both classroom and Web-based versions. Target Audience: Both ITS and safety professionals. Course Length: Two days.

Cost: $270 per participant for the classroom version; $175 per participant for the Web-based version; $250 per participant for the blended version

To Access This Resource:

- For the classroom version, access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137044."
- For the Web-based version, access the website address http://www.citeconsortium.org/courses/HighwaySafety-blended.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

http://

Integrated Vehicle Based Safety Systems Website

The Integrated Vehicle Based Safety Systems (IVBSS) Initiative aims to accelerate deployment of advanced driver safety systems in all new light vehicles and heavy commercial trucks. These safety systems will help drivers avoid the most common types of fatal collisions: rear-end, lane-change, and roadway departure. In this initiative, the U.S. DOT is partnering with members of the automotive industry to develop and field test the next generation of advanced safety systems. This website presents program goals, background, approach, milestones, and points-of-contact, as well as announcements of upcoming events and availability of reports.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/ivbss/index.htm.

http://

IVI Human Factors Website

This website is a compilation of resources related to human factors aspects of the Intelligent Vehicle Initiative (IVI). The site describes several issues that will be addressed by IVI Human

Factors research and outlines eight key problem areas into which various research activities are classified. The site contains project reports, contacts, and related links.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/ivi/ivihf/index.html.

http://

Vehicle Research and Test Center's Crash Avoidance Research/ITS Research Website

This website describes the array of research projects that use ITS technologies for crash avoidance that are being conducted at the NHTSA's Vehicle Research and Test Center (VRTC) in East Liberty, Ohio. The website contains detailed descriptions of what is being tested in current research projects and what has been learned in completed projects.

Cost: Free

To Access This Resource: Access the website address http://www-nrd.nhtsa.dot.gov/vrtc/ca/its.htm.

http://

NHTSA's Intelligent Transportation Systems Website

This website profiles the National Highway Traffic Safety Administration's ITS activities. The site contains detailed profiles of NHTSA projects in the areas of collision avoidance, vision enhancement systems, heavy vehicle stability, automatic collision notification, and cross-cutting activities. The site also contains a description of NHTSA's ITS program, selected technical publications, and related links.

Cost: Free

To Access This Resource: Access the website address http://www-nrd.nhtsa.dot.gov/departments/nrd-12/IntelligentTransportationSystems.html.

NHTSA Office of Crash Avoidance Research Technical Publications Website

This website contains a bibliography of all technical publications issued by the NHTSA Office of Crash Avoidance Research from 1989 to the present. The more recent publications can be downloaded directly from the site.

Cost: Free

To Access This Resource: Access the website address http://www-nrd.nhtsa.dot.gov/departments/nrd-12/pubs_rev.html.

IVI Final Report: Saving Lives Through Advanced Vehicle Safety Technology (2005)

This report provides an overview of the Intelligent Vehicle Initiative throughout its eight-year history. The report lists the initiative's goals, examines how well these goals have been reached, and discusses future directions for additional research. The report concludes with a detailed bibliography of reference sources.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Final Report: Evaluation of the Freightliner Intelligent Vehicle Initiative Field Operational Test (2003)

This report presents the findings of an operational test of two functions of a new Roll Advisor and Control (RA&C) system: Roll Stability Advisor (RSA) and Roll Stability Control (RSC). The private company Freightliner, in partnership with the fleet operator Praxair and the University of Michigan Transportation Research Institute (UMTRI), tested the RA&C system, which is designed to assist commercial vehicle drivers, especially drivers of tanker trucks, in avoiding rollover crashes. The test concluded that the RA&C system could prevent up to 20 percent of rollover crashes caused by drivers using excessive speed on sharp curves.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13871.html, EDL# 13871.

ITS Deployment Support

Architecture Implementation and National ITS Architecture Points-of-Contact

- Lee Simmons, ITS Joint Program Office, (202) 366-8048, Lee.Simmons@dot.gov
- Steve Clinger, FHWA Office of Transportation Management, (202) 366-2168, Stephen.Clinger@dot.gov
- Emiliano Lopez, FHWA Office of Transportation Management, (202) 366-2199, Emiliano.Lopez@dot.gov
- Mac Lister, FHWA Resource Center, (708) 283-3532, Mac.Lister@dot.gov
- Walter Kulyk, FTA Office of Mobility Innovation, (202) 366-4991, Walter.Kulyk@dot.gov
- Michael Baltes, FTA Office of Mobility Innovation, (202) 366-2182, Michael.Baltes@dot.gov

National ITS Architecture Section of the ITS Joint Program Office Website

This website is a compilation of resources related to the National ITS Architecture. The site links to the National ITS Architecture "browsable" online version developed by Iteris and provides instructions on how to order the document on CD-ROM. The site also contains information related to the Turbo Architecture software tool and *National ITS Architecture Security* which presents an overview of security as it is represented in the Architecture and provides guidance for using the security-related aspects of the Architecture. In addition, the site lists other Architecture-related documents, training courses, workshops, contacts in the ITS Joint Program Office, and related links, including applicable ITS standards.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/arch/index.htm.

ITS Architecture Implementation Program Section of the FHWA Office of Operations Website

This website offers a Web-based resource guide on conformity with the FHWA's Final Rule and the FTA's Policy on the National ITS Architecture and Standards. The website contains the final text of both the FHWA Rule and FTA Policy, as well as frequently asked questions (with answers), fact sheets, training information, and sample architecture documents.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/its_arch_imp/index.htm.

National ITS Architecture Field Support Team

The National ITS Architecture Field Support Team (AFST) provides short-term, on-call, or on-site technical assistance to facilitate the development, utilization, and maintenance of regional ITS architectures. The Team offers technical assistance in the following areas: customized training courses, including a basic primer on ITS architectures; pre- or post-meeting support held in conjunction with the Regional ITS Architecture Development Process Workshop; guidance materials, including examples of good regional ITS architectures; review of existing regional ITS architectures; and support for users of the Turbo Architecture software. Services are available to public sector staff at the Federal, state, and local levels.

Cost: Free

To Access This Resource: Contact the ITS Specialist at the FHWA Division Office in your state. Contact information for these individuals can be found online at http://www.ops.fhwa.dot.gov/int_its_deployment/its_specialists/fhwa_office.htm.

Alternatively, contact any of the team members:

- Emiliano Lopez, FHWA Office of Transportation Management, (202) 366-2199, Emiliano.Lopez@dot.gov
- Ed Fok, FHWA Resource Center, (415) 744-0113, Edward.Fok@dot.gov

- Greg Jones, FHWA Resource Center, (404) 562-3906, GregM.Jones@dot.gov
- Mac Lister, FHWA Resource Center, (708) 283-3532, Mac.Lister@dot.gov
- Frank Cechini, FHWA Division Office, (916) 498-5005, Frank.Cechini@dot.gov
- Jim Hunt, FHWA Division Office, (717) 221-4422, Jim.Hunt@dot.gov
- John Broemmelsiek, FHWA Division Office, (225) 757-7614, John.Broemmelsiek@dot.gov

The National ITS Architecture: A Framework for Integrated Transportation into the 21st Century, Version 6.0

Just as an architect's plans lay out the design of a house, the National ITS Architecture provides a master blueprint for building an integrated, multimodal, intelligent transportation system. The National ITS Architecture defines the framework around which a generally common ITS infrastructure can be developed, while ensuring that local needs are met. The Architecture helps state and local decision-makers plan smarter and buy smarter, ultimately saving time and money while making their regions more economically attractive. Available online is a "browsable" version of the Architecture developed by Iteris, which, together with a CD-ROM version, contains the complete set of documents, physical and logical architecture databases, as well as hyperlinks to assist in navigation. The CD-ROM also includes *National ITS Architecture Security*, which presents an overview of security as it is represented in the Architecture and provides guidance for using the security-related aspects of the Architecture, and *Regional ITS Architecture Guidance: Developing, Using and Maintaining an ITS Architecture for Your Region, Version 2.0.*

Cost: Free

To Access This Resource: Access the website address http://www.iteris.com/itsarch. To order the CD-ROM, contact the Operations/ITS HelpLine, (866) 367-7487, itspubs@dot.gov.

Turbo Architecture Version 4.0

Turbo Architecture is an interactive software tool for regional and project-specific ITS architecture development. By helping the user integrate multiple project architectures with a regional architecture and with each other, Turbo Architecture makes it easier to develop an architecture consistent with the National ITS Architecture. Version 4.0 is compatible with the National ITS Architecture 6.0, has added new interfaces and flows, has updated equipment package descriptions, function requirements and ITS standards information, and is compatible with Microsoft Vista.

Cost: $190 for a single-site license, less per license when multiple-site licenses are purchased; $50 with a trade-in of Turbo Architecture 1.0, 2.0, or 3.0.

To Access This Resource: Order Turbo Architecture through the McTrans Center for Microcomputers in Transportation at the University of Florida, (352) 392-0378, fax: (352) 392-3224, mctrans@ce.ufl.edu, http://mctrans.ce.ufl.edu.

Systems Engineering for Intelligent Transportation Systems: An Introduction for Transportation Professionals (FHWA-HOP-07-069) (2007)

This guide is an introduction to systems engineering, showing how the systems engineering (SE) process can be applied to planning, designing, and implementing ITS projects. This guide leads the reader, step by step, through the project life cycle and discusses how SE can be applied at each step. The guide explains how to begin implementing the SE approach on new projects and how to incorporate SE more broadly into an organization's business processes and practices. The guide concludes with a list of resources, including ITS-specific publications, general SE references, selected SE standards, and available SE training.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/publications/seitsguide/seguide.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/publications/seitsguide/index.htm

Regional ITS Architecture Guidance: Developing, Using and Maintaining an ITS Architecture for Your Region, Version 2.0 (FHWA-HOP-06-112) (2006)

This document is a guide for transportation professionals involved in the development, use, or maintenance of regional ITS architectures. The document describes a process for creating a regional ITS architecture and includes supporting examples of each architecture product. This process includes the following steps: getting started, gathering data, defining interfaces, implementation, and, finally, use and maintenance of the regional ITS architecture developed. The document contains an appendix that describes several tools available for regional ITS architecture development. In its discussion of the uses of regional ITS architectures, the document presents an approach for mainstreaming ITS into the transportation planning and project development process. This document is designed to aid regions in the development of regional architectures that comply with the FHWA's Final Rule and the FTA's Policy on the National ITS Architecture and Standards. The document provides a foundation for the two-day Regional Architecture ITS Architecture Development Process Workshop and the one-day Regional ITS Architecture Development Process Seminar.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/publications/regitsarchguide/raguide.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/publications/regitsarchguide/index.htm

Regional ITS Architecture Checklist (2004)

This checklist is a tool that allows a reviewer to assess the completeness of and identifying improvements to a regional ITS architecture, as stated in the FHWA Rule and FTA Policy on ITS Architecture and Standards. Questions are listed by main topic area, with space for a reviewer to make an assessment. The "Comments" column allows a reviewer to document any suggestions, notes, strengths, or shortcomings. Reviewers are encouraged to use *Regional ITS Architecture Guidance: Developing, Using and Maintaining an ITS Architecture for Your Region, Version 2.0* as a reference when filling out this checklist.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/its_arch_imp/checklist.htm.

Regional ITS Architecture Maintenance White Paper (FHWA-HOP-04-004) (2004)

This document provides guidance for the development, use, and maintenance of regional ITS architectures. This document is a companion to *Regional ITS Architecture Guidance: Developing, Using and Maintaining an ITS Architecture for Your Region, Version 2.0*, providing detailed guidance for the development of a regional ITS architecture maintenance plan and the activities involved in maintaining a regional ITS architecture.

Cost: Free

To Access This Resource: Access the website address

- http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13957.html, EDL# 13957
- http://www.ops.fhwa.dot.gov/its_arch_imp/ArchMaintrV5.htm.

Disaster Response and Evacuation User Service: An Addendum to the ITS Program Plan (2003)

This document provides a detailed description of the Disaster Response and Evacuation User Service. This document serves as an addendum to the *National ITS Program Plan* in describing the 33rd ITS user service and establishes the need for including disaster response and evacuation (DRE) in the National ITS Architecture. ITS technologies and services described in the document provide enhanced access to the scene for response personnel and resources, better information about the transportation system in the vicinity of the disaster, and more efficient and safer evacuation of the general public. ITS can also be used to prioritize, allocate, and track personnel and resources for more efficient and effective disaster response.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/14064.html, EDL# 14064.

FTA National ITS Architecture Consistency Policy: Additional Grantee Guidance (2003)

In 2001, the Federal Transit Administration published its *National ITS Architecture Policy on Transit Projects* to meet the requirement in Section 5206(s) of the Transportation Equity Act for the 21st Century (TEA-21). The policy requires that ITS projects conform to the National ITS Architecture and related standards and recommended activities that transit agencies should be carrying out in order to meet the policy's requirements. This document contains additional guidance resulting from feedback received since the policy went into effect. The additional guidance recommends that transit agencies take several key steps: familiarize themselves with the policy, assess how the policy is applicable to their own projects and grants, participate in the ITS architecture development process in their own region, and develop an ITS project architecture for all major ITS projects. The additional guidance recommends that this last step be accomplished

by conducting a systems engineering analysis for the ITS and communications components of any major ITS project.

Cost: Free

To Access This Resource: Access the following website addresses:

- Cover letter from FTA Administrator: http://www.fta.dot.gov/assistance/technology/research_511.html
- Document: http://www.fta.dot.gov/documents/dc2003.pdf

FHWA's Final Rule and FTA's Policy for Applying the National ITS Architecture at the Regional Level (FHWA-OP-01-029) (2001)

This pamphlet explains how the FHWA's Final Rule and the FTA's Policy on the National ITS Architecture and Standards affect the planning and operations of regional transportation systems. The pamphlet provides the background behind the Final Rule and Policy, outlines the relationship between the National ITS Architecture and regional architectures, notes the benefits of a systems engineering approach to developing a regional ITS architecture, outlines requirements and incentives for using ITS standards, and provides an extensive list of resources for technical assistance.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Maintenance and Construction Operations User Service: An Addendum to the ITS Program Plan (2001)

This document provides a detailed description of the maintenance and construction operations user service. This document serves as an addendum to the *National ITS Program Plan* in describing the 32nd ITS user service and establishes the need for including maintenance and construction operations in the National ITS Architecture, focusing on four specific

functions: maintenance vehicle fleet management, roadway management, work zone management and safety, and roadway maintenance conditions and work plan dissemination.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/13465.pdf, EDL# 13465.

National ITS Architecture New User Service Procedure (2001)

This document describes a two-phase procedure for the introduction and integration of a new user service into the National ITS Architecture. Phase I involves stakeholders' efforts to address their transportation needs, formalize these needs into a user service, and gain acceptance within the U.S. DOT. Phase II involves the actions of the ITS Joint Program Office to integrate the new user service into the National ITS Architecture, coordinate activities with stakeholders, and ensure that the final product has stakeholder consensus and support.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13483.html, EDL# 13483.

National Intelligent Transportation Systems Program Plan: Five-Year Horizon (FHWA-OP-00-008) (2000)

This document presents the National ITS Program's goals, key activities, and milestones for the next five years. For each major area of the program—metropolitan ITS, rural and statewide ITS, commercial vehicle operations, and the Intelligent Vehicle Initiative—the document discusses current status (where we are), a vision for the future (where we are going), and strategies the program will employ to achieve its goals (how we get there).

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/11943.pdf, EDL# 11943. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Archived Data User Service (ADUS): An Addendum to the ITS Program Plan, Final Version 3.0 (1998)

This document provides a detailed description of the archived data user service (ADUS). This document serves as an addendum to the *National ITS Program Plan* in describing the 31st ITS user service and establishes the need for including data archiving in the National ITS Architecture.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/5224.htm, EDL# 5224. This document is also included as an appendix in the *National Intelligent Transportation Systems Program Plan: Five-Year Horizon.*

Highway-Rail Intersection User Service (1996)

This document provides a detailed description of the highway-rail intersection ITS user service. This document serves as an addendum to the *National ITS Program Plan* in describing the 30th ITS user service and establishes the need for including highway-rail grade crossing safety in the National ITS Architecture.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/12503.pdf, EDL# 12503. This document is also included as an appendix in the *National Intelligent Transportation Systems Program Plan: Five-Year Horizon.*

National ITS Program Plan (1995)

Since its publication in 1995, this document has guided development and deployment of intelligent transportation systems in the U.S. The guidance contained in this Architecture document seeks to encourage coordination, maintain a focus on deployment, and ensure that ITS is intermodal. The strategy for accomplishing these goals is the formal definition of the National ITS Program in terms of 29 ITS user services. These user services form the basis upon which the National ITS Architecture was developed. A Synopsis provides a 50-page encapsulation of the major subject areas within the *National ITS Program Plan*, with special emphasis on deployment. Volume I focuses on the origins of the National ITS Program, user services, compatibility, deployment, and program assessment. Volume II contains detailed descriptions of each of the 29 original ITS user services.

Cost: Free

To Access This Resource: Access the following website addresses:

- Synopsis: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/3845.pdf, EDL# 3845
- Volume I: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/3827.pdf, EDL# 3827
- Volume II: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/3786.pdf, EDL# 3786

Deploying the National Intelligent Transportation System (ITS) Architecture (NHI Course# 137013)

The objective of this course is to demonstrate in an interactive workshop format how to apply tools and methodologies developed by the National ITS Architecture Team for the U.S. DOT. Topics covered include transportation services, subsystems and terminators, information flows, market packages, ITS standards, developing an ITS architecture, logical architecture, using an architecture for project deployment, user service requirements and the theory of operations, and the FHWA's Final Rule and FTA's Policy on ITS Architecture and Standards. Skill Level: Core learning. Target Audience: This

course is primarily for a public sector audience involved in ITS planning, deployment, and operations; systems integrators from the private sector would also benefit. Course Length: Two days.

Cost: $270 per participant. The course fee includes a copy of the National ITS Architecture Version 5.0 on CD-ROM.

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137013."

Turbo Architecture Software Training (NHI Course# 137029A)

This course provides training on how to use Turbo Architecture, which is a software tool for regional and project-specific architecture development. Target Audience: Public sector transportation professionals at the state, county, city, and metropolitan planning organization (MPO) levels, as well as private sector consultants, who are developing regional and project architectures. Skill Level: Specialized training. Course Length: Two days.

Cost: $270. The sponsoring organization is responsible for providing 400 Mhz microcomputers running Windows SE or better, color monitors, and a hard disk with 50 MB free storage memory.

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137029A."

Introduction to the National ITS Architecture (NHI Course# 137015)

This Web-based distance learning course provides students with a broad overview of the National ITS Architecture and the role it plays in planning, designing, and implementing ITS. The course provides background (what the National ITS Architecture is, how it is defined, why it was established, and its goals and objectives) and introduces the concept of ITS user services. Basic concepts and models of systems engineering are addressed, as well as the physical architecture through examples of local implementations of the National

ITS Architecture. Specific elements of the physical architecture, such as subsystems and terminators, are presented in detail. Skill Level: Awareness learning. Target Audience: Transportation professionals wanting to enhance their knowledge of and skills for using the National ITS Architecture. Course Length: Eight hours.

Cost: $75

To Access This Resource: Access the website address http://www.citeconsortium.org/courses/initsa.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Complying with the Federal Transit Administration's Policy on ITS Architecture Consistency and Its Impact on Project Planning and Implementation

In 2001, the Federal Transit Administration published its *National ITS Architecture Policy on Transit Projects* to meet the requirement in Section 5206(s) of the Transportation Equity Act for the 21st Century (TEA-21). This policy requires that ITS projects conform to the National ITS Architecture and related standards. This policy applies to all ITS projects that are funded in whole or in part with the Highway Trust Fund, including the mass transit account. Additionally, FTA encourages the coordination of local ITS strategies and projects to help meet national and local goals. This course focuses on providing transportation agencies and Federal field staff with an understanding of the policy, the intent behind the policy, the impact of transit ITS planning and development, practical benefits of conformity, and guidelines for meeting policy requirements. Course Length: One day.

Cost: Free for Federal, state, and local government employees; $150 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfo.asp?CourseNumber=ID019 or Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

ITS Architecture Use and Maintenance Workshop

This two-day workshop will help participants understand how a regional ITS architecture can be used in regional and statewide transportation planning and project deployment. Participants will gain insight into the decisions and process steps involved in maintaining a regional ITS architecture. Workshops will be customized for individual regions, which a single workshop involving all stakeholders from a given region.This interactive workshop will be facilitated by the National ITS Architecture Team using lectures, discussions and group exercises. Exercises will guide participants on how to use their own region's ITS architecture to support long-range transportation planning, identify ITS projects, support programming and budgeting of these projects, support systems engineering, support project implementation, and maintain the architecture, i.e., keeping it relevant to changing circumstances.

Cost: Free. Host organizations must pay certain logistical expenses, such as catering and room rental.

To Access This Resource: Contact the ITS Specialist at the FHWA Division Office in your state. Contact information or these individuals can be found online at http://www.ops.fhwa.dot.gov/int_its_deployment/its_specialists/fhwa_office.htm.

Regional ITS Architecture Development Process Seminar

This one-day seminar will equip ITS professionals with the information needed to develop their own regional ITS architecture. The seminar will focus on the six-step process described in the document *Regional ITS Architecture Guidance: Developing, Using and Maintaining an ITS Architecture for Your Region, Version 2.0*. The seminar will address both technical and institutional issues often encountered during the regional ITS architecture development process.

Cost: Free. Host organizations must pay certain logistical expenses, such as catering and room rental.

To Access This Resource: Contact the ITS Specialist at the FHWA Division Office in your state. Contact information for these individuals can be found online at http://www.ops.fhwa.dot.gov/int_its_deployment/its_specialists/fhwa_office.htm.

Regional ITS Architecture Development Process Workshop

This two-day workshop will equip ITS professionals with the tools to develop their own regional ITS architecture by helping them prepare a customized action plan to guide them through the process. The discussions will address both technical and institutional issues that stakeholders may encounter during the regional ITS architecture development process. The workshop is conducted in roundtable format, with extensive discussions of situations specific to the participants' own particular region. Participants are expected to be knowledgeable about the National ITS Architecture, as well as their region's transportation planning process. Participants will leave the workshop with a customized action plan, which they can then use as a roadmap to develop their own regional ITS architecture. A single workshop can accommodate from one to four regions, with ITS architecture champions and key stakeholders attending.

Cost: Free. Host organizations must pay certain logistical expenses, such as catering and room rental.

To Access This Resource: Contact the ITS Specialist at the FHWA Division Office in your state. Contact information for these individuals can be found online at http://www.ops.fhwa.dot.gov/int_its_deployment/its_specialists/fhwa_office.htm.

ITS Integration Program Points-of-Contact

- Larry Swartzlander, FHWA Office of Transportation Management, (202) 366-6066, Larry.Swartzlander@dot.gov
- Steve Clinger, FHWA Office of Transportation Management, (202) 366-2168, Stephen.Clinger@dot.gov
- Joseph Peters, ITS Joint Program Office, (202) 366-2202, Joe.Peters@dot.gov

Facilitating Integrated ITS Deployment Program Section of the FHWA Office of Operations Website

This website is a compilation of resources intended for recipients of ITS Integration Program funds, commonly called "earmarks," that were designated in the transportation authorizing or annual appropriation legislation from 1998 to 2005. For the FY05 ITS Integration Program, the website includes a list of projects by state and congressionally designated amounts, guidelines for the development of a project proposal, including a proposal checklist to be completed by the FHWA or FTA field office staff, and a template to help in submitting a project proposal in the required format. The website also contains points-of-contact and related links.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/int_its_deployment/earmarks.htm.

Procurement Practices Points-of-Contact

- William S. Jones, ITS Joint Program Office, (202) 366-2128, William.S.Jones@dot.gov
- Althea Goodine, FTA Office of Mobility Innovation, (202) 366-6678, Althea.Goodine@dot.gov

Factors in Decisions to Make, Purchase, and Use On-board Safety Technologies (FMCSA-MCRT-06-003) (2005)

This report documents the findings of a study of what motivates key commercial vehicle stakeholders when making decisions to manufacture, buy or use on-board safety technologies. Telephone interviews were conducted with several individuals representing a wide range of stakeholders: 19 motor carriers, five insurance companies, two associations, one driver training program. Factors identified in making manufacturing, purchase and use decisions include return on investment, demonstrated effectiveness to improve safety, reliability, maintainability, liability, market demand, initial cost, market image, driver acceptance, and ease of integrating the new technology into the existing layout of the commercial vehicle cab.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/factors-in-decisions.pdf
- HyperText Markup Language (HTML) format: http://www.fmcsa.dot.gov/facts-research/research-technology/report/factors-in-decisions.htm

Specification Guide for Procurement of NTCIP-Compliant Dynamic Message Signs (DMS) (2002)

This document provides guidance on how to procure dynamic message signs that are compliant with the National Transportation Communications for ITS Protocol

(NTCIP) 1203 v1 standard. The guide contains an overview of the NTCIP standard, an explanation of the need to include particular information when developing an NTCIP specification for dynamic message signs, a suggested outline for procurement specifications, and sample text for inclusion in the specifications.

Cost: Free

To Access This Resource: Access the website address http://www.standards.its.dot.gov/Documents/genDMSSpec.pdf.

Successful Traffic Signal System Procurement Techniques: A Summary of Effective Processes (FHWA-OP-02-032) (2002)

Traffic signal systems are benefiting from the micro-computing and technology explosion of the past several decades. These new systems are more adaptable and more reliable than traffic signal systems of the past. However, these new technologies, and the capabilities enabled by them, introduce difficulties in procurement. Agencies are finding that these systems, equipment, and software do not meet their expectations for functionality and maintainability. In addition, it has become more difficult to manage the budget and schedule of a traffic signal system installation project. This document outlines a suggested procurement methodology that can support agencies in defining their signal systems needs and communicating those needs in a procurement.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13611.html, EDL# 13611. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Procurement Case Studies (2000)

This series of four case studies examines procurement approaches used to deliver ITS projects. The purpose of this series is to provide examples of successful strategies that have been used to overcome challenges to ITS procurement contained within the traditional design-bid-build approach.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Georgia's Intelligent Transportation System NaviGAtor Systems Integrator Contract—Use of a Systems Integrator to Manage ITS Implementation (FHWA-OP-01-019): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13459.pdf, EDL# 13459
- Michigan Intelligent Transportation System Center—Use of a Design/Build/Warranty Contract (FHWA-OP-01-020): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13460.pdf, EDL# 13460
- The Las Vegas Freeway and Arterial Management System—Use of a Systems Manager Contractor to Procure ITS (FHWA-OP-01-021): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13461.pdf, EDL# 13461
- CHART II Software Upgrade—Using a Design Competition to Procure ITS Software (FHWA-OP-01-022): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13462.pdf, EDL# 13462

ITS Software: Effective Acquisition Practices (2000)

This report presents the results of a study on effective software acquisition practices for intelligent transportation systems. This document was prepared under the guidance of the National Cooperative Highway Research Program (NCHRP). This report presents the results of surveys, interviews, and roundtable discussions with transportation officials and contractors at the state and local levels. The report examines the types of software acquisition projects that agencies are undertaking, problems they have encountered during the process, and techniques they are using or have used to deal with these problems. The report also discusses software acquisition and engineering techniques that have proven effective in other industries and in non-transportation government sectors.

Cost: $68-$85 depending on membership status in the Association of American State Highway and Transportation Officials (AASHTO). Available in both electronic and hardcopy versions

To Access This Resource: Contact the AASHTO Bookstore, (800) 231-3475, fax: (800) 525-5562, http://bookstore.transportation.org and search for "ITS-1."

What's Yours, Mine, and Ours—Overcoming Intellectual Property Rights Issues: A Cross-Cutting Study (FHWA-OP-99-021/FTA-TRI-11-99-11) (2000)

This report is one in a series designed to educate public sector managers about particular ITS technologies. Debate over ownership of intellectual property rights has caused substantial setbacks in some ITS projects, delaying the time that innovations can be commercialized and accessible to all jurisdictions. However, there are solutions to these daunting problems. This report explores how the public and private sector partners in the Phoenix and San Antonio Metropolitan Model Deployment Initiative (MMDI) efforts successfully came to agreement on intellectual property rights.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/11486.pdf, EDL# 11486. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

The Road to Successful ITS Software Acquisition (1998)

This document assembles best practices and presents useful advice on how to acquire software components of intelligent transportation systems. The intended audience are customers of software vendors—project leaders, technical contract managers, decision-makers, and consultants. The document presents a series of themes that serve as guiding

principles for achieving a successful software acquisition, including themes based on people, management, and systems. Software acquisition activities that build upon these themes are presented in subsequent chapters. Among the activities covered are building a team, developing requirements, making build/buy decisions, resolving intellectual property rights issues, acceptance testing, and project and risk management. Also included are case studies to illustrate the various points, as well as key point summaries and checklists to facilitate use of the material. The document concludes with brief stand-alone topic sheets that review issues related to software acquisition.

Cost: Free

To Access This Resource: To order a hardcopy of any of these documents, contact the Operations/ITS HelpLine, (866) 367-7487, itspubs@dot.gov. For the online version, access the following website addresses:

- Executive Summary: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/4132.pdf, EDL# 4132
- Volume I: Overview and Themes (FHWA-JPO-98-035): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/4130.pdf, EDL# 4130
- Volume II: Software Acquisition Process Reference Guide (FHWA-RD-98-036): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/4131.pdf, EDL# 4131

ITS Procurement Resource Guide (FHWA-JPO-97-0025) (1997)

This resource guide compiles, in a three-ring-binder format, key materials related to ITS procurement. The guide contains a case study on the Virginia Department of Transportation's public-private partnership, the *Innovative Contracting Procedures for ITS* executive summary, and the *FHWA Federal-Aid ITS Procurement Regulations and Contracting Options* report. First published in 1997, the resource guide is updated as new material becomes available.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. In addition, some of the documents that comprise the *ITS Procurement Resource Guide* are also available online:

- Virginia Department of Transportation Public-Private Procurement—Issues and Accomplishments and Interim Report (1997): http://www.itsdocs.fhwa.dot.gov/jpodocs/rept_mis/3403.pdf, EDL# 3403
- Innovative Contracting Practices for ITS: Executive Summary (1997): http://www.itsdocs.fhwa.dot.gov/jpodocs/rept_mis/1868.htm, EDL# 1868
- FHWA Federal-Aid ITS Procurement Regulations and Contracting Options (FHWA-RD-97-145) (1997): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/3029.htm, EDL# 3029

Guidebook for Selecting Technology for Rural and Small Urban Public Transportation Systems (TCRP Report# 76) (2002)

This guidebook helps public transportation professionals identify appropriate technologies for their transit systems, which can range from off-the-shelf computer software to automatic vehicle location (AVL) systems. The guidebook encourages readers to conduct a self-assessment of the services, character, and environment of their own transit system in order to select the technology best suited to their needs. The guidebook lists grants and revenue sources that can be used to pay for these technologies. Finally, the guidebook offers recommendations on developing an implementation plan, conducting the procurement process, and installing the new technology system.

Cost: $17 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TC076," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://gulliver.trb.org/publications/tcrp/tcrp_rpt_76.pdf.

A Handbook for Acquiring Demand-Responsive Transit Software (TCRP Report# 18) (1996)

This handbook is intended to assist providers of demand-responsive transit (DRT) in the selection, acquisition, and implementation of software for DRT operations and administration. The purpose of this handbook is to advise providers of DRT services about computer software and other technology appropriate for DRT applications, and to assist software vendors in understanding the market for DRT software and technologies.

Cost: $26 for the hardcopy version; the online version is free.

To Access This Resource: To order the hardcopy version, contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "TC018," (202) 334-3213, fax: (202) 334-2519. For the online version, access the website address http://gulliver.trb.org/publications/tcrp/tcrp_rpt_18.pdf.

ITS Software Acquisition (NHI Course# 137019)

This course provides a general understanding of the many issues involved in the development, management, and deployment of ITS software. Topics covered include the challenges software projects present and how to overcome them, the guiding principles to use for acquiring software successfully, and selection of an appropriate contracting mechanism. Skill Level: Core learning. Target Audience: State and local personnel, such as project leaders, who will be involved in ITS projects that have a significant software component to them. FHWA Resource Center

and Division office personnel who are involved in coordinating these projects would also benefit. Course Length: Two days.

Cost: $270 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137019."

Intelligent Transportation System (ITS) Procurement (NHI Course# 137020)

This seminar is intended to heighten awareness of the challenges in procuring ITS within the traditional construction project environment. This seminar combines lectures with presentations of case studies to describe the lessons learned from past ITS projects, and explain how best practices can be instituted to help ensure successful ITS procurement. This seminar is a companion to, but not a prerequisite to, ITS Software Acquisition. Skill Level: Core learning. Target Audience: Federal, state, and local transportation professionals directly involved in procuring ITS systems, especially those responsible for developing and reviewing statements-of-work for ITS procurement, including program managers, contracting officers, and attorneys. Course Length: One day.

Cost: $200 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137020."

Introduction to Systems Engineering for Advanced Transportation (NHI Course# 137024)

This course provides an introduction to systems engineering for ITS project managers and staff, allowing participants to understand the benefits of applying systems engineering approaches to developing quality systems. The course covers both technical practices (modeling, prototyping, trade-off analysis, and testing) and management practices (risk analysis and mitigation). Skill Level: Core learning. Target Audience: Transportation engineers and other information technology

(IT) professionals and technical staff at all levels of the public and private sectors, including ITS project managers, technical team members, contractors, and staff. Project managers in particular may benefit from this course. This course is available in classroom, Web-based and blended instructor-led/Web-based versions. Course Length: Two days for the classroom version; 10 hours for the Web-based and blended versions.

Cost: $270 per participant for the classroom version; $200 per participant for the Web-based version; $250 per participant for the blended version.

To Access This Resource:

- For the classroom version, access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137024."
- For the Web-based and blended versions, access the website address http://www.citeconsortium.org/courses/SE101.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Managing High Technology Projects in Transportation (NHI Course# 137026)

The goal of this course is to improve the project management skills of both public and private sector personnel responsible for managing the implementation of technology-intensive transportation projects. The course provides training on the fundamental principles and practices of good project management; the steps to be taken for the planning, design, and implementation of transportation systems projects; the types of project management tools available; and the basic skills required to be a good project manager. Skill Level: Core learning. Target Audience: Current and prospective project managers from state and local transportation agencies, as well as those in the private sector who support the implementation of advanced transportation projects. Course Length: Two days. This course is available in classroom, Web-based and blended instructor-led/Web-based versions. Course Length: Two days for the classroom version; eight hours for the Web-based and blended versions.

Cost: $270 per participant for the classroom version; $200 per participant for the Web-based version; $250 per participant for the blended version.

To Access This Resource:

- For the classroom version, access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137026."
- For the Web-based and blended versions, access the website address http://www.citeconsortium.org/courses/2mod11.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Configuration Management (CM) for Traffic Management Systems (NHI Course# 137042)

Configuration management (CM) is the practice of handling changes systematically so that a facility maintains its integrity over time. CM involves policies, procedures, techniques, and tools to manage and evaluate proposed project changes, track the status of changes, and maintain an inventory of system and support documents. This course presents issues surrounding CM and recommended practices for agencies to consider in a modular manner. A two-day version of the course presents all 10 modules. The sponsor may select modules to be presented in the one-day version of the course. Target Audience: Any individual involved in the planning, design, implementation, management, operation, or maintenance of transportation systems, including representatives of metropolitan planning organizations, traffic management centers, state and local governments, FHWA, universities, and consultants. Course Length: Two days.

Cost: $270 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137042."

DMS Procurement Workshop

This workshop discusses the nuts and bolts of a successful dynamic message sign (DMS) procurement. Participants will learn to develop methods for incorporating National Transportation Communications for ITS Protocol (NTCIP) standards into their DMS specifications. The workshop gives participants practical, ready-to-use information on a full range of topics related to the procurement of standards-based DMS systems. Target Audience: Public and private sector professionals responsible for specifying and procuring ITS-related equipment and services. Transportation/ITS engineers, project managers, technical team members (specification writers), consultants, contractors, and operators will all benefit from the workshop. Course Length: Two days.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/int_its_deployment/standards_imp/dmswkshp.htm or contact Tom Stout, FHWA Office of Transportation Management, (202) 366-6054, Tom.Stout@dot.gov.

Program Assessment and Evaluation Points-of-Contact

- Joseph Peters, ITS Joint Program Office, (202) 366-2202, Joe.Peters@dot.gov
- Charlene Wilder, FTA Service Innovation Division, (202) 366-1077, Charlene.Wilder@dot.gov

Evaluation Section of the ITS Joint Program Office Website

This website is a compilation of resources related to ITS evaluation and program assessment. The site contains a definition of ITS program assessment and evaluation, guidelines on how to evaluate ITS projects, and guidelines on how to collect information on unit and life-cycle costs of ITS technologies. The site organizes by topic area links to over 400 ITS evaluation-related documents available online. Types of documents posted on the site include evaluation plans, evaluation strategies, detailed test plans, and final reports of evaluation results.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/evaluation/index.htm.

International Benefits, Evaluation and Costs (IBEC) Working Group Website

This website is the official site of the International Benefits, Evaluation and Costs (IBEC) Working Group, a group of more than 350 ITS professionals from over 40 countries around the world. IBEC is a forum for information exchange on techniques used to evaluate the costs and benefits of ITS and the results of those evaluations. The site contains news of upcoming events, including IBEC-sponsored sessions at the ITS America Annual Meeting, ITS in Europe conference, and the annual ITS World Congress. The site library contains presentations given at these sessions, as well as proceedings from IBEC-sponsored events at past ITS World Congresses dating back to 1999. From the site's links section, the user can

access the websites of ITS professional associations for dozens of countries and regions throughout the world.

Cost: Free

To Access This Resource: Access the website address http://www.ibec-its.org.

ITS Benefits Database

This database contains information regarding the impacts of ITS projects on the operation of the surface transportation network. Entries are brief summaries of ITS benefits—in the areas of safety, efficiency, mobility, productivity, environmental impacts, and customer satisfaction—reported in printed and online sources. At present, the database contains more than 200 entries. Reference information is provided with each entry, along with the link to the reference document if available electronically. Users can search the database by ITS component, performance measure, project location, and date submitted. Several other documents pertaining to ITS benefits are also available for downloading, including a one-page ITS benefits desk reference. Users are invited to contribute new information, and the website has instructions on how to do so.

Cost: Free

To Access This Resource: Access the website address http://www.itsbenefits.its.dot.gov.

ITS Costs Database

This database contains estimates of ITS costs that can be used for policy analysis and benefit/cost analysis. At present, the database contains unit cost estimates of more than 200 ITS technologies, as well as system costs for selected ITS deployments. The unit cost database is available online, and as an Excel spreadsheet. Users can search the database of system costs by ITS component, project location, and date submitted. Several other documents pertaining to ITS benefits are also available for downloading, including a national ITS costs working paper. Users are invited to contribute new information, and the website has instructions on how to do so.

Cost: Free

To Access This Resource: Access the website address http://www.itscosts.its.dot.gov.

ITS Lessons Learned Knowledge Resource

The Lessons Learned Knowledge Resource (LLKR) is a repository of experience on how to plan, design, deploy, operate, and maintain ITS. The LLKR provides a mechanism for those who came before to share their hard-earned wisdom with those encountering similar challenges for the first time. At present, the LLKR contains about 80 lessons. Users can search the LLKR by ITS component, project location, nine topic areas, and many other factors. The nine topic areas are management and operations, policy and planning, design and deployment, leadership and partnerships, funding, technical integration, procurement, legal issues, and human resources. Users are invited to contribute new information, and the website has instructions on how to do so.

Cost: Free

To Access This Resource: Access the website address http://www.itslessons.its.dot.gov.

ITS Deployment Statistics Database

Now in its seventh year, the ITS Deployment Tracking effort surveys practitioners from across the country to measure progress toward National ITS Program goals. The ITS Deployment Statistics website contains the results of this multi-year survey effort. Updated in 2005, this database contains results from several recent surveys: ITS technologies deployed in 30 medium-size cities, 20 tourist cities, and the 78 largest metropolitan areas, as well as statewide and rural ITS systems deployed in all 50 states. Users can view survey results by component and by city or state, view blank surveys, and review the precise definitions used to determine how much ITS is deployed in each city or state. Users can also download detailed reports for each city and state, as well as a national report.

Cost: Free

To Access This Resource: Access the website address http://www.itsdeployment.its.dot.gov.

Advanced Parking Management Systems: A Cross-Cutting Study (FHWA-JPO-07-011) (2007)

This report is one in a series designed to educate public sector managers about particular ITS technologies. This report explains how ITS technologies can be used to inform travelers about where the best parking locations are, what hours they are open, what fees they change, and, most importantly, whether a parking space will be available when they arrive. This report presents the full range of advanced parking management systems (APMS) technologies, from low-tech solutions such as a parking information website to cutting-edge parking reservation systems that enable drivers to locate, reserve, and pay for a parking space all through wireless communications. The report profiles advanced parking management systems in Washington State, Illinois, and Maryland. The study concludes with a summary of the benefits and costs of this new technology, as well as lessons learned in the areas of policy and planning, design and deployment, and management and operations.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14318_files/14318.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14318.htm, EDL# 14318

Intelligent Transportation Systems for Traffic Incident Management: Deployment Benefits and Lessons Learned (FHWA-JPO-07-001) (2007)

This leaflet is one in a series that shows how ITS technologies can reduce congestion, in support of the U.S. Department of Transportation's Congestion Initiative. This leaflet summarizes the benefits, costs, extent of deployment and lessons learned about the use of ITS for traffic incident management.

The online version contains a full list of sources, so that all information in the leaflet's brief four pages is backed up with supporting documentation.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.its.dot.gov/jpodocs/repts_te/14288_files/14288.pdf
- HyperText Markup Language (HTML) format: http://www.its.dot.gov/jpodocs/repts_te/14288.htm, EDL# 14288

Intelligent Transportation Systems for Traffic Signal Control: Deployment Benefits and Lessons Learned (FHWA-JPO-07-004) (2007)

This leaflet is one in a series that shows how ITS technologies can reduce congestion, in support of the U.S. Department of Transportation's Congestion Initiative. This leaflet summarizes the benefits, costs, extent of deployment and lessons learned about the use of ITS for traffic signal control. The online version contains a full list of sources, so that all information in the leaflet's brief four pages is backed up with supporting documentation.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.its.dot.gov/jpodocs/repts_te/14321_files/14321.pdf
- HyperText Markup Language (HTML) format: http://www.its.dot.gov/jpodocs/repts_te/14321.htm, EDL# 14321

Intelligent Transportation Systems for Traveler Information: Deployment Benefits and Lessons Learned (FHWA-JPO-07-002) (2007)

This leaflet is one in a series that shows how ITS technologies can reduce congestion, in support of the U.S. Department of Transportation's Congestion Initiative. This leaflet summarizes the benefits, costs, extent of deployment and lessons learned about the use of ITS for providing accurate, timely traveler information. The online version contains a full list of sources, so that all information in the leaflet's brief four pages is backed up with supporting documentation.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.its.dot.gov/jpodocs/repts_te/14319_files/14319.pdf
- HyperText Markup Language (HTML) format: http://www.its.dot.gov/jpodocs/repts_te/14319.htm, EDL# 14319

Intelligent Transportation Systems for Work Zones: Deployment Benefits and Lessons Learned (FHWA-JPO-07-003) (2007)

This leaflet is one in a series that shows how ITS technologies can reduce congestion, in support of the U.S. Department of Transportation's Congestion Initiative. This leaflet summarizes the benefits, costs, extent of deployment and lessons learned about the use of ITS in work zones. The online version contains a full list of sources, so that all information in the leaflet's brief four pages is backed up with supporting documentation.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.its.dot.gov/jpodocs/repts_te/14320_files/14320.pdf
- HyperText Markup Language (HTML) format: http://www.its.dot.gov/jpodocs/repts_te/14320.htm, EDL# 14320

Traffic Signal Preemption for Emergency Vehicles: A Cross-Cutting Study (FHWA-JPO-05-010) (2006)

This report is one in a series designed to educate public sector managers about particular ITS technologies. Emergency vehicle preemption (EVP) systems give emergency response vehicles a green light on their approach to a signalized intersection while providing a red light to conflicting approaches. This report examines how transportation, police, fire/rescue and emergency medical services (EMS) officials in three local jurisdictions—Fairfax County, Virginia; Plano, Texas; and St. Paul, Minnesota—used EVP to improve emergency vehicle response time, improve safety and lower costs. The report discusses who is using EVP nationwide and what are the technology options, as well as benefits, costs lessons learned from their implementation.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14097_files/14097.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14097.htm, EDL# 14097

Archived Data Management Systems: A Cross-Cutting Study (FHWA-JPO-05-044) (2005)

This report is one in a series designed to educate public sector managers about particular ITS technologies. Archived data management systems (ADMSs) use data generated by ITS technologies in transportation planning and operations. This report examines six ADMSs in depth, discussing their design considerations, operational practices, benefits, and costs.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14128/14128.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14128.htm, EDL# 14128.

Intelligent Transportation Systems Benefits, Costs, and Lessons Learned: 2005 Update (FHWA-JPO-05-002) (2005)

This report is the latest in a biennial series that provides a synthesis of the information collected by U.S. DOT on the impact of ITS projects on the operation of the surface transportation network. The report presents ITS impacts according to program areas within the intelligent infrastructure and intelligent vehicle applications. ITS benefits are classified by performance measures associated with National ITS Program goals, i.e., the improvement of safety, efficiency, mobility, productivity, and energy/environmental impacts. The report also presents unit cost figures for selected ITS deployments, as well as sample system cost information. New in the 2005 edition is a discussion of the ITS Lessons Learned Knowledge Resource, a repository of experience on how to plan, design, deploy, operate, and maintain ITS. Information in the report is drawn from the ITS Benefits and Costs Databases, available online at http://www.benefitcost.its.dot.gov.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14073_files/14073.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14073.htm, EDL# 14073

CVISN for Commercial Vehicles (2004)

These two reports are part of a series designed to educate public and private sector managers about particular ITS technologies. These case studies provide an in-depth view of the deployment of Commercial Vehicle Information Systems and Networks (CVISN) electronic credentialing and safety information exchange in Washington State and Connecticut. These studies describe benefits, successful practices, and lessons learned in operations and management from the point of view of early CVISN-adopting states.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- CVISN Electronic Credentialing for Commercial Vehicles in Washington State: A Case Study (FHWA-JPO-04-029/FMCSA-RT-04-001)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13980_files/washington.pdf
- CVISN Electronic Credentialing for Commercial Vehicles in Washington State: A Case Study—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13980.htm, EDL# 13980
- CVISN Safety Information Exchange for Commercial Vehicles in Connecticut: A Case Study (FHWA-JPO-04-030/FMCSA-RT-04-002)—Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13981_files/Connecticut.pdf

- CVISN Safety Information Exchange for Commercial Vehicles in Connecticut: A Case Study—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13981.htm, EDL# 13981

Intelligent Transportation Systems in Work Zones: Case Studies (2004)

These four reports are part of a series designed to educate public sector managers about particular ITS technologies. These case studies examine how transportation authorities in Arizona, Illinois, Michigan, and New Mexico used ITS in their work zones to improve mobility and reduce crashes. Each case study describes the work zone, how the ITS system was selected, how it worked, the benefits experienced, and lessons learned.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or workzonepubs@dot.gov. For the online version, access the following website addresses:

- Dynamic Lane Merge System—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14011.htm, EDL# 14011 or http://www.ops.fhwa.dot.gov/wz/technologies/michigan/index.htm
- Work Zone Traffic and Incident Management System—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13941.html, EDL# 13941 or http://www.ops.fhwa.dot.gov/wz/technologies/albuquerque/index.htm
- Work Zone Travel Time System (FHWA-HOP-04-032)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/technologies/arizona/arizona.pdf
- Work Zone Travel Time System—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14001.htm, EDL# 14001 or http://www.ops.fhwa.dot.gov/wz/technologies/arizona/index.htm

- Dynamic Lane Merge System (FHWA-HOP-04-033)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/technologies/michigan/michigan.pdf
- Dynamic Lane Merge System—HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/wz/technologies/michigan/index.htm or EDL# 14011 at http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/14011.htm
- Real-Time Work Zone Traffic Control System (FHWA-HOP-04-018)—Adobe Acrobat format: http://www.ops.fhwa.dot.gov/wz/technologies/springfield/springfield.pdf
- Real-Time Work Zone Traffic Control System—HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13984.htm, EDL# 13984 or http://ops.fhwa.dot.gov/wz/technologies/springfield/index.htm

Incorporating Intelligent Transportation Systems into Planning Analysis: Summary of Key Findings from a Seattle 2020 Case Study (FHWA-OP-02-031) (2002)

This report presents a new transportation modeling technique that shows how ITS can improve the reliability of the transportation infrastructure. This new technique is especially useful because traditional analytical tools often fail to capture how transportation improvements perform under a wide range of conditions.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13605/13605.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13605.html, EDL# 13605

Intelligent Transportation Systems in Work Zones: A Cross-Cutting Study (FHWA-OP-02-025) (2002)

This report is one in a series designed to educate public sector managers about particular ITS technologies. This report examines how transportation departments in Illinois, Michigan, New Mexico, and Arkansas used ITS in their work zones and recounts the benefits they experienced. The report also profiles other ITSrelated work zone products, systems, and techniques.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://ops.fhwa.dot.gov/wz/docs/ITSWorkzones.pdf or http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13600_files/13600.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13600.html, EDL#14128

Metropolitan ITS Integration: A Cross-Cutting Study (FHWA-OP-02-083/FTA-TRI-11-02-05) (2002)

This report, one in a series designed to educate public sector managers about particular ITS technologies, profiles how 24 cities in the U.S. have achieved integration of previously disparate ITS systems, the benefits they have gained as a result, and the lessons they have learned. The report concludes with a series of successful practices for making ITS integration a reality, in the areas of planning, design, implementation, and operations and maintenance.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13672_files/13672.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13672.html, EDL# 13672

Using Metropolitan ITS Deployment Tracking for Regional ITS Planning: Telling the Deployment Story in Tucson, Arizona (FHWA-OP-02-035) (2002)

This case study examines how the Pima Association of Governments (PAG) used the methodology contained in the Metropolitan ITS Deployment Tracking Database to develop its ITS Strategy Deployment Plan. Using the methodology contained in the database allows agencies to compare their current ITS assets with what is possible (the "could" case), as well as with the region's long-term goals (the "should" case).

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13606_files/13606.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13606.html, EDL# 13606

Deploying and Operating Integrated Intelligent Transportation Systems: Twenty Questions and Answers (FHWA-OP-02-023) (2001)

This report summarizes lessons learned through evaluation of the four Metropolitan Model Deployment Initiative (MMDI) sites selected in 1996: San Antonio, Texas; Phoenix, Arizona; Seattle, Washington; and the New York/New Jersey/Connecticut area. One of the goals of the MMDI was to demonstrate measurable benefits resulting from the application of integration, region-wide approaches to transportation management, and provision of traveler information. This report synthesizes the evaluations that were conducted at the selected sites, and includes findings from follow-up interviews conducted with site managers in the spring of 2001—five years after the program's start. This report is intended to assist traffic managers, planners, and other key decision-makers in metropolitan areas that are considering similar integrated ITS applications.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13599/13599.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13599.html, EDL# 13599

Informed Motorists, Fewer Crashes—Using Intelligent Transportation Systems in Work Zones (FHWA-OP-01-043) (2001)

This brochure, one in a series designed to encourage decision-makers to invest their own budget resources in ITS, examines the safety and mobility benefits of the use of ITS in work zones. The brochure quotes elected officials and transportation

professionals from around the country about the benefits they have experienced from using ITS in work zones.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13584/13584.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13584.html, EDL# 13584

San Antonio's Medical Center Corridor: Lessons Learned from the Metropolitan Model Deployment Initiative (FHWA-OP-01-034) (2001)

This is one in a series that documents lessons learned from the Metropolitan Model Deployment Initiative (MMDI). This report documents the benefits of integration of traffic management on both freeways and arterial streets.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13220.pdf, EDL# 13220. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Ventura County Fare Integration: A Case Study (FHWA-OP-01-033/ FTA-TRI-11-01-01) (2001)

This report is one in a series designed to educate public sector managers about particular ITS technologies. Starting in 1996, transit agencies in Ventura County, California, field-tested an electronic fare payment system called "Smart Passport." The demonstration ended in 1999 without Ventura County transit operators experiencing many of the program's anticipated benefits. The demonstration was conducted when the National ITS Program was in its early stages and few resources were available to assist the local participants. Today, the

experiences of Ventura County have much to teach us. This case study contains insights gained in institutional needs, technical requirements, and customer acceptance techniques that can be helpful to those deploying any new technology in an operational setting.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Adobe Acrobat format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13479/13479.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13479.html, EDL# 13479

What Have We Learned about Intelligent Transportation Systems? (FHWA-OP-01-006) (2000)

In this compendium report, a distinguished set of authors looks back on the 10 years of the National ITS Program to examine which ITS technology applications have been successful, which have not been successful, and what are the underlying factors that determine success versus failure. Individual chapters focus on freeway, incident, and emergency management and electronic toll collection; arterial management; advanced traveler information systems; advanced public transportation systems; commercial vehicle operations; cross-cutting technical and programmatic issues; and institutional issues. An introductory chapter provides a synthesis of lessons learned, and a closing chapter looks toward the future to offer final comments. An appendix reprints tables from each chapter that summarize the state of deployment of ITS technologies.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13316.pdf, EDL# 13316. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Evaluation 101: Training Session on ITS Performance Measures and Evaluation Techniques

This series of PowerPoint slides comprises the handouts that were distributed at a training course on ITS performance measures and evaluation techniques that was presented in conjunction with the 10th ITS World Congress in Madrid, Spain in November 2003. The course provides an overview of ITS project evaluation methods commonly used in both the U.S. and Europe, showing the similarities and differences between these two methods. Recommended steps include forming an evaluation team, developing an evaluation strategy, developing an evaluation plan and test plans, data collection and analysis, and reporting of results. The course stresses that these steps are not strictly sequential, but also cyclical, so that evaluation can give feedback to ITS projects to improve their performance.

Cost: Free

To Access This Resource: Access the website address http://www.ibec-its.org/trainingmaterials.asp.

SAFETEA-LU Points-of-Contact

- Marcia Pincus, ITS Joint Program Office, (202) 366-9230, Marcia.Pincus@dot.gov
- Kathy Krause, FHWA Office of Safety, (202) 366-9265, Kathy.Krause@dot.gov
- Sean Ricketson, FTA Office of Mobility Innovation, (202) 366-6678, Sean.Ricketson@dot.gov

SAFETEA-LU Website

This FHWA's official website for the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which authorizes the Federal surface transportation programs for highways, highway safety, and transit for the five-year period from 2005 to 2009. The website contains the full text of the legislation, summaries of SAFETEA-LU's content, progress reports, over 50 fact sheets on the programs covered by and provisions of the legislation, and funding tables showing the legislation's authorizations, apportionments, allocations, and obligation limitations. The cross-reference feature links each section of the legislation with related guidance (policy memoranda, Federal Register notices, regulatory actions, etc.), fact sheets, questions and answers, and other resources.

Cost: Free

To Access This Resource: Access the website address http://www.fhwa.dot.gov/safetealu.

Surface Transportation Reauthorization Section of the U.S. DOT Website

This website is a repository of information regarding the reauthorization of the Transportation Equity Act for the 21st Century (TEA-21). Using several key reference documents available for downloading, including the full text of the U.S. DOT's Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA) proposal for TEA-21 reauthorization, this site describes the U.S. DOT's rationale behind its proposal. The site allows users to post their own comments on reauthorization, as well as view comments made by others.

The site also contains a list of frequently asked questions (with answers), testimony provided at previous Congressional hearings, and related links.

Cost: Free

To Access This Resource: Access the website address http://www.fhwa.dot.gov/reauthorization.

http://

TEA-21 Section of the FHWA Website

This website is a comprehensive compilation of resources related to the Transportation Equity Act for the 21st Century (TEA-21). The "Legislation" section contains the full text of TEA-21, the TEA-21 Restoration Act, and related Congressional reports. The ITS portion of TEA-21 is under Title V, Subtitle C. The "Cross Reference" section contains the legislative language, links to related guidance (policy memoranda, *Federal Register* notices, regulatory actions, etc.), fact sheets, and frequently asked questions (with answers) for each section of TEA-21. The "Summary Information" section contains summaries of the TEA-21 legislation and progress reports. The "Fact Sheets" section contains fact sheets on the programs and provisions of TEA-21. The fact sheet on ITS is available at http://www.fhwa.dot.gov/tea21/factsheets/its.htm. The "Funding Tables" section contains tables showing TEA-21 authorization amounts, apportionments, allocations, and obligation limitations. The "Information Exchange" section provides a schedule of the outreach sessions conducted in 1998, summaries of each session, and a report that synthesizes findings from all the sessions. The "Publications" section links to TEA-21-related publications and instructions for ordering copies. Two ITS-related publications are available: *Intelligent Transportation Systems in the Transportation Equity Act for the 21st Century* and *The TEA-21 ITS Deployment Program: Interim Report 2000.*

Cost: Free

To Access This Resource: Access the website address http://www.fhwa.dot.gov/tea21.

Department of Transportation Appropriation Legislation (1997-2005)

These pieces of legislation make appropriations for the U.S. DOT and related agencies, as authorized under the Transportation Equity Act for the 21st Century (TEA-21) and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

Cost: Free

To Access This Resource: Access the following website addresses:

- FY98: http://www.access.gpo.gov/nara/publaw/105publ.html, search for "Pub.L. 105-66"
- FY99: http://www.access.gpo.gov/nara/publaw/105publ.html, search for "Pub.L. 105-277"
- FY00: http://www.access.gpo.gov/nara/publaw/106publ.html, search for "Pub.L. 106-069"
- FY01: http://www.access.gpo.gov/nara/publaw/106publ.html, search for "Pub.L. 106-346"
- FY02: http://www.access.gpo.gov/nara/publaw/107publ.html, search for "Pub.L. 107-087"
- FY03: http://www.access.gpo.gov/nara/publaw/108publ.html, search for "Pub.L. 108-007"
- FY04: http://www.access.gpo.gov/nara/publaw/108publ.html, search for "Pub.L. 108-199"
- FY05: http://www.access.gpo.gov/nara/publaw/108publ.html, search for "Pub.L. 108-447"
- FY06: http://www.access.gpo.gov/nara/publaw/109publ.html, search for "Pub.L. 109-059"

Intelligent Transportation Systems in the Transportation Equity Act for the 21st Century (FHWA-JPO-99-040) (1999)

This brochure highlights the key provisions in the ITS section of the Transportation Equity Act for the 21st Century (TEA-21), the U.S. DOT's approach to developing these policies, and how state, local, and private stakeholders can participate in the policy development process. Topics covered include the ITS

Deployment section of TEA-21 (including the ITS Integration Program and the Commercial Vehicle ITS Infrastructure Program), research and development, Federal-aid funding sources, critical ITS standards, conformity with the National ITS Architecture and Standards, procurement, and the *National ITS Program Plan.*

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/brochure/6090.pdf, EDL# 6090. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Transportation Equity Act for the 21st Century (1998)

The Transportation Equity Act for the 21st Century (TEA-21) was enacted June 9, 1998, as Public Law 105-178. TEA-21 authorizes the Federal surface transportation programs for highways, highway safety, and transit for the six-year period 1998-2003. TEA-21 builds on the initiatives established in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which was the last major authorizing legislation for surface transportation.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.fhwa.dot.gov/tea21/pl105178.pdf
- HyperText Markup Language (HTML) format: http://www.fhwa.dot.gov/tea21/h2400.htm

Standards Development and Implementation Points-of-Contact

- Lee Simmons, ITS Joint Program Office, (202) 366-8048, Lee.Simmons@dot.gov
- Tom Stout, FHWA Office of Transportation Management, (202) 366-6054, Tom.Stout@dot.gov
- Mike Onder, FHWA Office of Freight Management and Operations, (202) 366-2639, Michael.Onder@dot.gov
- Ed Fok, FHWA Resource Center, (415) 744-0113, Edward.Fok@dot.gov
- Michael Baltes, FTA Office of Mobility Innovation, (202) 366-2182, Michael.Baltes@dot.gov
- Jim Smailes, FRA Office of Railroad Development, (202) 493-6360, James.Smailes@dot.gov

ITS Standards Program Section of the ITS Joint Program Office Website

This site is the official website of the ITS Standards Program. The "About Us" section contains a description of the key program activities and the partners of the program. The "Learn About Standards" section provides background on the program and describes the program's role in ITS research initiatives. This section also discusses several aspects of standards, including application areas, standards' life cycles, standards development, standards testing, and the system engineering process. The "Deployment Resources" section lists available technical assistance, training programs, testing programs, publications, and discussion forums. The "Development Activities" section provides an overview of the standards development process, including how future standards candidates are identified. This section also provides the status of over 100 ITS standards currently in development.

Cost: Free

To Access This Resource: Access the website address http://www.standards.its.dot.gov/default.asp.

http://

National Transportation Communications Protocols for ITS (NTCIP) Website

This website is a compilation of resources related to the National Transportation Communications for ITS Protocols (NTCIP) family of standards. The "Background" section contains a basic description of NTCIP, its function and history. The "Deployment" section contains a list of NTCIP projects by location, the NTCIP 9001 guide, and case studies on the use of NTCIP. There is also a link for ordering NTCIP standards from the National Electronics Manufacturers Association (NEMA) and the Institute of Transportation Engineers (ITE). The "Library" section contains a collection of documents, software products, and links relating to NTCIP, including draft standards and NTCIP operational and deployment documents. A new feature of the Library is the provision of free downloads of new standards. The "News" section contains current and updated information concerning NTCIP. The NTCIP newsletter can be downloaded from this section of the website. The "Calendar" section contains a list of upcoming events. The "Committees" section is where users can go to log in to restricted work areas of the website.

Cost: Free

To Access This Resource: Access the website address http://www.ntcip.org.

http://

Advanced Transportation Controller (ATC) Specifications Website

This website is a compilation of resources related to Advanced Transportation Controller (ATC) specifications. ATC specifications define a general purpose field computer that is intended for continuous, unattended operation in harsh environments. The specifications define interchangeable modules that are combined to form a Type 2070 ATC capable of running control software from various vendors. In many cases, the specifications define several module options that can be arranged in a variety of configurations to meet users' needs. The website provides an overview of ATC specifications and its application program interface (API), as well as reference documents pertaining to those standards.

Cost: Free

To Access This Resource: Access the website address http://www.ite.org/standards/atc.

ITS Standards Field Support Team

The ITS Standards Field Support Team (SFST) provides short-term, on-call, technical assistance to support the adoption and use of ITS standards. The Team is comprised of FHWA technical staff. Services offered by the Team include: assessment of a user's current ITS system to identify where standards may be beneficial; assistance in the development of project specifications; review of existing contracts and specifications; assistance in the identification of appropriate contracting mechanisms; assistance in the development of test plans; and evaluation of systems for compliance with contracts and conformance to specifications. Services are available to public sector staff at the Federal, state, and local levels.

Cost: Free

To Access This Resource: Contact the ITS Specialist at the FHWA Division Office in your state. Contact information for these individuals can be found online at http://www.ops.fhwa.dot.gov/int_its_deployment/its_specialists/fhwa_office.htm. Alternatively, contact Ed Fok, FHWA Resource Center, (415) 744-0113, Edward.Fok@dot.gov.

ITS Standards Database

This database contains the over 100 ITS standards being tracked by the ITS Standards Program. Users can search the database by lead standard development organization (SDO), development status, or keyword. Each record contains the standard's title, a description, current status, informational website, and point of contact with telephone number and e-mail address.

Cost: Free

To Access This Resource: Access the website address http://www.standards.its.dot.gov/stdssearch.asp.

Application Area Table

This table is a guide to ITS standards documentation that should be considered for use in different types of ITS projects. Each row in the table represents an Interface Class from the National ITS Architecture. The National ITS Architecture's 19 application areas are listed in the second column of the table.

Cost: Free

To Access This Resource: Access the website address http://www.standards.its.dot.gov/learn_Application.asp.

Center-to-Center (C2C) Communications Profiles Standards Advisory (2006)

This flier is one of a series of documents that provide state and local transportation agencies with background and guidance on development issues and other key activities related to ITS standards. Center-to-Center (C2C) communications relate to all aspects of ITS, covering the exchange of data between computers physically located in different transportation management facilities (e.g., traffic management centers, transit management centers, emergency management centers, and parking management centers.) C2C standards enable exchange of data, specifying what information is exchanged, how and when it is exchanged, and the underlying transport mechanisms. C2C standards can be divided into two categories: (1) message and data content and (2) rules for exchanging messages and data. The focus of this ITS standards advisory is on the rules for exchanging messages and data, called "C2C communications profile standards." The flier contains a list of C2C communications profile standards, a list of C2C standards resources, and a list of C2C documents and guides.

Cost: Free

To Access This Resource: Access the website address: http://www.standards.its.dot.gov/Documents/advisories/adv_c2c_bg.asp.

Incident Management (IM) ITS Standards Advisory (2004)

This flier is one of a series of documents that provide state and local transportation agencies with background and guidance on development issues and other key activities related to ITS standards. This flier describes the family of standards developed by the Institute of Electrical and Electronics Engineers (IEEE) that facilitates incident management. The IEEE 1512 family allows traffic management systems and public safety management systems to exchange incident-related information immediately for real-time command and control of resources. The flier profiles each of the four standards in the family (the base standard and standards for traffic incident management, public safety, and hazardous materials), and provides an update on their standards development status. The flier contains case studies on the use of IEEE 1512 standards in New York, Washington, D.C., Utah, and Washington State; and a list of available resources for technical assistance.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.standards.its.dot.gov/Documents/advisories/IM_advisory.pdf
- HyperText Markup Language (HTML) format: http://www.standards.its.dot.gov/Documents/advisories/IM_Advisory.htm

National Transportation Communications for ITS Protocol (NTCIP) Case Study Reports (1999-2004)

This series of documents describes the lessons learned by vendors, agencies, and consultants during a project that required compliance with the National Transportation Communications for ITS Protocol (NTCIP).

Cost: Free

To Access This Resource: Access the following website addresses:

- NTCIP 9002 v01.04: Virginia DOT Statewide VMS Project (1999): http://www.ntcip.org/library/documents/pdf/9002_090999.pdf
- NTCIP 9003 v01.04: Washington State DOT NTCIP VMS Software Upgrade (1999): http://www.ntcip.org/library/documents/pdf/9003_090999.pdf
- NTCIP 9004 v01.05: City of Phoenix, Arizona—Phoenix Advanced Transportation Management System (1999): http://www.ntcip.org/library/documents/pdf/9004_090999.pdf
- NTCIP 9005 v01.09: Texas Department of Transportation Statewide Center-to-Center Software and Systems Integration (2004): http://www.ntcip.org/library/documents/pdf/9005v0109a_txdot_c2c.pdf
- NTCIP 9006 v01.06: City of Lakewood, Colorado—Lakewood Advanced Traffic Management System (2004): http://www.ntcip.org/library/documents/pdf/9006v0106_lakewood.pdf
- NTCIP 9007 v01.05: City of Mesa Arizona Signal System Upgrade (2004): http://www.ntcip.org/library/documents/pdf/9007v0105_mesa.pdf
- NTCIP 9008 v01.06: Minnesota DOT Statewide R/WIS Project (2004): http://www.ntcip.org/library/documents/pdf/9008v01-06.pdf
- NTCIP 9009 v01.05: Washington State Department of Transportation Statewide ESS Procurement (2004): http://www.ntcip.org/library/documents/pdf/9009v01-05.pdf

Archived Data User Service (ADUS) ITS Standards Advisory (2003)

This flier is one of a series of documents that provide state and local transportation agencies with background and guidance on development issues and other key activities related to ITS standards. This flier describes the first ITS standard to be published related to the archived data user service (ADUS): ASTM E2259-03 *Standard Guide for Archiving and Retrieving ITS-Generated Data* issued by the American Society for Testing

and Materials (ASTM). The flier contains case studies on the use of ASTM E2259-03 in Alaska, Arizona, Maryland, and Virginia; a list of contacts; and a bibliography.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.standards.its.dot.gov/Documents/advisories/adus_advisory.pdf
- HyperText Markup Language (HTML) format: http://www.standards.its.dot.gov/Documents/advisories/ADUS_Advisory.htm

Dedicated Short Range Communications (DSRC) ITS Standards Advisory (2003)

This flier is one of a series of documents that provide state and local transportation agencies with background and guidance on development issues and other key activities related to ITS standards. This flier provides an update on recent developments concerning the set of standards that implement Dedicated Short Range Communications (DSRC) high-speed communications between vehicles and the roadside, and between vehicles. In 1999, the Federal Communications Commission (FCC) allocated the 5.9 GHz band of frequency for DSRC. Since that time, the American Society of Testing and Materials (ASTM) has been developing standards to implement DSRC and approved the first DSRC standard E2213-02 in 2002. The flier contains a case study on the use of ASTM E2259-03 in Michigan, a list of contacts, and a bibliography.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.standards.its.dot.gov/Documents/advisories/dsrc_advisory.pdf
- HyperText Markup Language (HTML) format: http://www.standards.its.dot.gov/Documents/advisories/dsrc_advisory.htm

Dynamic Message Signs (DMS) ITS Standards Advisory (2003)

This flier is one of a series of documents that provide state and local transportation agencies with background and guidance on development issues and other key activities related to ITS standards. This flier provides an update on recent developments concerning standards for dynamic message signs within the National Transportation Communications for ITS Protocol (NTCIP) family of ITS standards. An initial version of the NTCIP standard for dynamic message signs—NTCIP 1203—was published in 1997 and a second version is under development. The flier contains case studies on the use of NTCIP 1203 in Illinois and Virginia, a list of contacts, and a bibliography.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.standards.its.dot.gov/Documents/advisories/dms_advisory.pdf
- HyperText Markup Language (HTML) format: http://www.standards.its.dot.gov/Documents/advisories/dms_advisory.htm

Environmental Sensor Stations (ESS) ITS Standards Advisory (2003)

This flier is one of a series of documents that provide state and local transportation agencies with background and guidance on development issues and other key activities related to ITS standards. This flier provides an update on recent developments concerning standards for environmental sensor stations within the National Transportation Communications for ITS Protocol (NTCIP) family of ITS standards. An initial version of the NTCIP standard for environmental sensor stations—NTCIP 1204—was published in 1998 and a second version is under development. The flier contains case studies on the use of NTCIP 1204 in Minnesota, Washington, and Wisconsin; a list of contacts; and a bibliography.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.standards.its.dot.gov/Documents/advisories/ess_advisory.pdf
- HyperText Markup Language (HTML) format: http://www.standards.its.dot.gov/Documents/advisories/ess_advisory.htm

Environmental Sensor Station Standards for the Roadway: Standards Application Package (FHWA-OP-02-007) (2002)

This package of documents brings together written material on environmental sensor station (ESS) standards. ESSs are roadside sensors that collect and disseminate surface weather and road conditions. The package includes an application area matrix, a roadmap for ESS standards development, a contact list of those who have already deployed ESSs, profiles of early deployments, a reference sheet of meteorological standards, and a set of ESS standards fact sheets, as well as other materials concerning the ITS Standards Program.

Cost: Free

To Access This Resource: To order a hardcopy, contact Gerry Flood, John A. Volpe National Transportation Systems Center, (617) 494-3848, Flood@volpe.dot.gov.

NTCIP 9001 (2002)

The subject of communications protocols and standards is a challenging one, even for engineers experienced in these issues. In the case of the National Transportation Communications for ITS Protocol (NTCIP), the level of difficulty is heightened by the fact that NTCIP is a whole suite of documents and protocols aimed at meeting the communications needs of the various fixed-point communications components of the National ITS Architecture, not just one single component. The purpose of this guide—formerly called *The NTCIP Guide* but since renamed *NTCIP 9001*—is to assist decision-makers, planners, specification writers, and implementers to

understand the various NTCIP standards documents and how to use them, as well as the overall motivations behind the use of NTCIP. The document has been updated twice since its publication in 1999. The most recent version is *NTCIP 9001 v.03.02*, which was accepted by the Joint Committee on the NTCIP in October 2002.

Cost: Free

To Access This Resource: For the most recent version of the document, access the website address http://www.ntcip.org/library/guide.asp.

Specification Guide for Procurement of NTCIP-Compliant Dynamic Message Signs (DMS) (2002)

This document provides guidance on how to procure dynamic message signs that are compliant with the National Transportation Communications for ITS Protocol (NTCIP) 1203 v1 standard. The guide contains an overview of the NTCIP standard, an explanation of the need to include particular information when developing an NTCIP specification for dynamic message signs, a suggested outline for procurement specifications, and sample text for inclusion in the specifications.

Cost: Free

To Access This Resource: Access the website address http://www.standards.its.dot.gov/Documents/genDMSSpec.pdf.

Dynamic Message Sign Standards: Application Area Package (2001)

This package of documents brings together written material on dynamic message sign (DMS) standards. The package includes an application area matrix, a roadmap for DMS standards development, profiles of early deployments, lessons learned from these early deployments, a contact list of those who have already deployed DMSs, a set of DMS standards fact sheets, as well as other materials concerning the ITS Standards Program.

Cost: Free

To Access This Resource: To order a hardcopy, contact Gerry Flood, John A. Volpe National Transportation Systems Center, (617) 494-3848, Flood@volpe.dot.gov.

ITS Standards Lessons Learned Reports: Raising ITS Standards IQ (2000-2001)

This series of two brochures documents lessons learned on how to raise awareness and understanding of ITS standards among transportation stakeholders, particularly those in the public sector. Lesson Learned Report #1 discusses how the Minnesota Department of Transportation (Mn/DOT) heightened awareness of ITS standards by hosting a one-day workshop among public sector representatives at the state, county, and city levels. Lesson Learned Report #2 describes the experiences of nine state transportation agencies who were among the first to use dynamic message signs (DMSs) built to specifications contained in the National Transportation Communications for ITS Protocol (NTCIP).

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Lessons Learned Report #1: Raising ITS Standards IQ with a Public Sector Workshop (FHWA-OP-00-010) (2000)—Adobe Acrobat format: http://www.standards.its.dot.gov/Documents/lessons1.pdf
- Lessons Learned Report #1: Raising ITS Standards IQ with a Public Sector Workshop—HyperText Markup Language (HTML) format: http://www.standards.its.dot.gov/Documents/lessons1/its1.htm
- Learned Report #2: Raising ITS Standards IQ with Implementation of NTCIP-Based Dynamic Message Signs (FHWA-OP-01-032) (2001)—Adobe Acrobat format: http://www.standards.its.dot.gov/Documents/lessons2.pdf
- Learned Report #2: Raising ITS Standards IQ with Implementation of NTCIP-Based Dynamic Message Signs —HyperText Markup Language (HTML) format: http://www.standards.its.dot.gov/Documents/lessons2/its2.htm

Intelligent Transportation Systems: Critical Standards (1999)

This report fulfills a requirement of the Transportation Equity Act for the 21st Century (TEA-21) to identify by June 1, 1999 "which standards are critical to ensuring national interoperability or critical to the development of other standards and specifying the status of development of each standard identified." The report provides a definition of "critical," describes the process and criteria for choosing the critical standards, and notes what considerations were taken in applying these criteria.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_pr/5515.pdf, EDL# 5515.

DMS Procurement Workshop

This workshop discusses the nuts and bolts of a successful dynamic message sign (DMS) procurement. Participants will learn to develop methods for incorporating National Transportation Communications for ITS Protocol (NTCIP) standards into their DMS specifications. The workshop gives participants practical, ready-to-use information on a full range of topics related to the procurement of standards-based DMS systems. Target Audience: Public and private sector professionals responsible for specifying and procuring ITS-related equipment and services. Transportation/ITS engineers, project managers, technical team members (specification writers), consultants, contractors, and operators will all benefit from the workshop. Course Length: Two days.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/int_its_deployment/standards_imp/dmswkshp.htm or contact Tom Stout, FHWA Office of Transportation Management, (202) 366-6054, Tom.Stout@dot.gov.

Systems Engineering Points-of-Contact

- Steve Clinger, FHWA Office of Transportation Management, (202) 366-2168, Stephen.Clinger@dot.gov
- Emiliano Lopez, FHWA Office of Transportation Management, (202) 366-2199, Emiliano.Lopez@dot.gov
- Gene McHale, FHWA Office of Research, Development and Technology, (202) 493-3275, Gene.McHale@dot.gov
- Frank Cechini, FHWA Division Office, (916) 498-5005, Frank.Cechini@dot.gov

Systems Engineering Section of the FHWA Office of Operations Website

FHWA's Final Rule and FTA's Policy on ITS Architecture and Standards requires a systems engineering analysis for all ITS projects using Federal funds. This website contains a compilation of resources to help Federal fund recipients conduct the required systems engineering analysis, including training courses and reference publications.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/int_its_deployment/sys_eng.htm.

Systems Engineering for Intelligent Transportation Systems: An Introduction for Transportation Professionals (FHWA-HOP-07-069) (2007)

This guide is an introduction to systems engineering, showing how the systems engineering (SE) process can be applied to planning, designing, and implementing ITS projects. This guide leads the reader, step by step, through the project life cycle and discusses how SE can be applied at each step. The guide explains how to begin implementing the SE approach on new projects and how to incorporate SE more broadly into an organization's business processes and practices. The guide concludes with a list of resources, including ITS-specific publications, general SE references, selected SE standards, and available SE training.

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://www.ops.fhwa.dot.gov/publications/seitsguide/seguide.pdf
- HyperText Markup Language (HTML) format: http://www.ops.fhwa.dot.gov/publications/seitsguide/index.htm

Configuration Management for Transportation Management Systems: Final Report (FHWA-OP-04-013) (2003)

This handbook provides an introduction to configuration management (CM) in a transportation context. The handbook defines configuration management, describes current CM practices, and discusses CM processes and plans. The handbook provides guidance on how to establish a formal CM program and concludes with a list of CM resources and tools. Development of this handbook was sponsored by the Transportation Management Center Pooled-Fund Study (TMC PFS).

Cost: Free

To Access This Resource: Access the following website addresses:

- Adobe Acrobat format: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/uploaded_files/CM%20for%20TMS%20Handbook%20v3.pdf
- HyperText Markup Language (HTML) format: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13885.html, EDL# 13885

Systems Engineering CD-ROM (2002)

This CD-ROM contains three documents that introduce various aspects of systems engineering to transportation professionals. One report provides a general overview of the systems engineering process. A second report explores how to develop functional requirements for ITS projects. A third report introduces the topic of configuration management (CM) and explores how CM can be used in deploying ITS.

Cost: Free

To Access This Resource: To order a copy of the CD-ROM, contact the Operations/ITS HelpLine, (866) 367-7487, itspubs@dot.gov or access the following website addresses:

- Building Quality Intelligent Transportation Systems through Systems Engineering (FHWA-OP-02-046): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13620.html, EDL# 13620
- Developing Functional Requirements for ITS Projects (FHWA-OP-02-047): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13621.html, EDL# 13621
- A Guide to Configuration Management for Intelligent Transportation Systems (FHWA-OP-02-048): http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13622.html, EDL# 13622

Configuration Management in Transportation Management Systems (NCHRP Synthesis# 294) (2001)

This synthesis report defines how configuration management (CM) is currently being developed and used by transportation management personnel. This report addresses the fundamental concepts and principles of CM, the need for CM within transportation management systems, and available CM resources such as documents, standards, websites, and software tools. The report also explores how configuration management is being used within transportation departments, and contains detailed case studies on CM both within and outside of the transportation field.

Cost: $23

To Access This Resource: Contact the Transportation Research Board (TRB) Bookstore at http://www.trb.org/bookstore and search for "SYH294," (202) 334-3213, fax: (202) 334-2519.

Introduction to Systems Engineering for Advanced Transportation (NHI Course# 137024)

This course provides an introduction to systems engineering for ITS project managers and staff, allowing participants to understand the benefits of applying systems engineering approaches to developing quality systems. The course covers both technical practices (modeling, prototyping, trade-off analysis, and testing) and management practices (risk analysis and mitigation). Skill Level: Core learning. Target Audience: Transportation engineers and other information technology (IT) professionals and technical staff at all levels of the public and private sectors, including ITS project managers, technical team members, contractors, and staff. Project managers in particular may benefit from this course. This course is available in classroom, Web-based and blended instructor-led/Web-based versions. Course Length: Two days for the classroom version; 10 hours for the Web-based and blended versions.

Cost: $270 per participant for the classroom version; $200 per participant for the Web-based version; $250 per participant for the blended version.

To Access This Resource:

- For the classroom version, access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137024."
- For the Web-based and blended versions, access the website address http://www.citeconsortium.org/courses/SE101.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Managing High Technology Projects in Transportation (NHI Course# 137026)

The goal of this course is to improve the project management skills of both public and private sector personnel responsible for managing the implementation of technology-intensive transportation projects. The course provides training on the fundamental principles and practices of good project management; the steps to be taken for the planning, design, and implementation of transportation systems projects; the

types of project management tools available; and the basic skills required to be a good project manager. Skill Level: Core learning. Target Audience: Current and prospective project managers from state and local transportation agencies, as well as those in the private sector who support the implementation of advanced transportation projects. Course Length: Two days. This course is available in classroom, Web-based and blended instructor-led/Web-based versions. Course Length: Two days for the classroom version; eight hours for the Web-based and blended versions.

Cost: $270 per participant for the classroom version; $200 per participant for the Web-based version; $250 per participant for the blended version.

To Access This Resource:

- For the classroom version, access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137026."
- For the Web-based and blended versions, access the website address http://www.citeconsortium.org/courses/2mod11.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Configuration Management (CM) for Traffic Management Systems (NHI Course# 137042)

Configuration management (CM) is the practice of handling changes systematically so that a facility maintains its integrity over time. CM involves policies, procedures, techniques, and tools to manage and evaluate proposed project changes, track the status of changes, and maintain an inventory of system and support documents. This course presents issues surrounding CM and recommended practices for agencies to consider in a modular manner. A two-day version of the course presents all 10 modules. The sponsor may select modules to be presented in the one-day version of the course. Target Audience: Any individual involved in the planning, design, implementation, management, operation, or maintenance of transportation systems, including representatives of metropolitan planning organizations, traffic management centers, state and local

governments, FHWA, universities, and consultants. Course Length: Two days.

Cost: $270 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137042."

Advanced Systems Engineering for Advanced Transportation Projects

This Web-based distance-learning course covers a broad set of topics in systems engineering and systems integration. The course provides participants with an appreciation of the principles of systems engineering and its application to ITS projects. In addition, this course introduces participants to techniques of systems integration associated with regional systems. Introduction to Systems Engineering is recommended, but not required, before taking this course. Skill Level: Specialized learning. Target Audience: Transportation engineering and information technology (IT) professionals involved in the implementation of ITS, plus graduate students pursuing a concentration in ITS. A blended Web-based version provides online interaction between participants and instructors. Course Length: 10 hours.

Cost: $200 per participant for the Web-based version; $250 per participant for the blended version.

To Access This Resource: Access the website address http://www.citeconsortium.org/courses/syseng.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Telecommunications Points-of-Contact

- Linda Dodge, ITS Joint Program Office, (202) 366-8034, Linda.Dodge@dot.gov
- Jim Arnold, FHWA Office of Research, Development and Technology, (202) 493-3265, James.A.Arnold@dot.gov
- Paul Olson, FHWA Resource Center, (720) 963-3239, Paul.Olson@dot.gov
- Sebastian Renaud, FTA Office of Mobility Innovation, (202) 366-4991, Sebastian.Renaud@dot.gov
- Laurie Flaherty, NHTSA Office of Emergency Medical Services, (202) 366-2705, Laurie.Flaherty@dot.gov

Telecommunications Section of the ITS Joint Program Office Website

This website is a compilation of resources related to the ITS telecommunications. A memo from FHWA's Executive Director and background discussion paper provide guidance on longitudinal telecommunications installations on limited access highway rights-of-way. A supplemental Notice of Proposed Rule Making (NPRM) on dedicated short-range communication (DSRC) responds to comments filed in the initial NPRM proposing to make a new DSRC specification a requirement for all commercial vehicle operations projects that use Highway Trust Funds. The site also contains frequently asked questions (with answers) on the supplemental NPRM. A white paper discusses how the phenomenal expansion of wireless broadband technology enables consideration of using wireless technology instead of burying cables on transportation rights-of-way. The site contains FHWA's comments on the case that went before the Federal Communications Commission (FCC) on the Minnesota Shared Resources program, plus background material on the Minnesota Department of Transportation's original petition to the FCC. The site also contains several documents concerning the U.S. DOT's petition to the FCC requesting a nationwide three-digit traveler information phone number. (The petition was granted in 2000. The number assigned is 511). The site also lists contacts in the ITS Joint Program Office and related links.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/telecom/index.htm.

Next Generation 9-1-1 Website

The Next Generation 9-1-1 Initiative aims to enable any communications device used nationwide to connect with the 9-1-1 system. The current 9-1-1 system is built on decades-old technology and cannot receive data from the text, data, image and video devices increasingly common in personal communications and critical in many safety and medical applications. This initiative will involve a fundamental reexamination of the technological approach to 9-1-1 used today. This website presents the goal, background, approach, milestones and points-of-contact for the initiative.

Cost: Free

To Access This Resource: Access the website address http://www.its.dot.gov/ng911/index.htm.

Telecommunications Handbook for Transportation Professionals: The Basics of Telecommunications (FHWA-HOP-04-034) (2004)

This handbook provides with basic descriptions of terms and technologies that are commonly used (or considered) in the deployment of freeway management and traffic signal systems, including both voice and data communications. The handbook covers telecommunications fundamentals, the relationship between telecommunications and the National ITS Architecture, a step-by-step process for developing a telecommunications system, field devices, maintenance, warrantees, and construction. The handbook also examines the Internet and cutting-edge technologies. Two case studies from Utah and Texas are provided.

Cost: Free

To Access This Resource: Access the website addresses:

- Adobe Acrobat format: http://ops.fhwa.dot.gov/publications/telecomm_handbook/telecomm_handbook.pdf
- HyperText Markup Language (HTML) format: http://ops.fhwa.dot.gov/publications/telecomm_handbook/index.htm

Broadband Wireless, Integrated Services, and Their Application to Intelligent Transportation Systems (2000)

This paper introduces broadband wireless communications alternatives and describes how they can be used to provide high-speed connections between fixed, transportable, and mobile facilities. This paper also introduces integrated service technologies—devices used to bundle voice, data, and video services for transmission over a single broadband wireless link. This paper discusses how these broadband wireless options, when coupled with integrated service technologies, can be used to provide efficient, cost-effective, and flexible multi-service programming, including ITS applications.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13164.pdf, EDL# 13164.

Communications for Intelligent Transportation Systems—Successful Practices: A Cross-Cutting Study (FHWA-JPO-99-023/FTA-TRI-11-99-02) (2000)

This report is one in a series designed to educate public sector managers about particular ITS technologies. Determining what telecommunications network is best suited for one's needs can be an intimidating task for a state or local department of transportation. Agencies require a telecommunications network that enables them to deliver all their desired

services to the traveling public, both now and in the future. Furthermore, telecommunications infrastructure can be the single most expensive part of an ITS deployment. This report describes experiences from nine states on what processes work best and what factors they considered when making telecommunications decisions.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/11488.pdf, EDL# 11488. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

What Have We Learned about Intelligent Transportation Systems? Chapter 7: What Have We Learned about Cross-Cutting Technical and Programmatic Issues? (2000)

This document is an excerpt from a compendium report that looks back on the 10 years of the National ITS Program to examine which ITS technology applications have been successful, which have not been successful, and what are the underlying factors that determine success versus failure. This section examines cross-cutting technologies for surveillance and communications, as well as programmatic issues, such as planning and analysis tools, archived data, standards, and architecture.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/13323.pdf, EDL# 13323.

DSL for Traffic Video (1999)

This brochure summarizes the results of an assessment of the application of digital subscriber line (DSL or xDSL) technologies to ITS. It provides background on the various types of DSL technologies, describes the concept of xDSL-based traffic video, and explains how a prototype was tested in a laboratory setting and then field-tested in two locations in Northern Virginia. The brochure also contains frequently asked

questions (with answers) on implementation of xDSL-based video, testimonial quotes from city traffic engineers who used the system, a list of reference documents, and a list of contacts.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Flier (FHWA-OP-99-035): http://www.itsdocs.fhwa.dot.gov/jpodocs/pressrel/10443.pdf, EDL# 10443
- Overview (FHWA-OP-99-036): http://www.itsdocs.fhwa.dot.gov/jpodocs/pressrel/10443.pdf, EDL# 10443

The Application of Various Digital Subscriber Line (xDSL) Technologies to ITS (1999)

This series of two reports assesses the application of digital subscriber line (DSL or xDSL) technologies to ITS, particularly their use for traffic video. Traffic Video Laboratory Assessments discusses several types of DSL technologies and describes the concept of xDSL-based traffic video. Traffic Video Field Assessments documents the field testing of an xDSL-based traffic video prototype.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov. For the online version, access the following website addresses:

- Traffic Video Laboratory Assessments: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/9306.pdf, EDL# 9306
- Traffic Video Field Assessments: http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/10103.pdf, EDL# 10103

The Role of Access Policies in Wireline Shared Resource Projects (FHWA-OP-99-037) (1999)

This paper provides background information for evaluating a possible relationship between the geographic extent of broadband telecommunications infrastructure available for general use and the degree and type of control exercised by the public right-of-way (ROW) owner over infrastructure placement in limited access highway ROW. In addition to exploring telecommunications infrastructure with regard to universal service, i.e., geographic coverage of a state, this paper also explores the extent and depth of telecommunications support for public sector activities, focusing on ITS and other transportation activities.

Cost: Free

To Access This Resource: Access the website address http://www.itsdocs.fhwa.dot.gov/jpodocs/repts_te/9907.pdf, EDL# 9907. To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

Telecommunications Resource Guide (FHWA-JPO-97-0019) (1997)

This resource guide compiles, in a three-ring binder format, key materials related to telecommunications for ITS, particularly shared resource agreements. Shared resource agreements involve state departments of transportation (DOTs) allowing the longitudinal installation of telecommunications on freeway rights-of-way in exchange for some form of compensation. The resource guide contains a summary of key issues, a series of FHWA reports, case studies from Maryland and Missouri, guidance from the American Association of State Highway and Transportation Officials (AASHTO), memos from key FHWA directors outlining Federal policy, and a white paper advocating the use of digital subscriber line (DSL) technology. First published in 1997, the resource guide is updated as new material becomes available.

Cost: Free

To Access This Resource: To order a hardcopy, contact the Operations/ITS HelpLine, (866) 367-7487 or itspubs@dot.gov.

ITS Telecommunications Overview (NHI Course# 137005)

This course provides a broad introduction to the fundamentals of wireline and wireless telecommunications systems as they apply to ITS. The course covers key terms and concepts, requirements analysis, use of regional ITS architectures in telecommunications planning, and institutional and organizational issues. Target Audience: Transportation managers and engineers involved in policymaking, procurement, planning, program development and legal aspects of ITS infrastructure deployment. Course Length: Eight hours.

Cost: $200 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137005."

Introduction to Telecommunications Technology

This course introduces ITS telecommunications to those who have little or no previous exposure to the issues surrounding the deployment and use of telecommunications infrastructure. The course introduces participants to the fundamentals of wireline and wireless telecommunications systems and concludes with a brief discussion of the telecommunications technology acquisition process. Skill Level: Core learning. Target Audience: Transportation managers and engineers involved in policymaking, procurement, planning, program development, and legal aspects of ITS infrastructure deployment. A blended Web-based version provides online interaction between participants and instructors. The Web-based version is also available in Spanish. Course Length: Eight hours.

Cost: $175 per participant for the Web-based version; $250 per participant for the blended version.

To Access This Resource: Access the website address http://www.citeconsortium.org/courses/1mod3.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Advanced Telecommunications Technology

This course provides a system-level understanding of the operation of modern broadband transportation communications networks. This course focuses on how to plan and implement telecommunications networks to support major ITS infrastructure. Target Audience: Public sector transportation professionals including Federal engineers, planners, project managers, and field staff and others as appropriate. Transportation professionals from state, regional, and local agencies would also benefit from participation in the course. Course Length: Eight hours. A blended Web-based version provides online interaction between participants and instructors.

Cost: $175 per participant for the Web-based version; $250 per participant for the blended version.

To Access This Resource: Access the website address http://www.citeconsortium.org/courses/2mod8-blended.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Freeway Communication System Infrastructure Workshop

This workshop provides chief engineers, U.S. DOT field office division administrators, and transportation agency executives with a comprehensive analysis of the opportunities and limitations surrounding the deployment of a statewide communication infrastructure to support transportation needs. The workshop explores Federal laws and regulations; accommodation policies of different states; regional, interstate and international coordination; design and construction of long-haul telecommunications systems; stakeholder needs; and negotiation of shared resources. The outcome of this workshop is an executive-level, participant-generated action plan on how to meet the telecommunication needs of participants' organizations and regions. Follow-up support services are also provided on an as-needed basis. Course Length: Two and a half days.

Cost: Free

To Access This Resource: Access the website address http://www.pcb.its.dot.gov/news/2006-10_workshop.asp or contact Ron Giguere, ITS Joint Program Office, (202) 366-2203, Ron.Giguere@dot.gov.

Training Points-of-Contact

- Ron Giguere, ITS Joint Program Office, (202) 366-2203, Ron.Giguere@dot.gov
- John Halkias, FHWA Office of Transportation Management, (202) 366-2183, John.Halkias@dot.gov
- Emiliano Lopez, FHWA Office of Transportation Management, (202) 366-2199, Emiliano.Lopez@dot.gov
- Tom Stout, FHWA Office of Transportation Management, (202) 366-6054, Tom.Stout@dot.gov
- Ben Gribbon, FHWA Office of Safety, (202) 366-1809, Ben.Gribbon@dot.gov
- Michael Baltes, FTA Office of Mobility Innovation, (202) 366-2182, Michael.Baltes@dot.gov
- Jeff Secrist, FMCSA Office of Research and Analysis, (202) 385-2367, Jeff.Secrist@dot.gov
- Carolyn Temperine, FMCSA Eastern Service Center, (518) 431-4239 x270, Carolyn.Temperine@dot.gov
- Bud Cribbs, National Highway Institute, (703) 235-0526, William.Cribbs@dot.gov
- Renee Haider, National Transit Institute, (732) 932-1700, x223, RHaider@nti.rutgers.edu

ITS Professional Capacity Building Section of the ITS Joint Program Office Website

This website is the official site of the U.S. DOT's ITS Professional Capacity Building (PCB) Program and presents a compilation of resources related to training, professional development, formal education, and sources of technical assistance in ITS. The "Training" section contains a list of almost 40 classroom and Web-based courses (both self-guided and instructor-led "blended" courses) that have been endorsed by the PCB Program. The Program also supports three certificate-granting training series. The "Talking Technology and Transportation (T3)" section contains information about these free 90-minute Web-based seminars ("webinars"). This section has a calendar of upcoming T3 seminars and archive of past ones. The "Education" section lists relevant undergraduate and graduate courses offered by colleges and universities in the U.S. In the

"Technical Assistance" section, the ITS Technical Assistance Navigator provides an overview of technical support options in key aspects of ITS deployment and guides users to the resources most appropriate to their preferences and needs. These resources include contact information for Federal subject-area experts and links to other organizations that can offer assistance. In addition, the ITS Peer-to-Peer Program connects people seeking assistance with specific technical issues with state and local experts who are prepared to share their experience. The site also contains a list of contacts and related links.

Cost: Free

To Access This Resource: Access the website address http://www.pcb.its.dot.gov.

Talking Technology and Transportation (T3) Web Seminars

The Talking Technology and Transportation (T3) Web-based seminars ("webinars") are interactive conferences with instruction provided via both telephone and the Internet. Sponsored by the ITS Joint Program Office's Professional Capacity Building Program, these seminars cover a wide range of topics. Topics of recent T3 seminars include improving highway safety with ITS, guidelines for successful ITS procurement, software acquisition for project managers, and transit fare collection standards. Most seminars consist of one hour of presentation by instructors or panelists and a half-hour question and answer period. About 100 to 150 people participate in each seminar. Past seminars are archived on the T3 website, so even people who missed the seminar can review the material presented.

Cost: Free

To Access This Resource: Access the website address http://www.pcb.its.dot.gov/res_t3.asp to view a calendar of upcoming seminars and archives of past ones.

ITS Awareness Seminar (NHI Course# 137001)

This course provides an overall understanding of intelligent transportation systems (ITS) and ITS infrastructure. The course illustrates ITS infrastructure components by showcasing those systems that are deployed around the country. Institutional and technical issues in deployment of ITS infrastructure are also presented. Topics covered include planning, design, architecture, standards, procurement, installation and construction, operation and maintenance, and funding. Skill Level: Awareness learning. Target Audience: Transportation professionals who are currently not generally involved in ITS, but expect to be involved in ITS planning, implementation, operations, or maintenance. This course is available in both classroom and Web-based versions. Course Length: One day for the classroom version; four hours for the Web-based version.

Cost: $200 per participant for the classroom version; $50 per participant for the Web-based version.

To Access This Resource:

- For the classroom version, access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137001."
- For the Web-based version, access the website address http://www.citeconsortium.org/courses/itsawareness.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Deploying Integrated ITS—Metropolitan (NHI Course# 137002)

This course supports integrated ITS infrastructure deployment with consideration of the National ITS Architecture. The regional context in which the public components of ITS infrastructure will be implemented and integrated is emphasized. The course combines the technical and institutional components of deployment. The importance of each component is discussed and placed in the context of regional decisions that must be made by state and local agencies. Skill Level: Core learning. Target Audience: Transportation program managers who are currently

involved in ITS or expect to be involved in ITS planning, implementation, operations, or maintenance. Course Length: Two days.

Cost: $270 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137002."

ITS Telecommunications Overview (NHI Course# 137005)

This course provides a broad introduction to the fundamentals of wireline and wireless telecommunications systems as they apply to ITS. The course covers key terms and concepts, requirements analysis, use of regional ITS architectures in telecommunications planning, and institutional and organizational issues. Target Audience: Transportation managers and engineers involved in policymaking, procurement, planning, program development and legal aspects of ITS infrastructure deployment. Course Length: Eight hours.

Cost: $200 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137005."

Rural ITS Toolbox (NHI Course# 137007)

This course describes many ITS-related practices and techniques that have been applied successfully to rural transportation problems, which are described in the Rural ITS Toolbox document. The training course goes into further detail by including problem solving techniques and training for the course participant to describe ITS technologies to their stakeholders. This course will help participants identify cost-effective ITS technologies that can address rural transportation problems. Skill Level: Core learning. Target Audience: County, municipal, and town executives; traffic engineers; state, Federal, and local transportation planners and operations personnel; motor carrier managers; environmental groups; information technology (IT) personnel; academia; consultants; and contractors. Course Length: Eight hours.

Cost: $200 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137007."

Deploying the National Intelligent Transportation System (ITS) Architecture (NHI Course# 137013)

The objective of this course is to demonstrate in an interactive workshop format how to apply tools and methodologies developed by the National ITS Architecture Team for the U.S. DOT. Topics covered include transportation services, subsystems and terminators, information flows, market packages, ITS standards, developing an ITS architecture, logical architecture, using an architecture for project deployment, user service requirements and the theory of operations, and the FHWA's Final Rule and FTA's Policy on ITS Architecture and Standards. Skill Level: Core learning. Target Audience: This course is primarily for a public sector audience involved in ITS planning, deployment, and operations; systems integrators from the private sector would also benefit. Course Length: Two days.

Cost: $270 per participant. The course fee includes a copy of the National ITS Architecture Version 5.0 on CD-ROM.

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137013."

Introduction to the National ITS Architecture (NHI Course# 137015)

This Web-based distance learning course provides students with a broad overview of the National ITS Architecture and the role it plays in planning, designing, and implementing ITS. The course provides background (what the National ITS Architecture is, how it is defined, why it was established, and its goals and objectives) and introduces the concept of ITS user services. Basic concepts and models of systems engineering are addressed, as well as the physical architecture through examples of local implementations of the National ITS Architecture. Specific elements of the physical architecture,

such as subsystems and terminators, are presented in detail. Skill Level: Awareness learning. Target Audience: Transportation professionals wanting to enhance their knowledge of and skills for using the National ITS Architecture. Course Length: Eight hours.

Cost: $75

To Access This Resource: Access the website address http://www.citeconsortium.org/courses/initsa.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

ITS Software Acquisition (NHI Course# 137019)

This course provides a general understanding of the many issues involved in the development, management, and deployment of ITS software. Topics covered include the challenges software projects present and how to overcome them, the guiding principles to use for acquiring software successfully, and selection of an appropriate contracting mechanism. Skill Level: Core learning. Target Audience: State and local personnel, such as project leaders, who will be involved in ITS projects that have a significant software component to them. FHWA Resource Center and Division office personnel who are involved in coordinating these projects would also benefit. Course Length: Two days.

Cost: $270 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137019."

Intelligent Transportation System (ITS) Procurement (NHI Course# 137020)

This seminar is intended to heighten awareness of the challenges in procuring ITS within the traditional construction project environment. This seminar combines lectures with presentations of case studies to describe the lessons learned from past ITS projects, and explain how best practices can be instituted to help ensure successful ITS procurement. This seminar is a companion to, but not a prerequisite to,

ITS Software Acquisition. Skill Level: Core learning. Target Audience: Federal, state, and local transportation professionals directly involved in procuring ITS systems, especially those responsible for developing and reviewing statements-of-work for ITS procurement, including program managers, contracting officers, and attorneys. Course Length: One day.

Cost: $200 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137020."

CORSIM Traffic Simulation Model Training (NHI Course# 137022)

This seminar provides an understanding of CORidor SIMulation (CORSIM), a tool that simulates traffic and traffic control conditions on combined surface street and freeway networks. CORSIM determines how traffic engineering and control strategies impact a prescribed network's operational performance, as expressed in terms of various measures of effectiveness (MOEs). The MOEs, such as speed and delay, provide insights into the effects of the applied strategy on traffic operations and provide the basis for optimizing the applied strategy. Skill Level: Specialized learning. Target Audience: Traffic engineering technical staff from Federal, state, and local agencies. Course Length: Three days.

Cost: $400 per participant. The sponsoring organization is responsible for providing 200 Mhz microcomputers with Windows 95 or Windows NT or better, color monitors, and a hard disk with 50 MB free storage memory.

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137022."

Introduction to Systems Engineering for Advanced Transportation (NHI Course# 137024)

This course provides an introduction to systems engineering for ITS project managers and staff, allowing participants to understand the benefits of applying systems engineering

approaches to developing quality systems. The course covers both technical practices (modeling, prototyping, trade-off analysis, and testing) and management practices (risk analysis and mitigation). Skill Level: Core learning. Target Audience: Transportation engineers and other information technology (IT) professionals and technical staff at all levels of the public and private sectors, including ITS project managers, technical team members, contractors, and staff. Project managers in particular may benefit from this course. This course is available in classroom, Web-based and blended instructor-led/Web-based versions. Course Length: Two days for the classroom version; 10 hours for the Web-based and blended versions.

Cost: $270 per participant for the classroom version; $200 per participant for the Web-based version; $250 per participant for the blended version.

To Access This Resource:

- For the classroom version, access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137024."
- For the Web-based and blended versions, access the website address http://www.citeconsortium.org/courses/SE101.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Managing High Technology Projects in Transportation (NHI Course# 137026)

The goal of this course is to improve the project management skills of both public and private sector personnel responsible for managing the implementation of technology-intensive transportation projects. The course provides training on the fundamental principles and practices of good project management; the steps to be taken for the planning, design, and implementation of transportation systems projects; the types of project management tools available; and the basic skills required to be a good project manager. Skill Level: Core learning. Target Audience: Current and prospective project managers from state and local transportation agencies, as well as those in the private sector who support the implementation of advanced transportation projects. Course Length: Two days. This course is available in classroom, Web-based and blended

instructor-led/Web-based versions. Course Length: Two days for the classroom version; eight hours for the Web-based and blended versions.

Cost: $270 per participant for the classroom version; $200 per participant for the Web-based version; $250 per participant for the blended version.

To Access This Resource:

- For the classroom version, access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137026."
- For the Web-based and blended versions, access the website address http://www.citeconsortium.org/courses/2mod11.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Turbo Architecture Software Training (NHI Course# 137029A)

This course provides training on how to use Turbo Architecture, which is a software tool for regional and project-specific architecture development. Target Audience: Public sector transportation professionals at the state, county, city, and metropolitan planning organization (MPO) levels, as well as private sector consultants, who are developing regional and project architectures. Skill Level: Specialized training. Course Length: Two days.

Cost: $270. The sponsoring organization is responsible for providing 400 Mhz microcomputers running Windows SE or better, color monitors, and a hard disk with 50 MB free storage memory.

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137029A."

Principles and Tools for Road Weather Management (NHI Course# 137030)

This course helps those involved in highway maintenance and operations develop techniques and strategies for tackling road weather problems. This course provides basic knowledge

of meteorology and addresses the technological resources available to support highway personnel in making effective road weather management decisions. Key topics covered in the course include the impacts of weather on highway operations, fundamentals of meteorology including how it pertains to Road Weather Information Systems (RWIS), technical and institutional resources available for implementing RWIS and a range of effective and open solutions to various types of road weather conditions and for various management practices. The course focuses heavily on resources and solutions, and how those solutions can reduce the impact of adverse weather on the traveling public and the highway agency. Target Audience: Transportation engineers, planners, managers, public works personnel, safety engineers, systems engineers, operators, maintenance personnel and emergency personnel. Course Length: One Day

Cost: $200 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137030."

Configuration Management (CM) for Traffic Management Systems (NHI Course# 137042)

Configuration management (CM) is the practice of handling changes systematically so that a facility maintains its integrity over time. CM involves policies, procedures, techniques, and tools to manage and evaluate proposed project changes, track the status of changes, and maintain an inventory of system and support documents. This course presents issues surrounding CM and recommended practices for agencies to consider in a modular manner. A two-day version of the course presents all 10 modules. The sponsor may select modules to be presented in the one-day version of the course. Target Audience: Any individual involved in the planning, design, implementation, management, operation, or maintenance of transportation systems, including representatives of metropolitan planning organizations, traffic management centers, state and local governments, FHWA, universities, and consultants. Course Length: Two days.

Cost: $270 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137042."

Integrated Transportation Management for Small- and Medium-Sized Communities (NHI Course# 137043)

This course introduces the use of Advanced Transportation Management Systems (ATMS) and Advanced Traveler Information Systems (ATIS) when deployed in small and medium-sized communities. This course provides participants with the basic knowledge and resources needed to begin the process of planning for ATMS and ATIS in small and medium sized communities. Target Audience: Transportation professionals involved in the planning, design, implementation, and operation of ITS in small and medium sized communities. Course Length: One day.

Cost: $200 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137043."

Improving Highway Safety with Intelligent Transportation Systems (ITS) (NHI Course# 137044)

The goal of this course is to increase awareness of the highway safety benefits offered by ITS technologies. Highway safety benefits may be experienced at the highway system, mainstream (highway improvement project) and stand-alone project level. The course surveys the participants on their experiences deploying ITS for highway safety improvements and reviews procedures and requirements of safety strategic planning and the ITS deployment process. Ideally, participants will comprise a 50/50 split between safety and ITS personnel so that experiences, expectations and contributions will be shared. This course is available in both classroom and Web-based versions. Target Audience: Both ITS and safety professionals. Course Length: Two days.

Cost: $270 per participant for the classroom version; $175 per participant for the Web-based version; $250 per participant for the blended version

To Access This Resource:

- For the classroom version, access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "137044."
- For the Web-based version, access the website address http://www.citeconsortium.org/courses/HighwaySafety-blended.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Computerized Traffic Signal Systems (NHI Course# 133010)

This course presents current technology and control options available for computerized traffic control, including microcomputer applications. It covers the technical issues of a computerized traffic control system and steps necessary to develop and manage a system. These steps begin with problem identification; followed by a feasibility study, control system design, installation, maintenance, and finally operation and system evaluation. The course will not assume any prior knowledge of computers. Skill Level: Specialized learning. Target Audience: Traffic engineering personnel from Federal, state, and local agencies involved in the technical aspects of traffic engineering. Course Length: Three days.

Cost: $400 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133010."

Traffic Signal Design and Operation (NHI Course# 133028)

This course addresses the application of the *Manual on Uniform Traffic Control Devices (MUTCD)* to intersection displays, as well as signal timing, computerized traffic signal systems, control strategies, integrated systems, traffic control simulation, and optimization software. Upon completion

of this course, participants will gain an understanding of the congestion and delays that exist on streets and roadways, and how these delays can be managed through effective traffic signal timing and optimization. The course is divided into three parts: Traffic Signal Design, Traffic Signal Systems, and Traffic Software. Skill Level: Specialized learning. Target Audience: Federal, state, and local traffic engineers involved in the design, review, and inspection of traffic control projects.
Course Length: Two days.

Cost: $270 per participant. The course fee includes a copy of the *Manual of Traffic Signal Design, Second Edition.*

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133028."

Managing Traffic Incident and Roadway Emergencies (NHI Course# 133048 or 133048A)

This course addresses the concepts and techniques of traffic incident management. The course focuses on the safety and operational efficiency of responding agencies and the institutional and administrative barriers that hinder interagency cooperation. Course modules cover the main groupings of topics: on-scene traffic incident management operations, multi-agency communications, and program management. Skill Level: Core learning. Target Audience: This course is designed for a multi-agency, multidisciplinary audience of mid- and upper-level managers from transportation, law enforcement, fire and rescue, emergency medical, emergency communications, and other agencies that respond to traffic incidents. In addition, the target audience also includes private sector responders from towing and recovery companies, hazardous materials contractors, and traffic reporting media. Course Length: One or two days.

Cost: $4,500 or $6900 per session (between $128 and $345 per participant depending on the number of participants and course length).

To Access This Resource: Contact the NHI Training Team, (703) 235-0534, nhitraining@fhwa.dot.gov or access the website addresses:

- One-day course: http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133048"
- Two-day course: http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133048A"

Freeway Management and Operations (NHI Course# 133075 or 133075A)

This course provides participants with an appreciation and understanding of the key policies, institutional issues, challenges and barriers, technical, and other issues to consider in the planning, design, implementation, management, operation, evaluation, and marketing of freeway facilities. The key topics covered include introduction to freeway management and operations, freeway management as a component of traffic operations programs, performance monitoring and evaluation, roadway and operational improvements, ramp management and control, lane management and control, high-occupancy vehicle (HOV) systems, traffic incident management, planned special events, information dissemination, transportation management centers, information sharing and integration, detection and surveillance, and communication media. This course addresses basic traffic flow theory for freeways and evaluation of freeway operations during project development and design. In addition, this course provides information on freeway traffic control systems, traffic management centers, and operations analysis procedures for freeways. Skill Level: Specialized learning. Target Audience: Federal, state, and local transportation professionals involved in planning, design, and implementation of freeway traffic operational improvements. Course Length: Two or three days.

Cost: $270 per participant for the two-day course; $400 per participant for the three-day course.

To Access This Resource: Access the following website addresses:

- Two-day course: http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133075"
- Three-day course: http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133075A"

Access Management, Location and Design (NHI# 133078)

This course presents the fundamentals of access management (AM) along highways and arterial streets. Topics covered in this course include the benefits of AM, AM practices and policies from various states and jurisdictions, warrants, design guidelines for the application of AM, retrofit programs, and evaluation of AM's impact on safety and operations. Target Audience: Engineers and planners at the Federal, state and local levels who expect to be involved in decisions about access to new or existing sites. Course Legnth: Three days.

Cost: $400 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133078."

Advancing Transportation Systems Management and Operations (NHI Course# 133098)

This course provides an understanding of Transportation Systems Management and Operations (TSM&O) in a regional context. The transportation challenges of the 21st century require a significant cultural shift in the way transportation systems are managed and operated. This means moving from limited interactions between planners and operators to a solid linkage that facilitates data sharing, joint development of regional operations opportunities, resource sharing, and supportive institutional arrangements. From an operations perspective, this cultural shift requires anticipating user needs 24/7, focusing on customers, and changing policies

and procedures to be performance-based. To be successful, the new norm requires a cross-jurisdictional, multi-agency, and multimodal perspective. From a planning standpoint, this cultural shift means bringing "operations thinking" into the planning process. Smart planning requires that ongoing operations be considered in regional planning and investment decisions. This course explores 21st century transportation challenges and how to advance TSM&O through a cultural shift in operations and planning. Target Audience: Transportation managers, service providers, public safety officials, public works directors, and business sector members of chambers of commerce. Operators and planners from states, cities, counties and metropolitan planning organizations (MPOs) also benefit from this course. Course Length: One day.

Cost: $200 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133098."

Managing Travel for Planned Special Events (NHI Course# 133099 or 133099A)

This course provides participants with the ability to identify and discuss the key phases, institutional issues, challenges, techniques, and other issues to consider in coordinating, planning, managing, and controlling traffic for planned special events. The following key topics are covered in the course: planned special events overview, pre-event planning and coordination, traffic management plan and travel demand management initiatives, implementation activities, day-of-event activities, and post-event activities. Participants will be able to apply the recommended concepts and techniques with all five key phases involved with managing travel for a planned special event: (1) program planning, (2) event operations planning, (3) implementation activities, (4) day-of-event activities, and (5) post-event activities. The course will refer to FHWA's *Managing Travel for Planned Special Events Handbook*. The course will guide participants on how to apply key concepts contained in the handbook. Target Audience: The target audience includes transportation managers, service providers, public safety officials, public works directors, and

business sector members of chambers of commerce. Operators and planners from states, cities, counties and metropolitan planning organizations (MPOs) would also benefit from this course. Course Length: One or two days. The two-day version includes scenario-based exercises in a workshop format.

Cost: $200 per participant for the one-day course; $270 per participant for the two-day course.

To Access This Resource: Access the following website addresses:

- One-day course: http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "133099A"
- Two-day course: http://www.nhi.fhwa.dot.gov/training brows_catalog.aspx and search for course number "133099"

Railroad-Highway Grade Crossing Improvement Program (NHI# 380005)

This course presents a broad overview of various options for improving highway-rail intersections, also called railroad grade crossings. The course covers historical background, definition of grade crossing components, collection and maintenance of data, assessment of crossing safety and operations, identification and selection of improvement alternatives, program and project development and implementation, maintenance, private crossings, and the Operation Lifesaver program. The workshop format enables participants to apply the material in a series of exercises. Target Audience: Representatives of Federal, state, and local transportation agencies responsible for the design, construction and maintenance of highway-rail intersections. Also, state and local traffic engineers responsible for highway-railroad grade crossing safety. Course Length: Two days.

Cost: $270 per participant

To Access This Resource: Access the website address http://www.nhi.fhwa.dot.gov/training/brows_catalog.aspx and search for course number "380005."

Introduction to Telecommunications Technology

This course introduces ITS telecommunications to those who have little or no previous exposure to the issues surrounding the deployment and use of telecommunications infrastructure. The course introduces participants to the fundamentals of wireline and wireless telecommunications systems and concludes with a brief discussion of the telecommunications technology acquisition process. Skill Level: Core learning. Target Audience: Transportation managers and engineers involved in policymaking, procurement, planning, program development, and legal aspects of ITS infrastructure deployment. A blended Web-based version provides online interaction between participants and instructors. The Web-based version is also available in Spanish. Course Length: Eight hours.

Cost: $175 per participant for the Web-based version; $250 per participant for the blended version.

To Access This Resource: Access the website address http://www.citeconsortium.org/courses/1mod3.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Advanced Telecommunications Technology

This course provides a system-level understanding of the operation of modern broadband transportation communications networks. This course focuses on how to plan and implement telecommunications networks to support major ITS infrastructure. Target Audience: Public sector transportation professionals including Federal engineers, planners, project managers, and field staff and others as appropriate. Transportation professionals from state, regional, and local agencies would also benefit from participation in the course. Course Length: Eight hours. A blended Web-based version provides online interaction between participants and instructors.

Cost: $175 per participant for the Web-based version; $250 per participant for the blended version.

To Access This Resource: Access the website address http://www.citeconsortium.org/courses/2mod8-blended.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Advanced Systems Engineering for Advanced Transportation Projects

This Web-based distance-learning course covers a broad set of topics in systems engineering and systems integration. The course provides participants with an appreciation of the principles of systems engineering and its application to ITS projects. In addition, this course introduces participants to techniques of systems integration associated with regional systems. Introduction to Systems Engineering is recommended, but not required, before taking this course. Skill Level: Specialized learning. Target Audience: Transportation engineering and information technology (IT) professionals involved in the implementation of ITS, plus graduate students pursuing a concentration in ITS. A blended Web-based version provides online interaction between participants and instructors. Course Length: 10 hours.

Cost: $200 per participant for the Web-based version; $250 per participant for the blended version.

To Access This Resource: Access the website address http://www.citeconsortium.org/courses/syseng.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

Roles of the Public & Private Sectors in ITS: Cooperative Partnerships

This course examines some of the critical success factors of cooperative partnerships and offers a suggested approach to partnering. The course presents important issues (legal, regulatory, procurement, public policy, etc.) associated with the establishment of partnerships. In addition, the course provides real-life examples of both successful and unsuccessful attempts at partnerships in the area of ITS. Target Audience:

Public sector transportation professionals including Federal engineers, planners, project managers, and field staff and others as appropriate. Transportation professionals from state, regional, and local agencies would also benefit from participation in the course. Course Length: Eight hours. A blended Web-based version provides online interaction between participants and instructors.

Cost: $150 per participant

To Access This Resource: Access the website address http://www.citeconsortium.org/courses/2mod12-blended.html or contact Kathleen Frankle, Consortium of ITS Training and Education (CITE), (410) 414-2925, KFrankle@umd.edu.

ITS for Transit: Applications, Costs and Benefits

This course presents case studies with examples of the costs and benefits experienced by transit agencies that have implemented ITS technologies. The course provides an overview of the range of capabilities of ITS technologies for transit and a methodology for determining their value to an organization. In the course, participants will review common transit problems and the potential solutions offered by ITS technologies and learn how to apply cost-benefit analysis methodologies using real-life applications. Target Audience: Managers, service planners, senior operational, maintenance and fleet management staff, and senior customer relations and security staff. Course Length: Two days.

Cost: Free for Federal, state, and local government employees; $300 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfo.asp?CourseNumber=ID005 or contact Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

Rural ITS

The purpose of this course is to provide transit, and health and human service agencies with an overview of ITS as well as the costs and benefits of applying ITS to transit operations. This course emphasizes the use of technologies to improve

operations, customer service, maintenance and management for agencies with small fleets, agencies that operate over wide geographic areas and agencies that have challenges in coordinating their services with other transportation providers. Providing transit agencies with this information is crucial as agencies search for cost-effective and innovative ways to provide better service and administer services more efficiently. Agencies armed with this knowledge can successfully determine whether the deployment of new technologies is needed and can then pursue the procurement and deployment. Target Audience: Agency managers, lead maintenance staff, customer service staff and others interested in learning about useful technologies. Course Length: One day.

Cost: Free for Federal, state, and local government employees; $150 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfo.asp?CourseNumber=ID035 or contact Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

Managing Information for Success

This course emphasizes the importance of efficient handling of data and information to transit operations. Modern operations using transit ITS technologies generate a large amount of data that can be not only used within the agency but also shared with other partners in an integrated system. The course outlines the benefits of having trained staff make full use of the information available and having means to efficiently process and archive this information. Course Length: One day.

Cost: Free for Federal, state, and local government employees; $150 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfo.asp?CourseNumber=ID027 or contact Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

Intelligent Transportation Staffing

Human resources are the key to a successful deployment of ITS in a transit agency. It is important that organizations have people in place that know how to create disparate parts of an organization into a team, set realistic goals, implement and use the technology, interpret the data, and derive the optimum benefits from the system. These staffing needs transcend all departments. How does an agency that is planning an ITS deployment ensure that its organization is appropriately staffed to ensure a successful and profitable implementation? This course will address these questions and provide participants with a toolkit to recruit, interview, hire, train and retain employees who are critical to an ITS purchase and deployment. Target Audience: Transit managers, human resource personnel, employees assigned to an ITS project who need additional personnel, consultants, decision-makers, project management managers, and staff of agencies participating in regional ITS projects. State departments of transportation, metropolitan planning organizations (MPOs), and county and municipal government staff would also benefit from this course. Course Length: Two days.

Cost: Free for Federal, state, and local government employees; $300 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfo.asp?CourseNumber=ID050 or contact Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

Flexible Community Transit Services: Planning, Design, and Technology

Transit operators increasingly need to serve markets for which conventional bus and rail modes can be too expensive, inefficient, or inflexible. Many operators are finding that flexible services such as route deviation have an important role to play in serving low-density areas, dispersed trip patterns, and travel by seniors and people with disabilities. This course presents the wide variety of innovative services now in use at transit systems in North America and Europe and examines and how ITS technologies can help implement flexible services. Other topics covered in the course include current efforts in Europe

to use technology to create better flexible transit services, coordination of conventional transit service and paratransit to reduce the cost of compliance with the Americans with Disabilities Act of 1990 (ADA), the benefits of technology as applied to flexible services, and the use of market research and performance data to determine where flexible services are appropriate. The course will also explore implementation issues, such as contracting, community relations, and technology procurement. Target Audience: Transit and paratransit managers, service planners, transportation planners from metropolitan planning organizations, social service agencies, and others concerned with effective and efficient service delivery. Course Length: Two days.

Cost: Free for Federal, state, and local government employees; $300 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfo.asp?CourseNumber=ID008 or contact Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

System Security Awareness and Security Incident Management

This series of four courses is designed to help transit systems better handle a potential terrorist incident as well as improve their security and reduce crime on their properties. Participants will learn how to improve their innate common sense abilities to observe, determine, and report people and things that are suspicious or out of place. Separate courses are available for employees of commuter railroads, passenger vessels, transit and transportation agencies. The course emphasizes prioritizing actions that must be taken at the scene of a threat or incident. Target Audience: Frontline employees and supervisors who have direct contact with the public for the vehicles and facilities used by the public. A train-the-trainer option for all four courses is available. Course Length: Three to four hours for the regular version; five to six hours for the train-the-trainer version.

Cost: Free

To Access This Resource: Access the following website addresses:

- System Security Awareness for Commuter Railroad Employees: http://www.ntionline.com/CourseInfo,asp?CourseNumber=SA001a
- System Security Awareness for Passenger Vessel Employees: http://www.ntionline.com/CourseInfo.asp?CourseNumber=SA001
- System Security Awareness for Transit Employees: http://www.ntionline.com/CourseInfo.asp?CourseNumber=WP028i
- System Security Awareness for Transportation Employees: http://www.ntionline.com/CourseInfo.asp?CourseNumber=SA005
- Alternatively, contact Coleen Meyer, National Transit Institute, (732) 932-1700 x231, CMeyer@rutgers.edu. Agencies can request that the course be customized for employees. To download the request form, access the website address http://www.ntionline.com/documents/CFRWEB.pdf.

Complying with the Federal Transit Administration's Policy on ITS Architecture Consistency and Its Impact on Project Planning and Implementation

In 2001, the Federal Transit Administration published its *National ITS Architecture Policy on Transit Projects* to meet the requirement in Section 5206(s) of the Transportation Equity Act for the 21st Century (TEA-21). This policy requires that ITS projects conform to the National ITS Architecture and related standards. This policy applies to all ITS projects that are funded in whole or in part with the Highway Trust Fund, including the mass transit account. Additionally, FTA encourages the coordination of local ITS strategies and projects to help meet national and local goals. This course focuses on providing transportation agencies and Federal field staff with an understanding of the policy, the intent behind the policy, the

impact of transit ITS planning and development, practical benefits of conformity, and guidelines for meeting policy requirements. Course Length: One day.

Cost: Free for Federal, state, and local government employees; $150 for contractors and consultants.

To Access This Resource: Access the website address http://www.ntionline.com/CourseInfo.asp?CourseNumber=ID019 or Myrna Sirleaf, National Transit Institute, (723) 932-1700 x228, MSirleaf@nti.rutgers.edu.

Introduction to ITS/CVO and CVISN (CVISN 101)

This Web-based course provides an introduction to the ITS/CVO program and the Commercial Vehicle Information Systems and Networks (CVISN) initiative. The course includes a short discussion of some of the problems currently existing in CVO, and an overview of the four main areas of the ITS/CVO program: Safety Assurance, Credentials Administration, Electronic Screening, and Carrier Operations. The concepts underlying current and future strategies are described for each of these areas, as well as the technologies used to carry them out. The discussion of CVISN focuses on the Level 1 capabilities (Safety Information Exchange, Electronic Credentialing and Electronic Screening) and the deployment process developed for their implementation. Target Audience: Public sector transportation professionals including Federal engineers, planners, project managers, and field staff and others as appropriate. Transportation professionals from state, regional, and local agencies would also benefit from participation in the course. A blended Web-based version provides online interaction between participants and instructors. Course Length: Six hours.

Cost: $175 per participant for the Web-based version; $150 per participant for the blended version.

To Access This Resource:

- Access the website address http://www.citeconsortium.org/courses/2mod3.html.
- Contact Jeff Secrist, FMCSA Office of Research and Analysis, (202) 385-2367, Jeff.Secrist@dot.gov or Carolyn Temperine, FMCSA Eastern Service Center, (518) 431-4239 x270, Carolyn.Temperine@dot.gov.

Advanced CVISN (CVISN 102)

This comprehensive course builds on the knowledge gained in CVISN 101 by delving into the specifics of the Commercial Vehicle Information Systems and Networks (CVISN) initiative. In this course, students will explore effective outreach strategies for securing ongoing support and buy-in to CVISN and learn how to meet funding challenges throughout the CVISN life cycle. Students will investigate CVISN's primary objective—to develop and deploy information systems that support exciting new capabilities in Safety Information Exchange, Credentials Administration, and Electronic Screening. In addition, the course presents a variety of best practices related to CVISN issues in states. Target Audience: Public sector transportation professionals including Federal engineers, planners, project managers, and field staff and others as appropriate. Transportation professionals from state, regional, and local agencies would also benefit from participation in the course. A blended Web-based version provides online interaction between participants and instructors. Course Length: Eight to 10 hours.

Cost: $175 per participant for the Web-based version; $150 per participant for the blended version.

To Access This Resource:

- Access the website address http://www.citeconsortium.org/courses/CVISN102.html.
- Contact Jeff Secrist, FMCSA Office of Research and Analysis, (202) 385-2367, Jeff.Secrist@dot.gov or Carolyn Temperine, FMCSA Eastern Service Center, (518) 431-4239 x270, Carolyn.Temperine@dot.gov.

DMS Procurement Workshop

This workshop discusses the nuts and bolts of a successful dynamic message sign (DMS) procurement. Participants will learn to develop methods for incorporating National Transportation Communications for ITS Protocol (NTCIP) standards into their DMS specifications. The workshop gives participants practical, ready-to-use information on a full range of topics related to the procurement of standards-based DMS systems. Target Audience: Public and private sector professionals responsible for specifying and procuring ITS-related equipment and services. Transportation/ITS engineers, project managers, technical team members (specification writers), consultants, contractors, and operators will all benefit from the workshop. Course Length: Two days.

Cost: Free

To Access This Resource: Access the website address http://www.ops.fhwa.dot.gov/int_its_deployment/standards_imp/dmswkshp.htm or contact Tom Stout, FHWA Office of Transportation Management, (202) 366-6054, Tom.Stout@dot.gov.

Freeway Communication System Infrastructure Workshop

This workshop provides chief engineers, U.S. DOT field office division administrators, and transportation agency executives with a comprehensive analysis of the opportunities and limitations surrounding the deployment of a statewide communication infrastructure to support transportation needs. The workshop explores Federal laws and regulations; accommodation policies of different states; regional, interstate and international coordination; design and construction of long-haul telecommunications systems; stakeholder needs; and negotiation of shared resources. The outcome of this workshop is an executive-level, participant-generated action plan on how to meet the telecommunication needs of participants' organizations and regions. Follow-up support services are also provided on an as-needed basis. Course Length: Two and a half days.

Cost: Free

To Access This Resource: Access the website address http://www.pcb.its.dot.gov/news/2006-10_workshop.asp or contact Ron Giguere, ITS Joint Program Office, (202) 366-2203, Ron.Giguere@dot.gov.

ITS Architecture Use and Maintenance Workshop

This two-day workshop will help participants understand how a regional ITS architecture can be used in regional and statewide transportation planning and project deployment. Participants will gain insight into the decisions and process steps involved in maintaining a regional ITS architecture. Workshops will be customized for individual regions, which a single workshop involving all stakeholders from a given region. This interactive workshop will be facilitated by the National ITS Architecture Team using lectures, discussions and group exercises. Exercises will guide participants on how to use their own region's ITS architecture to support long-range transportation planning, identify ITS projects, support programming and budgeting of these projects, support systems engineering, support project implementation, and maintain the architecture, i.e., keeping it relevant to changing circumstances.

Cost: Free. Host organizations must pay certain logistical expenses, such as catering and room rental.

To Access This Resource: Contact the ITS Specialist at the FHWA Division Office in your state. Contact information or these individuals can be found online at http://www.ops.fhwa.dot.gov/int_its_deployment/its_specialists/fhwa_office.htm.

Regional ITS Architecture Development Process Seminar

This one-day seminar will equip ITS professionals with the information needed to develop their own regional ITS architecture. The seminar will focus on the six-step process described in the document *Regional ITS Architecture Guidance: Developing, Using and Maintaining an ITS Architecture for Your*

Region, Version 2.0. The seminar will address both technical and institutional issues often encountered during the regional ITS architecture development process.

Cost: Free. Host organizations must pay certain logistical expenses, such as catering and room rental.

To Access This Resource: Contact the ITS Specialist at the FHWA Division Office in your state. Contact information for these individuals can be found online at http://www.ops.fhwa.dot.gov/int_its_deployment/its_specialists/fhwa_office.htm.

Regional ITS Architecture Development Process Workshop

This two-day workshop will equip ITS professionals with the tools to develop their own regional ITS architecture by helping them prepare a customized action plan to guide them through the process. The discussions will address both technical and institutional issues that stakeholders may encounter during the regional ITS architecture development process. The workshop is conducted in roundtable format, with extensive discussions of situations specific to the participants' own particular region. Participants are expected to be knowledgeable about the National ITS Architecture, as well as their region's transportation planning process. Participants will leave the workshop with a customized action plan, which they can then use as a roadmap to develop their own regional ITS architecture. A single workshop can accommodate from one to four regions, with ITS architecture champions and key stakeholders attending.

Cost: Free. Host organizations must pay certain logistical expenses, such as catering and room rental.

To Access This Resource: Contact the ITS Specialist at the FHWA Division Office in your state. Contact information for these individuals can be found online at http://www.ops.fhwa.dot.gov/int_its_deployment/its_specialists/fhwa_office.htm.

Related Websites

- Federal Highway Administration (FHWA) http://www.fhwa.dot.gov
- FHWA Office of Safety http://safety.fhwa.dot.gov
- FHWA Turner Fairbank Highway Research Center (TFHRC) http://www.tfhrc.gov
- Federal Motor Carrier Safety Administration (FMCSA) http://www.fmcsa.dot.gov
- Federal Railroad Administration (FRA) http://www.fra.dot.gov
- Federal Transit Administration (FTA) http://www.fta.dot.gov
- Maritime Administration (MARAD) http://www.marad.dot.gov
- National Highway Traffic Safety Administration (NHTSA) http://www.nhtsa.dot.gov
- Research and Innovative Technology Administration http://www.rita.dot.gov

U.S. Department
of Transportation

**Research and Innovative
Technology Administration**

**To access this document electronically, visit the website
http://www.resourceguide.its.dot.gov.**

FHWA-JPO-07-17 **EDL#14353**