Tracking the Deployment of the Integrated Metropolitan ITS Infrastructure in Detroit, Ann Arbor

FY99 Results

For additional information, please contact:

Joseph I. Peters, Ph.D.
ITS Program Assessment Coordinator
ITS Joint Program Office, Room 3416
400 Seventh St., S.W.
Washington, D.C. 20590
(202) 366-2202
FAX: (202) 493-2027
E-mail: joe.peters@fhwa.dot.gov

Table of Contents

Part 1 - Background and Purpose

In January 1996, Secretary Peña set a goal of deploying the integrated metropolitan Intelligent Transportation System (ITS) infrastructure in 75[1] of the nation's largest metropolitan areas by 2006:

> *"I'm setting a national goal: to build an intelligent transportation infrastructure across the United States to save time and lives, and improve the quality of life for Americans. I believe that what we do, we must measure . . . Let us set a very tangible target that will focus our attention . . . I want 75 of our largest metropolitan areas outfitted with a complete intelligent transportation infrastructure in 10 years."*[2]
>
> -- *Secretary Peña, 1996*

In 1997, the U.S. Department of Transportation initiated an effort to track progress toward fulfillment of this goal by conducting a survey of deployment in the nation's largest metropolitan areas. Traditionally, the product of a transportation infrastructure investment consists of a fixed asset such as a highway, bridge, or public transportation vehicle developed, constructed, or purchased by a single agency. Tracking the level of deployment for such traditional fixed assets can be accomplished by simply counting the number of such assets deployed. Measuring the deployment of the metropolitan ITS infrastructure is more complex because it consists of a set of systems, often deployed by multiple agencies, and integrated through a combination of complex institutional and technical arrangements. In brief, it is often difficult to simply count the number of systems deployed without first devising a measurement approach that captures the essential features of such systems in a consistent fashion across many deployment environments.

In order to track progress toward fulfillment of the Secretary's goal for deployment, the U.S. Department of Transportation ITS Joint Program Office developed the metropolitan ITS deployment tracking methodology. This methodology tracks deployment of the nine components that make up the Metropolitan ITS infrastructure: Freeway Management; Incident Management; Arterial Management; Emergency Management; Transit Management; Electronic Toll Collection; Electronic Fare Payment; Highway-Rail Intersections; and Regional Multimodal Traveler Information. Through a set of indicators tied to the major functions of each component, the level of deployment is tracked for the nation's largest metropolitan areas. In addition, the integration links between agencies operating the infrastructure are also tracked. The details of

[1] Since Secretary Peña's speech, the number of metropolitan areas that DOT will measure has been increased from 75 to 78. However, to maintain reporting consistency across the 10-year goal period, this report considers only the original 75 metropolitan areas.

[2] Excerpt of a speech delivered by Secretary of Transportation Peña at the Transportation Research Board in Washington, DC on January 10, 1996.

the methodology are explained elsewhere.[3]

During the summer and fall of 1999, the U.S. DOT undertook a new data collection effort for the purpose of examining ITS deployment progress in the nation's largest metropolitan areas. The Detroit, Ann Arbor metropolitan area was among the areas surveyed in 1997 and again in 1999. This report presents the results of the 1999 survey efforts and compares the results of the 1997 survey against those observed in 1999. The overall response rate for the surveys administered in the Detroit, Ann Arbor region was 93% in 1997 and 86% in 1999.

Part 2 contains a summary of the 1999 survey results, and Part 3 provides a comparison of 1999 survey results and the 1997 survey results.

The report also contains a set of appendices containing a map of the survey area, the list of local contacts surveyed along with a status of their response to the survey and a summary of the data collected from the surveys.

Agencies are encouraged to review the data presented in this report for completeness and accuracy and to direct any comments or corrections to the data provided to the contacts listed below:

Steve Gordon
Oak Ridge National Laboratory
P.O. Box 2008, 4500N, MS-6207
Oak Ridge, TN 37831-6207
(865) 576-8416 (voice)
(865) 574-3895 (fax)
gordonsr@ornl.gov

Jeff Trombly
Science Applications International Corporation
301 Laboratory Road
Oak Ridge, TN 37831-2501
(865) 481-8563 (voice)
(865) 481-2941 (fax)
jeffrey.w.trombly@saic.com

[3] Additional Resources: "Measuring ITS Deployment and Integration" (Electronic Document Number: 4372). U.S. Department of Transportation, Joint Program Office for Intelligent Transportation Systems, 400 Seventh St., SW (HVH-1), Washington, DC 20590, Phone: 202-366-9536, Fax: 202-366-3302, Web: http://www.its.dot.gov.

Part 2 - Summary 1999 Survey Results

Deployment indicators have been developed for two broad areas of interest: (1) the individual components, including their basic functions and characteristics and (2) integration of components, including how these components work together to provide coordinated regional service. As mentioned earlier, these indicators are expressed as percentages of the possible deployment opportunity and not necessarily what should be deployed based on local needs. Requirements for deployment and integration between each component will vary based on local conditions and cannot be assigned without extensive coordination with individual metropolitan areas.

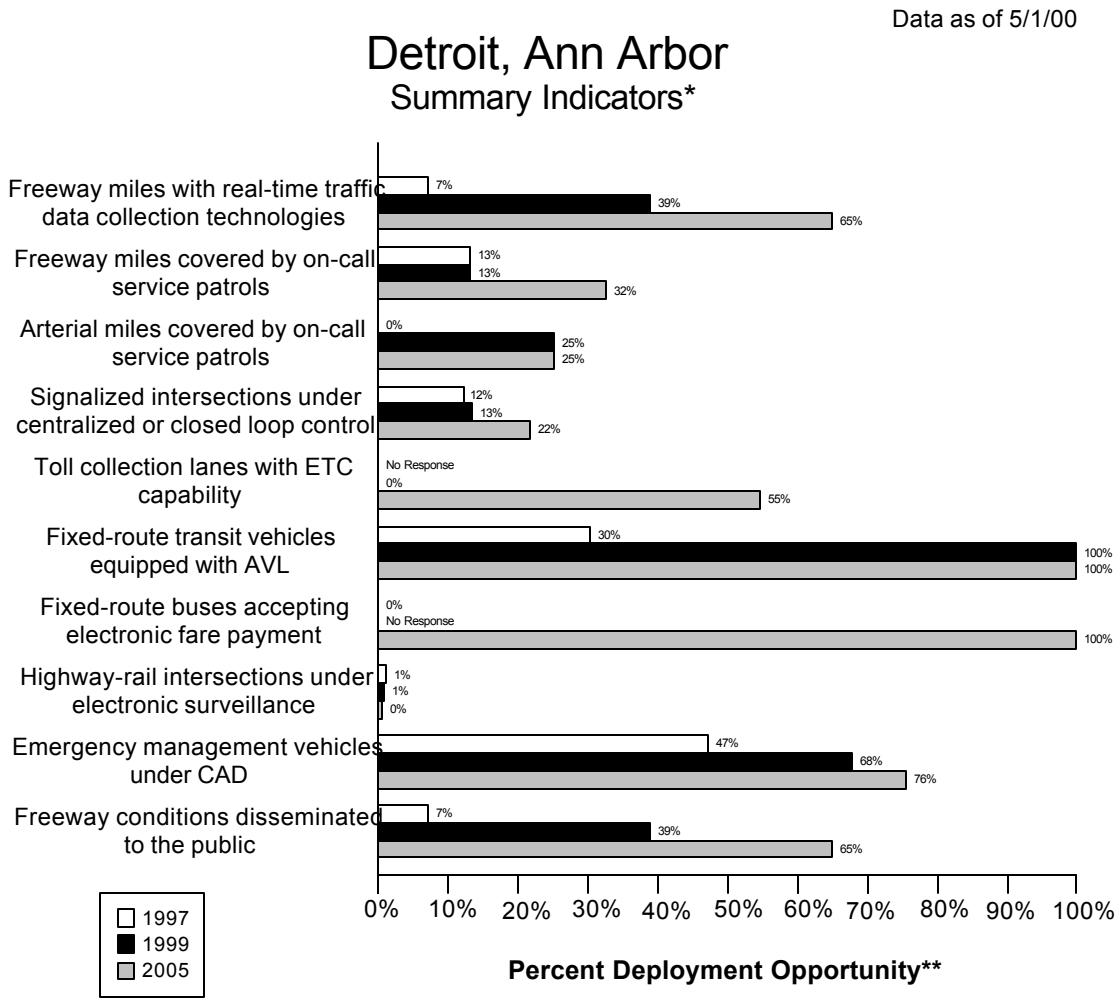
The following two figures portray the surrogate indicators for each of the nine components in Detroit, Ann Arbor and the same indicators at the national level. These are judged to be the single best representative of a component and are being used as summary indicator for component. The summary indicators are expressed as a percentage; however, because deployment goals have yet to be established, these indicators should not be read as a comparison of what is deployed versus eventual deployment goals. Instead, they only reflect what is deployed compared to full market saturation (i.e., opportunity for deployment).

Each component indicator was selected to reflect a critical function of the individual components. For example, in the case of Freeway Management, three basic functions were defined: surveillance, traffic control, and information display. The three indicators developed to reflect these functions are: percentage of freeway centerline miles under electronic surveillance (surveillance function), percentage of freeway entrance ramps managed by ramp meters (traffic control function), and percentage of freeway centerline miles covered by permanent VMS, HAR, or in-vehicle signing (information display function). The indicators are surrogates that do not necessarily reflect the full breadth of metropolitan ITS deployment activity.

A critical aspect of ITS that provides much of its capability is the integration of individual components to form a unified regional traffic control system. Individual ITS components routinely collect information that is used for purposes internal to that component. For example, the Arterial Management component monitors arterial conditions to revise signal timing and to convey these conditions to travelers through such technologies as variable message signs and highway advisory radio. Other ITS components can make use of this information in formulating their control strategies. For example, Transit Management may alter routes and schedules based on real-time information on arterial traffic conditions, and Freeway Management may alter ramp metering or diversion recommendations based on the same information.

As with the component indicators, definitions for inter- and intra-component integration were developed for each component, and indicators, derived from these definitions, were produced for each component. A total of 34 individual integration indicators was specified and is portrayed in the third figure which follows. Each integration indicator has been assigned a number and an origin/destination path from one ITS infrastructure component to another. For example, the

integration of information from the Freeway Management component to the Regional Multimodal Traveler Information component is identified by the number "10."

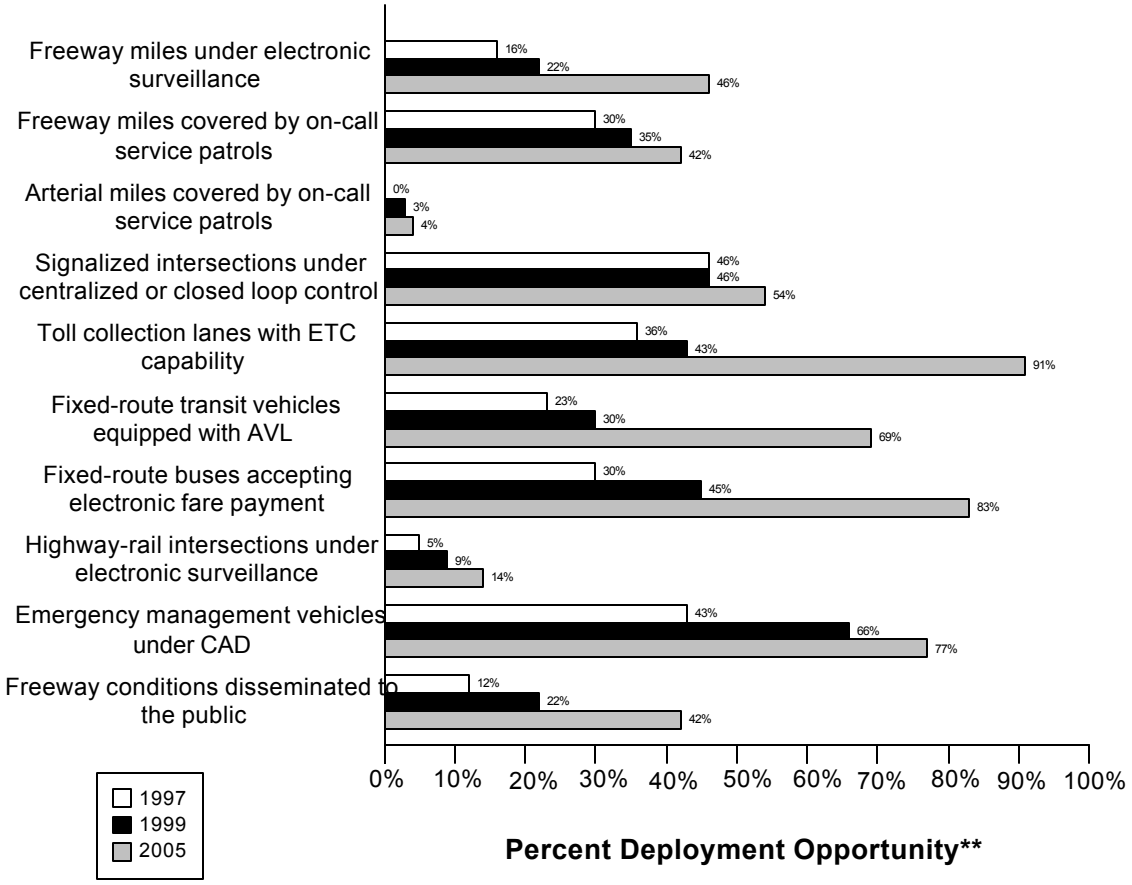


* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity.
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

Data as of 5/1/00

National

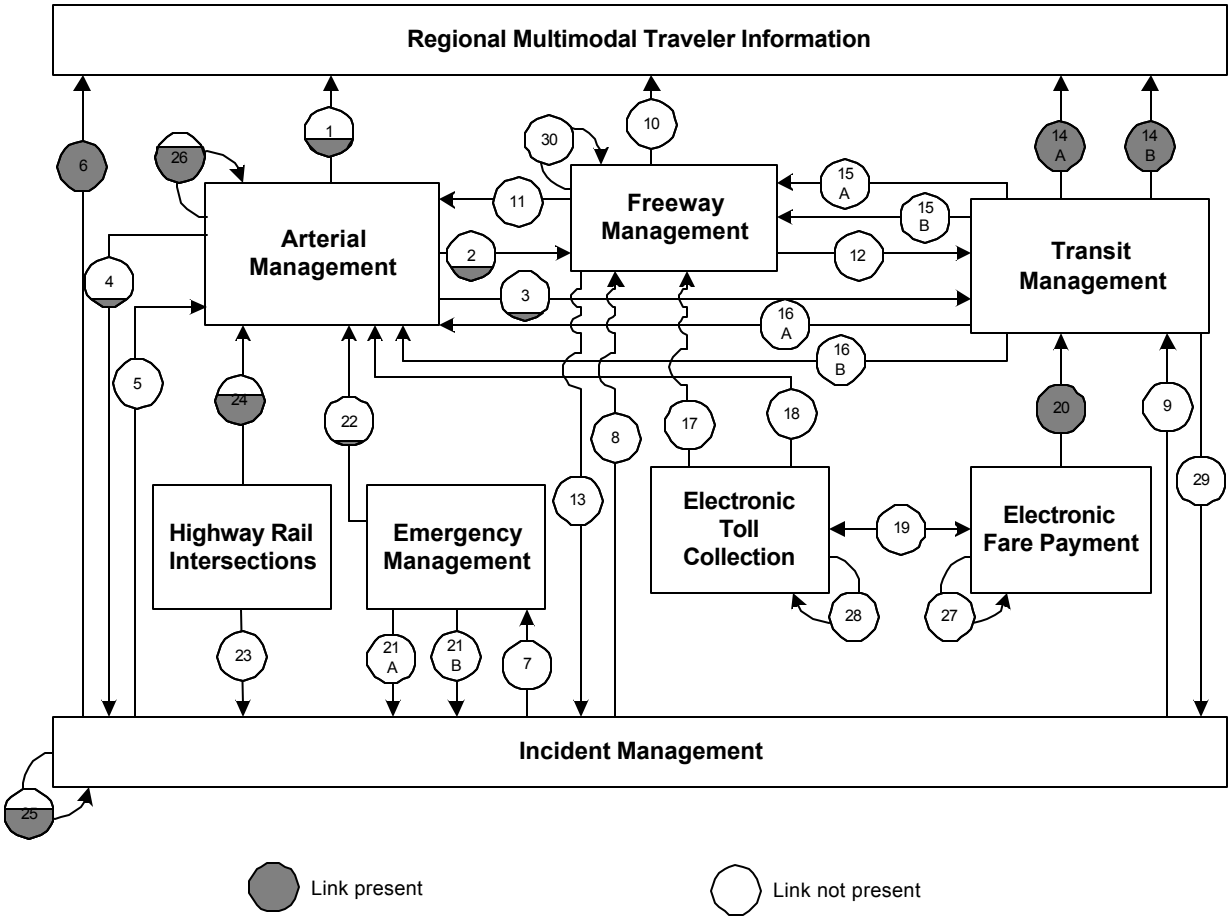
Summary Indicators*



* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

** Deployment opportunity reflects potential totals that do not necessarily reflect actual need

Detroit, Ann Arbor Integration Links



Note: Shading indicates the value of the link. For example a circle half shaded equals 50%

Link	Description	Link	Description
1	Arterial Management to Regional Multimodal Traveler Information	2	Arterial Management to Freeway Management
3	Arterial Management to Transit Management	4	Arterial Management to Incident Management
5	Incident Management to Arterial Management	6	Incident Management to Regional Multimodal Traveler Information
7	Incident Management to Emergency Management.	8	Incident Management to Freeway Management
9	Incident Management to Transit Management	10	Freeway Management to Regional Multimodal Traveler Information

Link	Description	Link	Description
11	Freeway Management to Arterial Management	12	Freeway Management to Transit Management
13	Freeway Management to Incident Management	14a 14b	Transit Management to Regional Multimodal Traveler Information (static route information) Transit Management to Regional Multimodal Traveler Information (schedule adherence information)
15a 15b	Transit Management to Freeway Management Transit Management to Freeway Management (transit vehicle probes)	16a 16b	Transit Management to Arterial Management Transit Management to Arterial Management (transit vehicle probes)
17	Electronic Toll Collection to Freeway Management (ETC equipped probes)	18	Electronic Toll Collection to Arterial Management (ETC equipped probes)
19	Electronic Fare Payment and Electronic Toll Collection	20	Electronic Fare Payment to Transit Management
21a 21b	Emergency Management to Incident Management (incident notification) Emergency Management to Incident Management (incident clearance)	22	Emergency Management to Arterial Management
23	Highway-rail intersections to Incident Management (crossing status)	24	Highway-rail intersections to Arterial Management (crossing status)
25	Incident Management intra component	26	Arterial Management intra component
27	Electronic Fare Payment intra component.	28	Electronic Toll Collection intra component
29	Transit Management to Incident Management (incident reporting)	30	Freeway Management intra component

Part 3 - Detailed 1999 Survey Results

The following figures and tables summarize the complete set of component and integration indicators developed for the Detroit, Ann Arbor metropolitan area. The figures summarizing the component indicators consist of a bar chart portraying the deployment levels for 1997, 1999, and 2005 accompanied by detailed tables of the data used to calculate each component indicator value (*Num* stands for numerator and *Den* stands for denominator; blank space indicates that no response was received.)

Example: Calculating Component Indicators for Freeway Management

Consider a metropolitan area with 100 miles of freeway and 25 freeway entrance ramps. The area has no ramp meters, 10 freeway miles for which traffic data are collected electronically, and 5 freeway miles, which are covered by highway advisory radio.

The component indicator for electronic surveillance is calculated as (10/100) or 10%.

The component indicator for ramp meter control is calculated as (0/25) or 0%.

The component indicator for HAR coverage is calculated as (5/100) or 5%.

The summary indicator for the metropolitan area is calculated as (10%+0%+5%)/3 = 5%.

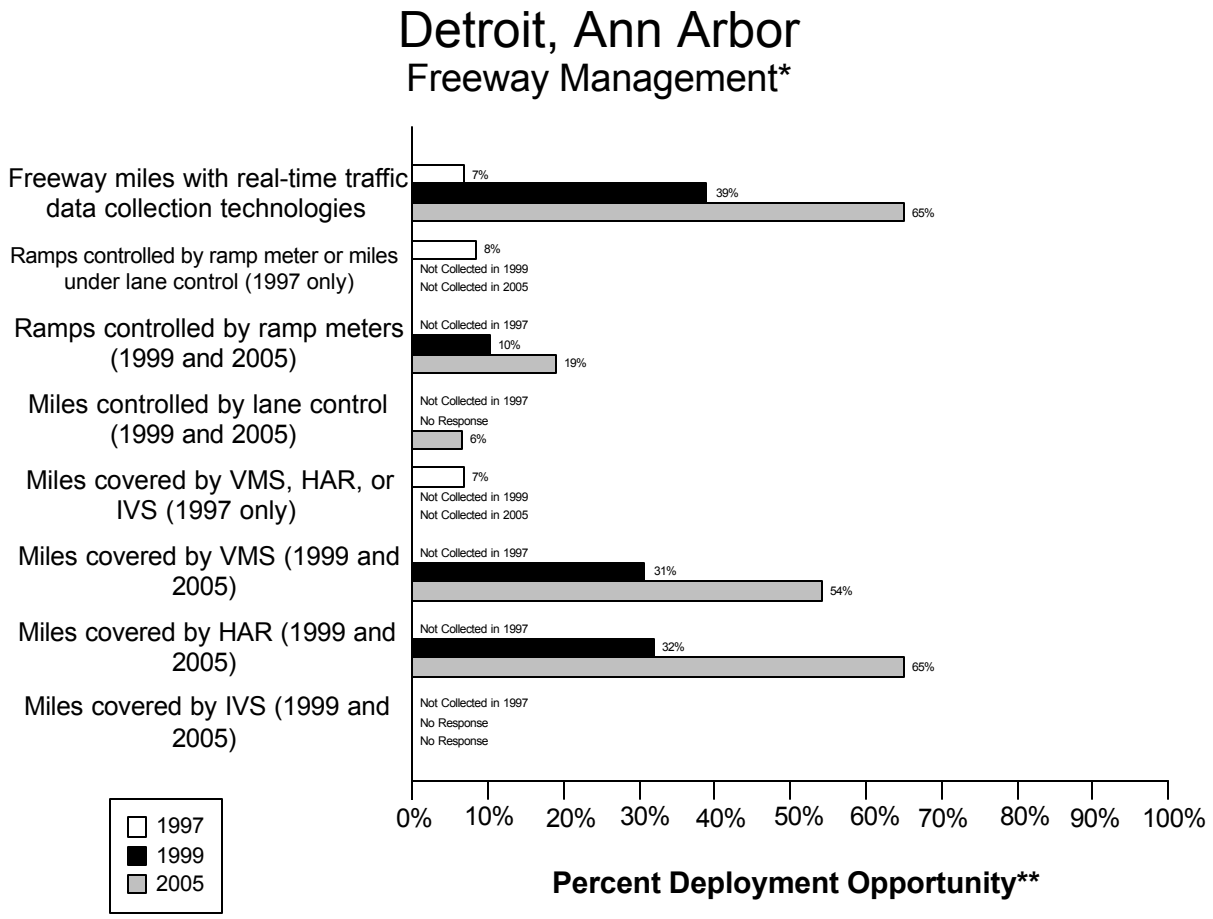
The figures summarizing the integration indicators consist of a diagram for each of the nine metropolitan ITS components portraying the integration level for 1999 (*italic*) and 2005 (**bold**), accompanied by tables providing an explanation of the data and calculations performed to develop each integration indicator value for 1999 and 2005. Each diagram portrays the proportion of agencies providing information to a component (e.g., the flow of incident information from Incident Management to Freeway Management) and the proportion of agencies providing information from one component to other components (e.g., the flow of freeway travel condition information from Freeway Management to Arterial Management).

Example: Calculating Integration between Arterial Management and Regional Multimodal Traveler Information

Consider a metropolitan area with three arterial management agencies. One out of three provides information to the public using a Regional Multimodal Traveler Information Media (e.g., internet, kiosk, pager, etc...). The integration indicator is 1/3 or 33%.

Freeway Management Component Indicators

Data as of 5/1/00



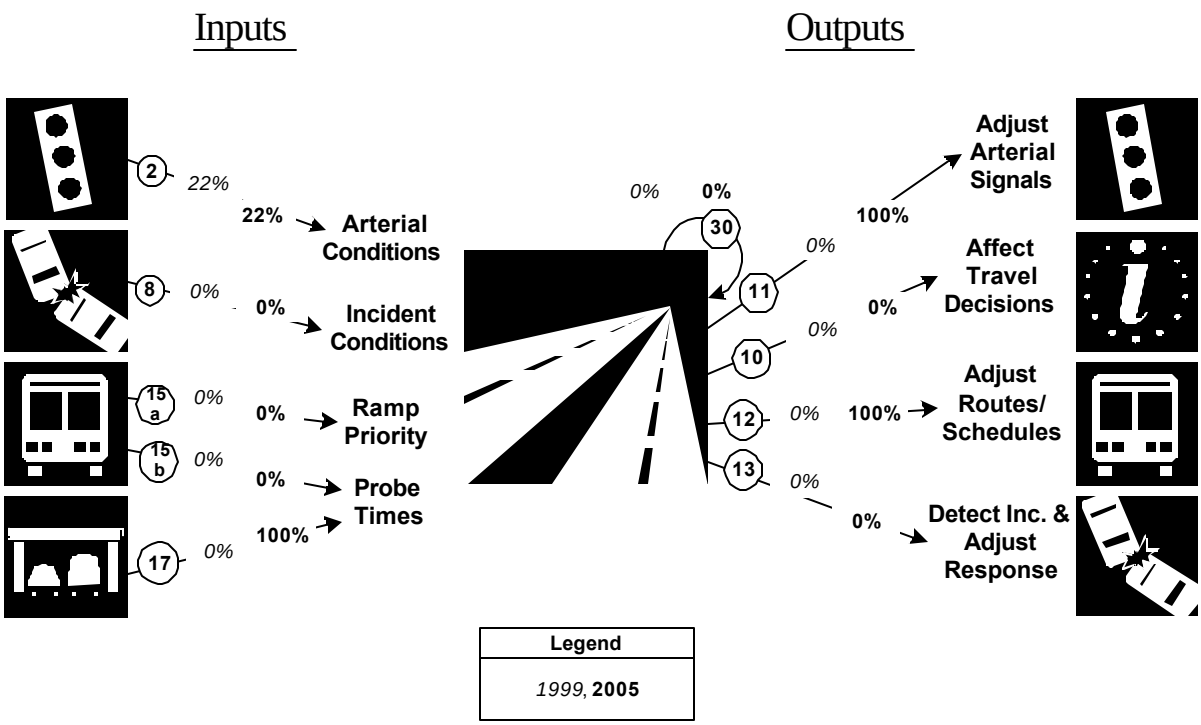
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity.
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Freeway centerline miles are under electronic surveillance for monitoring traffic flow	32	462	7%	180	462	39%	300	462	65%
Freeway entrance ramps are controlled by ramp meters or miles under lane control	49	584	8%						

Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Freeway entrance ramps are controlled by ramp meters				60	584	10%	111	584	19%
Freeway centerline miles will be controlled by lane control					462		30	462	6%
Freeway miles are covered by VMS, HAR, or IVS	32	462	7%						
Freeway miles are covered by VMS				142	462	31%	250	462	54%
Freeway miles are covered by HAR				148	462	32%	300	462	65%
Freeway miles are covered by IVS					462			462	

Freeway Management Integration Indicators

Detroit, Ann Arbor
Freeway Management Integration*



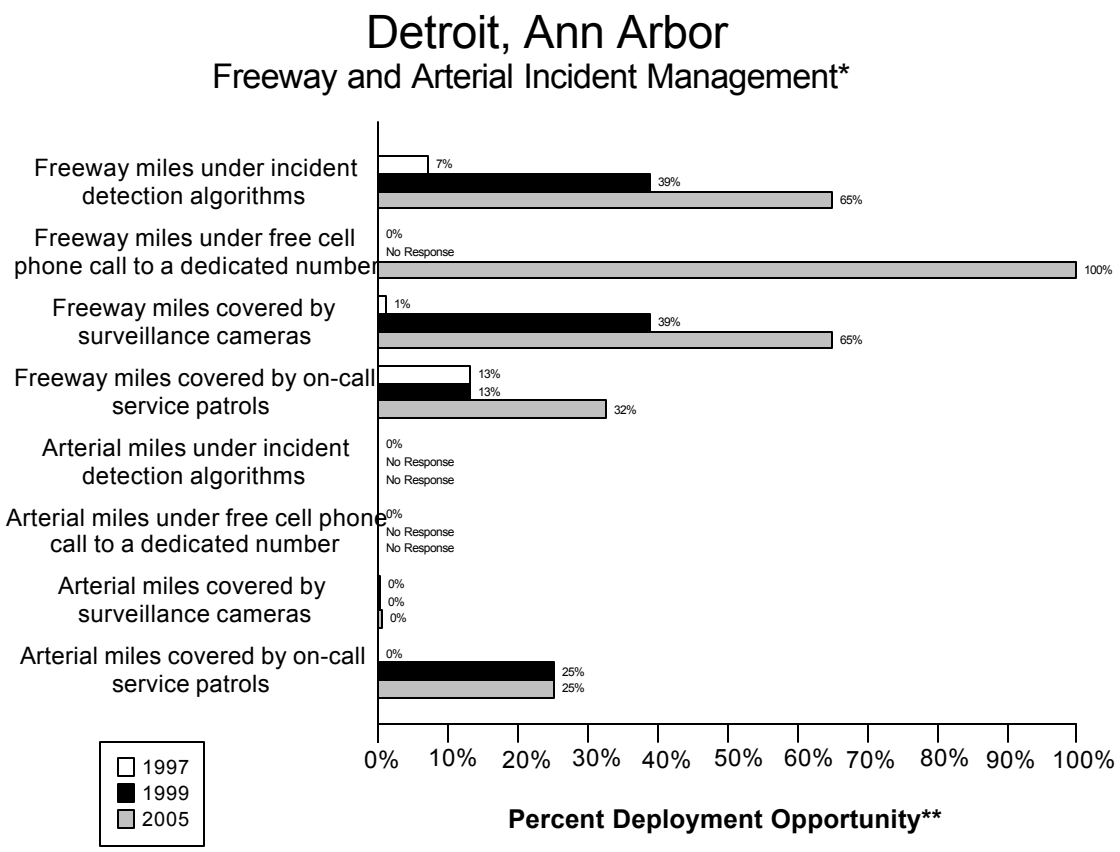
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
2. Arterial Management agencies sending information to Freeway Management	(2/ 9) 22%	(2/ 9) 22%
8. Incident Management agencies sending information to Freeway Management	(0/ 1) 0%	(0/ 1) 0%
15a. Transit management agencies with vehicles equipped with ramp meter priority	(0/ 1) 0%	(0/ 1) 0%
15b. Transit Management agencies with vehicles equipped as probes	(0/ 1) 0%	(0/ 1) 0%
17. Freeway Management agencies receiving freeway conditions from vehicle probes	(0/ 1) 0%	(1/ 1) 100%
30. Freeway Management agencies sending information to another Freeway Management agency	(0/ 1) 0%	(0/ 1) 0%
11. Freeway Management agencies sending information to Arterial Management	(0/ 1) 0%	(1/ 1) 100%

Link Description	1999	2005
10. Freeway Management agencies disseminating freeway conditions to the public	(0/ 1) 0%	(0/ 1) 0%
12. Freeway Management agencies sending freeway conditions to Transit Management	(0/ 1) 0%	(1/ 1) 100%
13. Freeway Management agencies sending freeway conditions to Incident Management	(0/ 1) 0%	(0/ 1) 0%

Incident Management Component Indicators

Data as of 5/1/00



* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity.
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

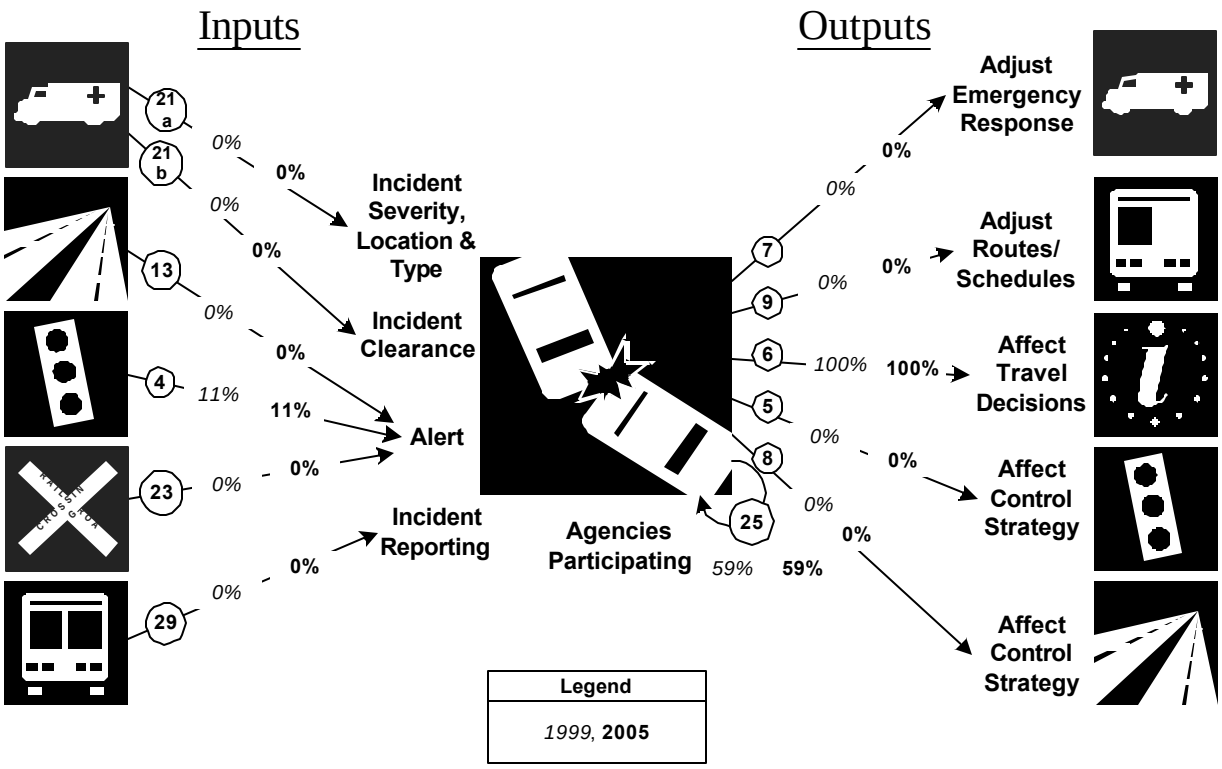
	1997			1999			2005		
Description	Num	Den	%	Num	Den	%	Num	Den	%
Freeway miles are covered by incident detection algorithms	32	462	7%	180	462	39%	300	462	65%
Freeway miles are covered by free cellular phone calls to a dedicated number	0	462	0%		462		462	462	100%
Freeway miles are covered by surveillance cameras.	5	462	1%	180	462	39%	300	462	65%

Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Freeway miles are covered by on-call publicly-sponsored service patrol or towing services.	60	462	13%	60	462	13%	150	462	32%
Arterial miles are covered by incident detection algorithms	0	2864	0%		2864			2864	
Arterial miles are covered by free cellular phone calls to a dedicated number	0	2864	0%		2864			2864	
Arterial miles are covered by surveillance cameras	5	2864	0%	6	2864	0%	12	2864	0%
Arterial miles are covered by on-call publicly-sponsored service patrol or towing services	0	2864	0%	718	2864	25%	718	2864	25%

Incident Management Integration Indicators

Detroit, Ann Arbor

Incident Management Integration*



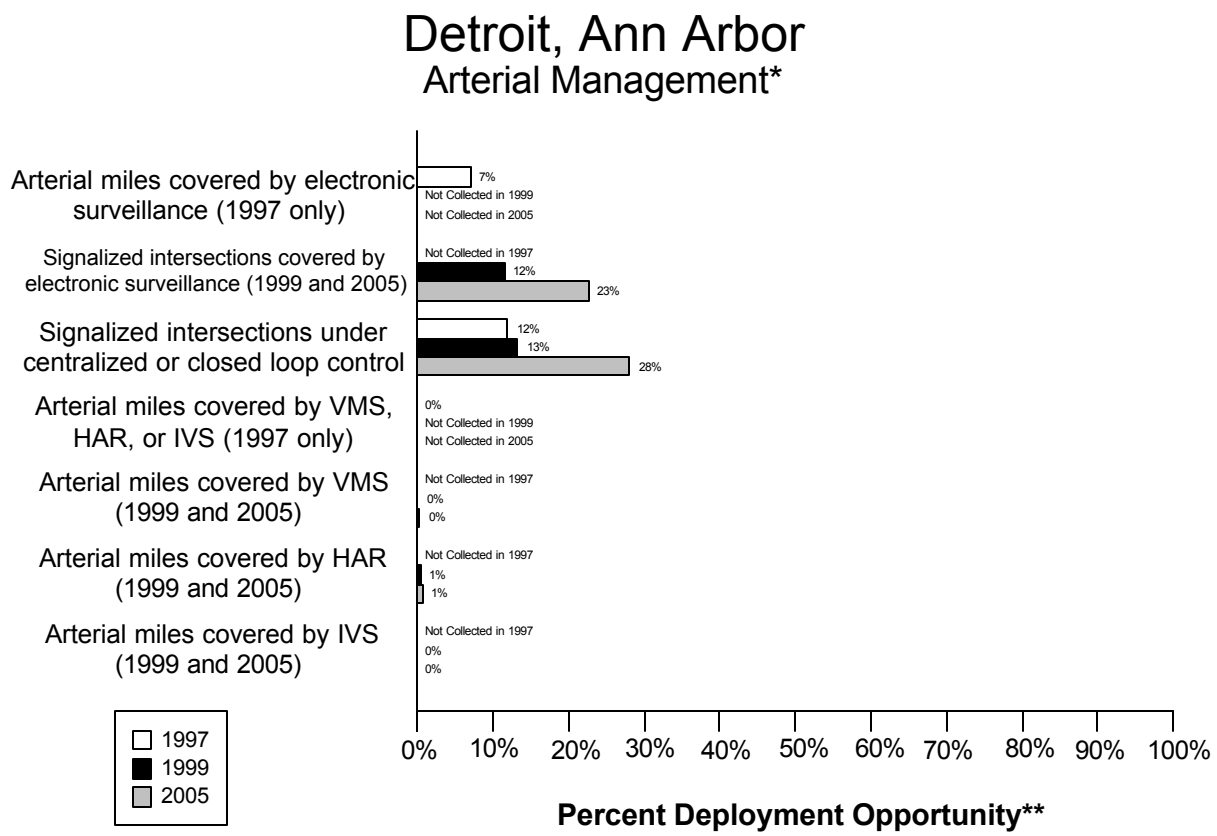
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
21a. Incident management agencies receiving incident severity from Emergency Management	(0/ 1) 0%	(0/ 1) 0%
21b. Incident management agencies receiving incident clearance activities from Emergency Management	(0/ 1) 0%	(0/ 1) 0%
13. Freeway Management agencies sending freeway conditions to Incident Management	(0/ 1) 0%	(0/ 1) 0%
4. Arterial Management agencies sending arterial conditions to Incident Management	(1/ 9) 11%	(1/ 9) 11%
23. Arterial Management agencies receive information on highway-rail intersection crossing blockages for the purpose of managing incident response	(0/ 9) 0%	(0/ 9) 0%
29. Transit Management agencies report traffic incidents as part of an organized regional incident management program	(0/ 1) 0%	(0/ 1) 0%

Link Description	1999	2005
7. Incident management agencies transfer information describing incident severity, location, and type to Emergency Management agencies	(0/ 1) 0%	(0/ 1) 0%
9. Incident Management agencies transfer information describing incident severity, location, and type to Transit Management agencies	(0/ 1) 0%	(0/ 1) 0%
6. Incident Management agencies disseminate information describing incident severity, location, and type to the public	(1/ 1) 100%	(1/ 1) 100%
5. Incident Management agencies transfer information describing incident severity, location, and type to Arterial Management agencies	(0/ 1) 0%	(0/ 1) 0%
8. Incident Management agencies transfer information describing incident severity, location, and type to Freeway Management agencies	(0/ 1) 0%	(0/ 1) 0%
25. Police, fire, and EMS agencies participating in a formal incident management plan/team	(30/ 51) 59%	(30/ 51) 59%

Arterial Management Component Indicators

Data as of 5/1/00



* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity.
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

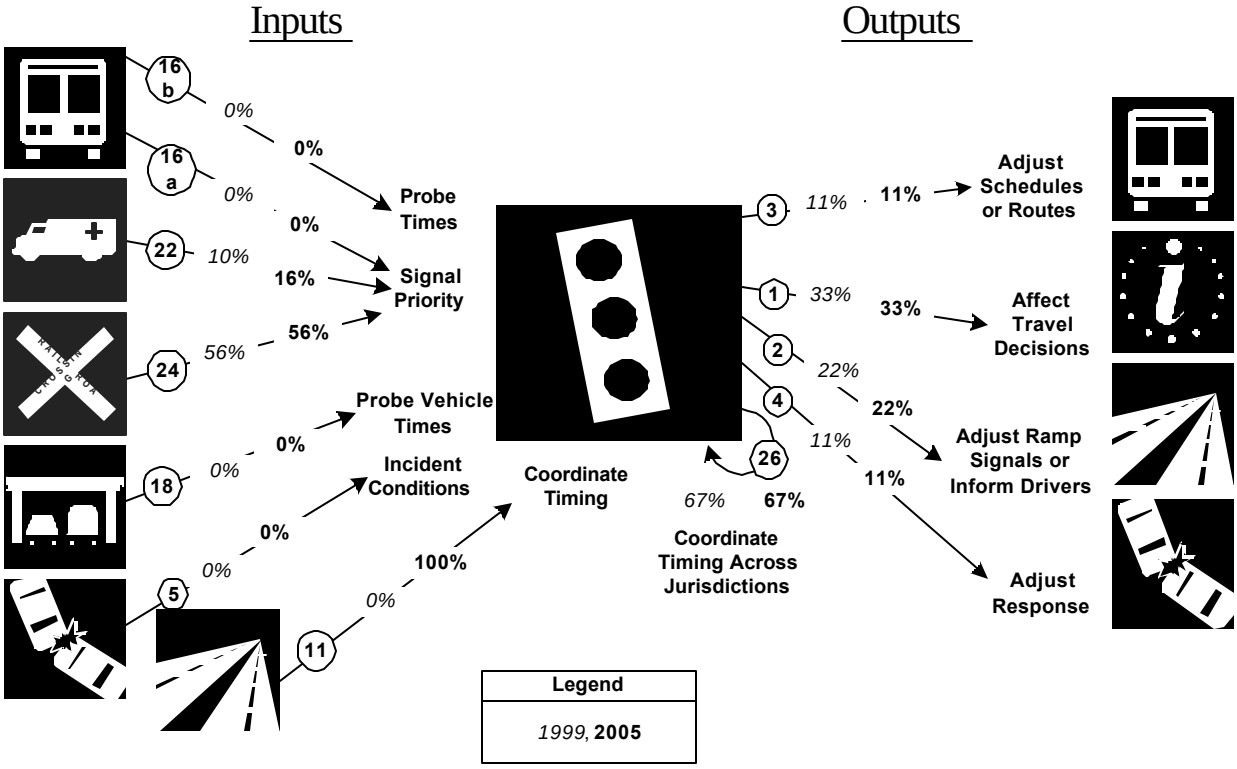
	1997			1999			2005		
Description	Num	Den	%	Num	Den	%	Num	Den	%
Arterial miles covered by electronic surveillance	203.1	2864	7%						
Signalized intersections are covered by electronic surveillance for monitoring traffic flow				440	3792	12%	700	3074	23%
Signalized intersections are under centralized or closed loop control	599	4982	12%	504	3792	13%	865	3074	28%

Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Arterial miles are covered by VMS, HAR, or IVS	0	2864	0%						
Arterial miles are covered by VMS				2	2864	0%	10	2864	0%
Arterial miles are covered by HAR				15	2864	1%	20	2864	1%
Arterial miles are covered by IVS				0	2864	0%	0	2864	0%

Arterial Management Integration Indicators

Detroit, Ann Arbor

Arterial Management Integration*



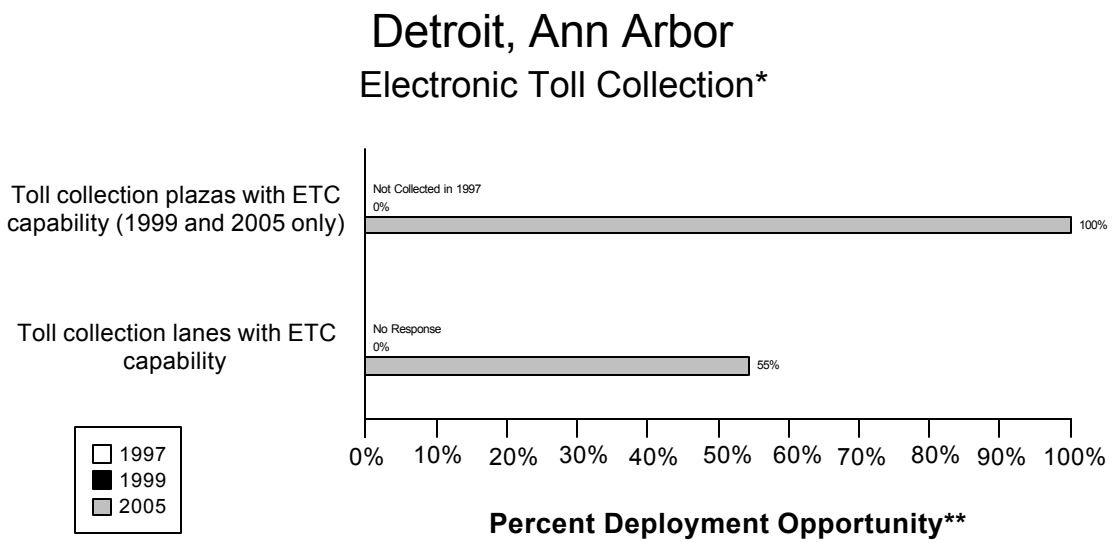
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
16a. Transit management agencies with vehicles equipped with traffic signal priority	(0/ 1) 0%	(0/ 1) 0%
16b. Transit Management agencies have vehicles equipped as probes on arterials	(0/ 1) 0%	(0/ 1) 0%
22. Emergency Management agencies have vehicles equipped with traffic signal preemption capability	(5/ 51) 10%	(8/ 51) 16%
24. Arterial Management agencies have traffic signals within 200 feet of a highway rail intersection with the capability of having their signal timing adjusted in response to a train crossing	(5/ 9) 56%	(5/ 9) 56%
18. Number of Arterial Management agencies receiving information from vehicle probes	(0/ 9) 0%	(0/ 9) 0%
5. Incident Management agencies transfer information describing incident severity, location, and type to Arterial Management	(0/ 1) 0%	(0/ 1) 0%

Link Description	1999	2005
11. Freeway Management agencies transfer freeway travel times, speeds, and conditions to Arterial Management agencies	(0/ 1) 0%	(1/ 1) 100%
3. Arterial Management agencies transfer arterial travel times, speeds, and conditions to Transit Management	(1/ 9) 11%	(1/ 9) 11%
1. Arterial Management agencies disseminate arterial travel times, speeds, and conditions to the public	(3/ 9) 33%	(3/ 9) 33%
2. Arterial Management agencies send traffic condition information to Freeway Management	(2/ 9) 22%	(2/ 9) 22%
4. Arterial Management agencies transfer arterial travel times, speeds, and conditions to Incident Management	(1/ 9) 11%	(1/ 9) 11%
26. Arterial Management agencies under cooperative agreement to share traffic signal timing for coordinated response	(6/ 9) 67%	(6/ 9) 67%

Electronic Toll Collection Component Indicators

Data as of 5/1/00

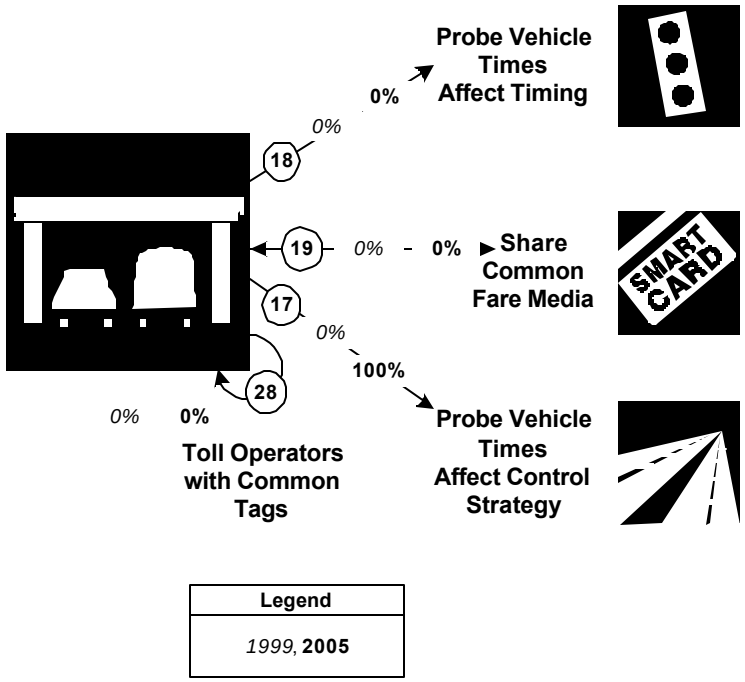


* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity.
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

	1997			1999			2005		
Description	Num	Den	%	Num	Den	%	Num	Den	%
Toll collection plazas with ETC capability				0	2	0%	2	2	100%
Toll collection lanes with ETC capability	0	0		0	11	0%	6	11	55%

Electronic Toll Collection Integration Indicators

Detroit, Ann Arbor
Electronic Toll Collection Integration*

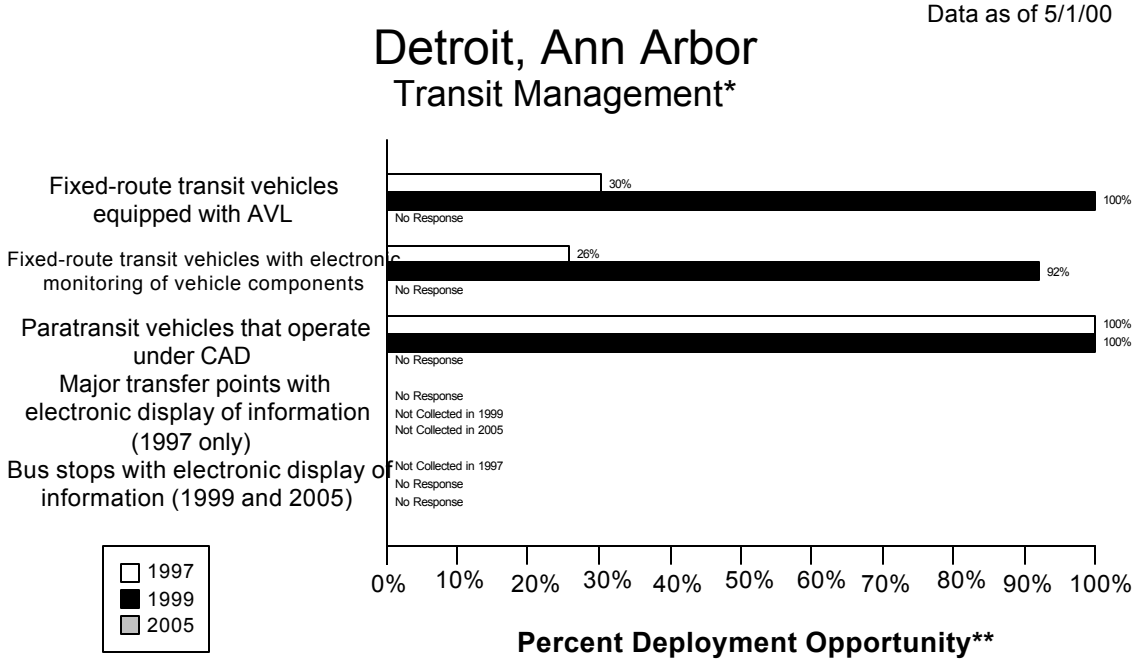


* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
18. Number of Arterial Management agencies receiving information from vehicle probes	(0/ 9) 0%	(0/ 9) 0%
19. Transit agencies that accept electronic payment through the use of electronic toll collection media	(0/ 1) 0%	(0/ 1) 0%
17. Freeway Management agencies receiving information from vehicle probes	(0/ 1) 0%	(1/ 1) 100%
28. Toll operators using common toll tag technology	(0/ 1) 0%	(0/ 1) 0%

Transit Management Component Indicators

Data as of 5/1/00

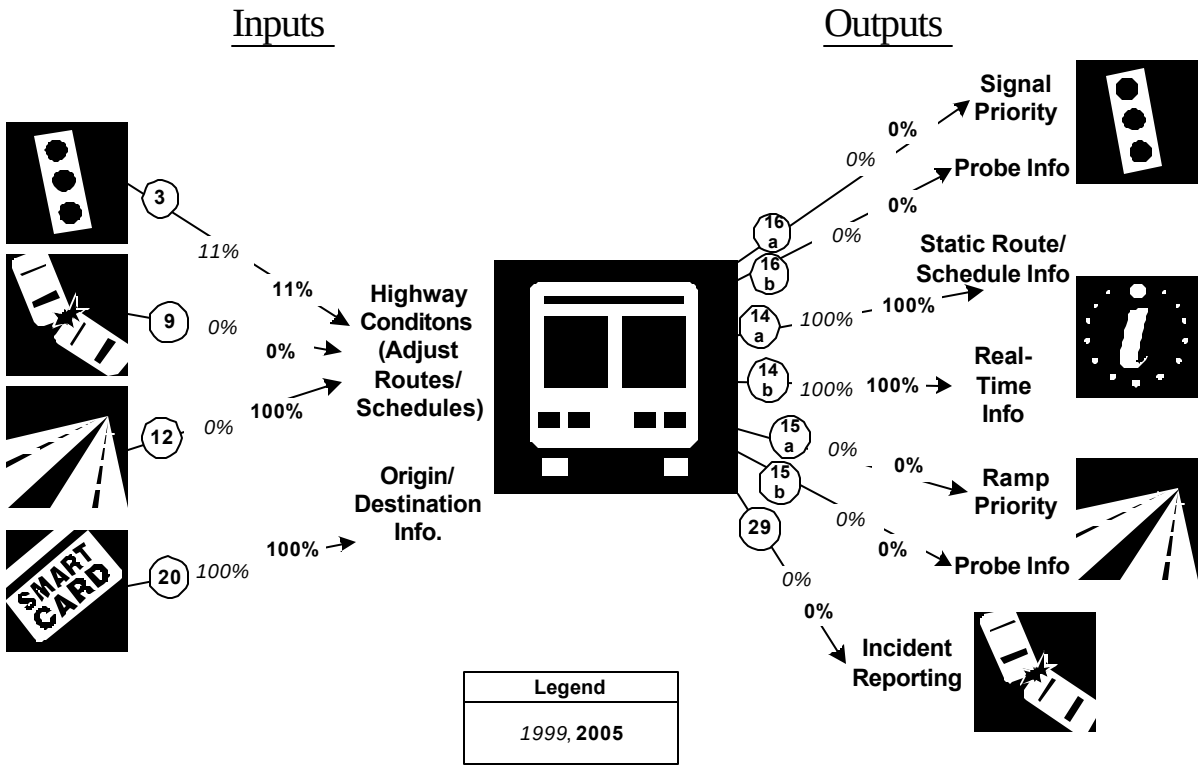


* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity.
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

	1997			1999			2005		
Description	Num	Den	%	Num	Den	%	Num	Den	%
Fixed-route transit vehicles are equipped with AVL	107	353	30%	76	76	100%			
Fixed-route transit vehicles are equipped with electronic monitoring of vehicle component	91	353	26%	70	76	92%	76		
Paratransit vehicles operate under computer-aided dispatch	108	108	100%	9	9	100%			
Percent fixed-route transfer locations with electronic display of information	0	0							
Bus stops display information to the public									

Transit Management Integration Indicators

Detroit, Ann Arbor
Transit Management Integration*



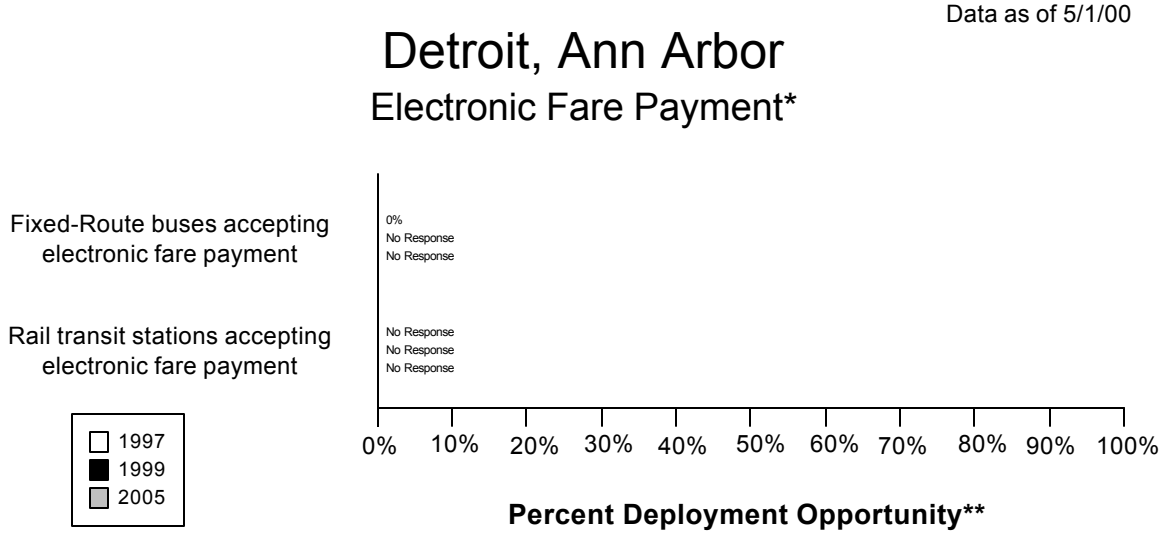
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
3. Arterial Management agencies transfer arterial travel times, speeds, and conditions to Transit Management	(1/ 9) 11%	(1/ 9) 11%
9. Incident management agencies transfer information describing incident severity, location, and type to Transit Management	(0/ 1) 0%	(0/ 1) 0%
12. Freeway Management agencies transfer freeway travel times, speeds, and conditions to Transit Management	(0/ 1) 0%	(1/ 1) 100%
20. Transit Management agencies using Electronic Fare Payment data in transit service planning	(1/ 1) 100%	(1/ 1) 100%
16a. Transit Management agencies have vehicles equipped with traffic signal priority capability	(0/ 1) 0%	(0/ 1) 0%
16b. Transit Management agencies have vehicles equipped as probes on arterials	(0/ 1) 0%	(0/ 1) 0%
14a. Transit Management agencies disseminate information describing transit routes, schedules, and fares to travelers	(1/ 1) 100%	(1/ 1) 100%

Link Description	1999	2005
14b. Transit Management agencies disseminate information describing schedule/route adherence to travelers	(1/ 1) 100%	(1/ 1) 100%
15a. Transit Management agencies have vehicles equipped with ramp meter priority capability	(0/ 1) 0%	(0/ 1) 0%
15b. Transit Management agencies have vehicles equipped as probes on freeways	(0/ 1) 0%	(0/ 1) 0%
29. Transit Management agencies that report traffic incidents as part of an organized regional Incident Management program	(0/ 1) 0%	(0/ 1) 0%

Electronic Fare Payment Component Indicators

Data as of 5/1/00



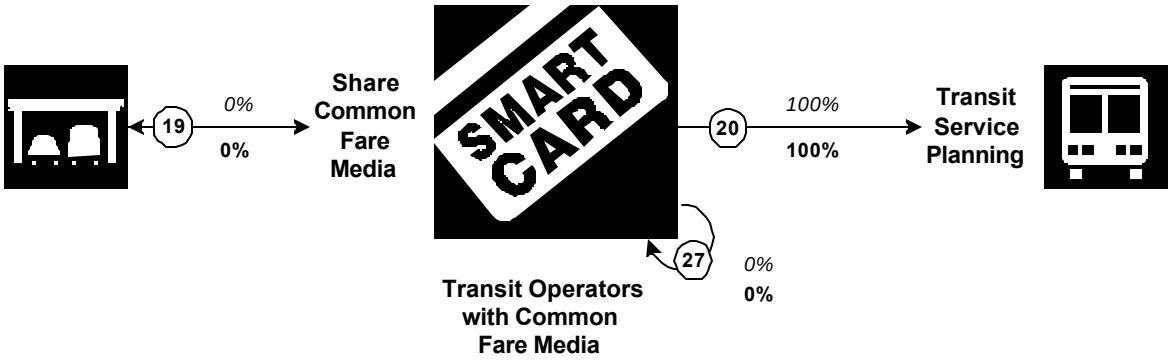
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity.
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Fixed-route transit vehicles that accept electronic payment	0	353	0%		76		76		
Rail transit stations that accept electronic payment	0	0							

Electronic Fare Payment Integration Indicators

Detroit, Ann Arbor
Electronic Fare Payment Integration*

Inputs Outputs



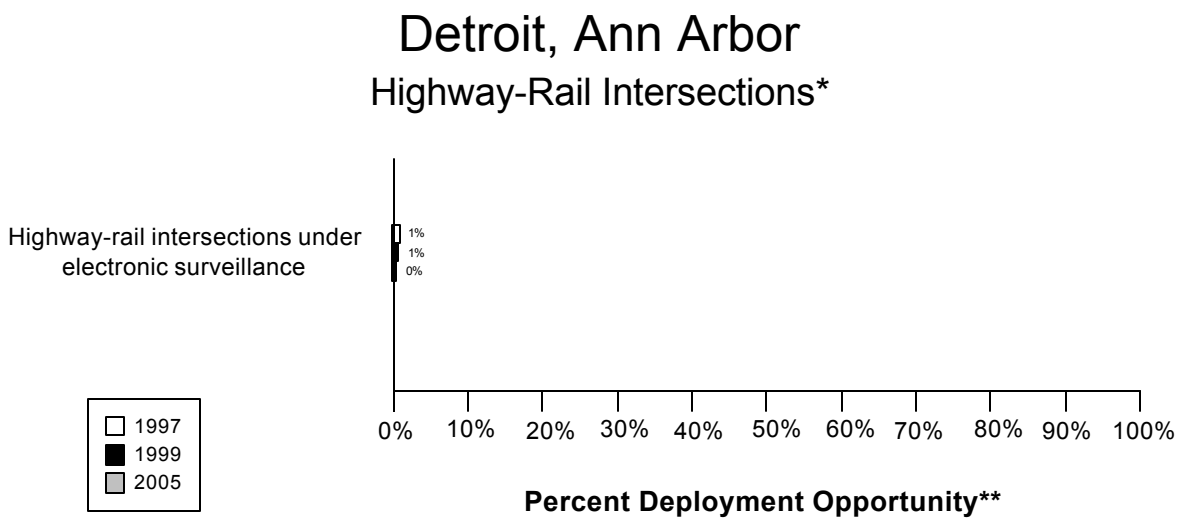
Legend
1999
2005

* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
19. Transit agencies that accept electronic payment through the use of electronic toll collection media	(0/ 1) 0%	(0/ 1) 0%
20. Transit Management agencies use Electronic Fare Payment data in transit service planning	(1/ 1) 100%	(1/ 1) 100%
27. Transit Management agencies that use the same electronic payment system	(0/ 1) 0%	(0/ 1) 0%

Highway Rail Intersection Component Indicators

Data as of 5/1/00



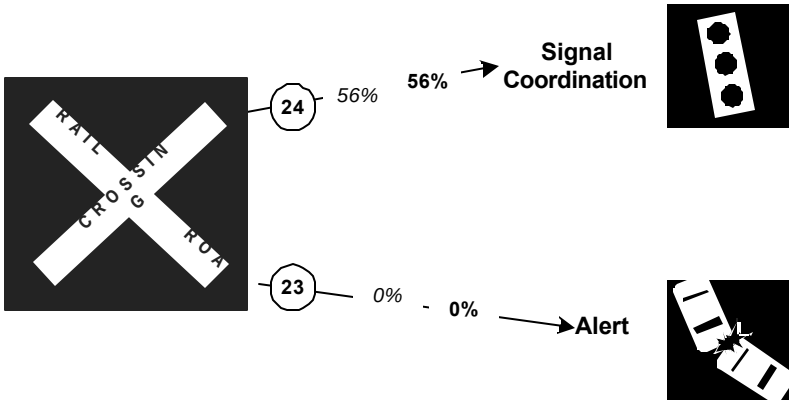
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity.
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

	1997			1999			2005		
Description	Num	Den	%	Num	Den	%	Num	Den	%
Highway-rail intersections are under electronic surveillance	4	432	1%	6	714	1%	3	714	0%

Highway Rail Intersection Integration Indicators

Detroit, Ann Arbor
Highway Rail Intersections Integration*

Inputs Outputs



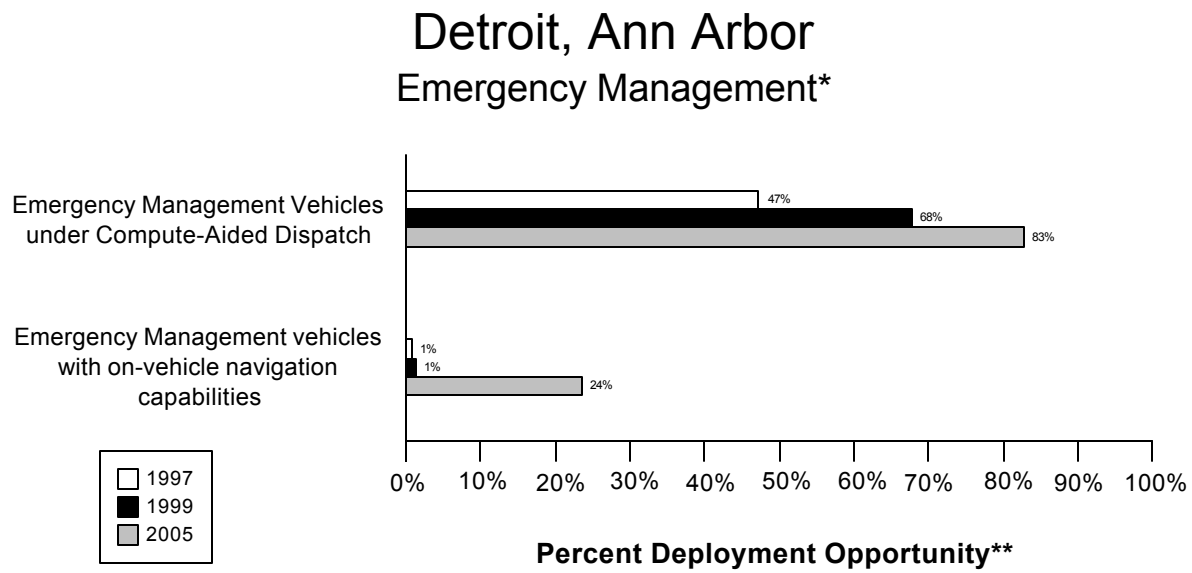
Legend
1999, **2005**

* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
24. Arterial Management agencies with traffic signals within 200 feet of a highway rail intersection with the capability of having their signal timing adjusted in response to a train crossing	(5/ 9) 56%	(5/ 9) 56%
23. Arterial Management agencies receive information on highway-rail intersection crossing blockages for the purpose of managing incident response	(0/ 9) 0%	(0/ 9) 0%

Emergency Management Component Indicators

Data as of 5/1/00



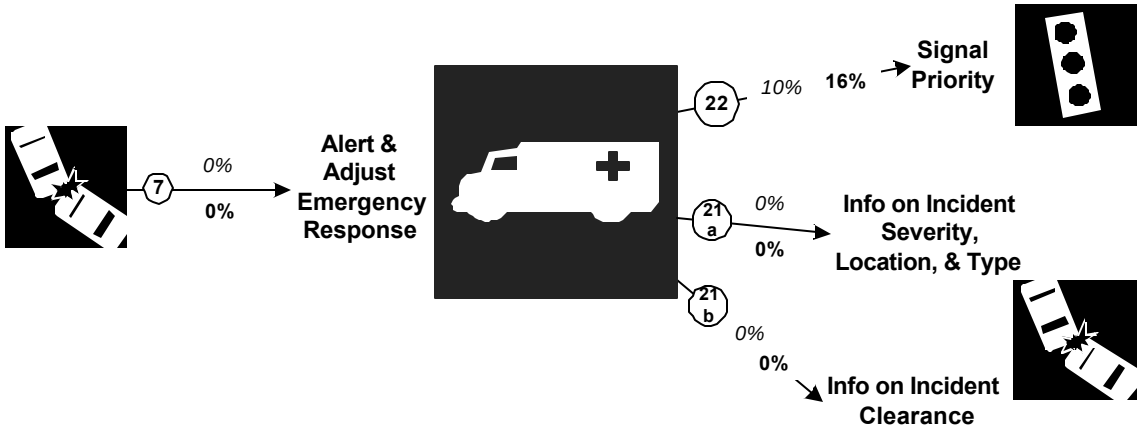
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity.
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

Description	1997			1999			2005		
	Num	Den	%	Num	Den	%	Num	Den	%
Public sector emergency vehicles that operate under computer-aided dispatch	1314	2781	47%	1069	1576	68%	990	1195	83%
Public sector emergency vehicles that have in-vehicle route guidance capability	17	2781	1%	22	1576	1%	281	1195	24%

Emergency Management Integration Indicators

Detroit, Ann Arbor
Emergency Management Integration*

Inputs Outputs



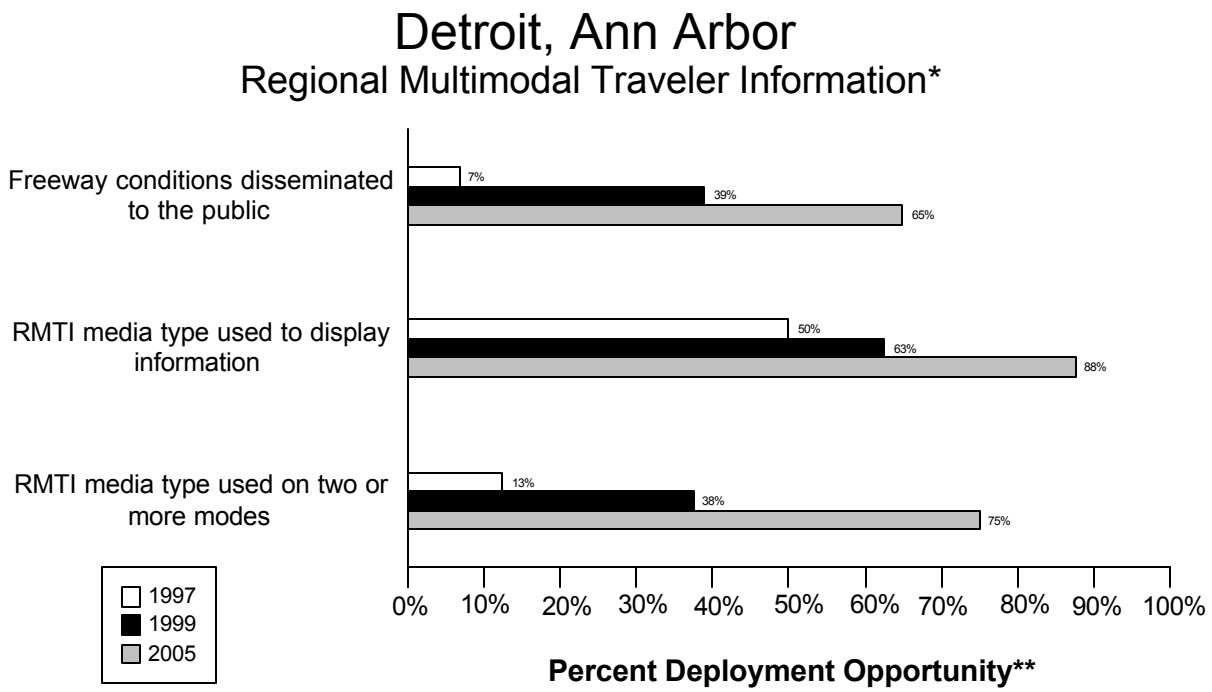
Legend
1999, **2005**

* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
7. Freeway Management agencies transfer information describing incident severity, location, and type to Emergency Management agencies	(0/ 1) 0%	(0/ 1) 0%
22. Emergency Management agencies have vehicles equipped with traffic signal preemption capability	(5/ 51) 10%	(8/ 51) 16%
21a. Freeway Management agencies receive incident severity, location, and type data from Emergency Management agencies	(0/ 1) 0%	(0/ 1) 0%
21b. Freeway Management agencies receive incident clearance activities information from Emergency Management agencies	(0/ 1) 0%	(0/ 1) 0%

Regional Multimodal Traveler Information Component Indicators

Data as of 5/1/00

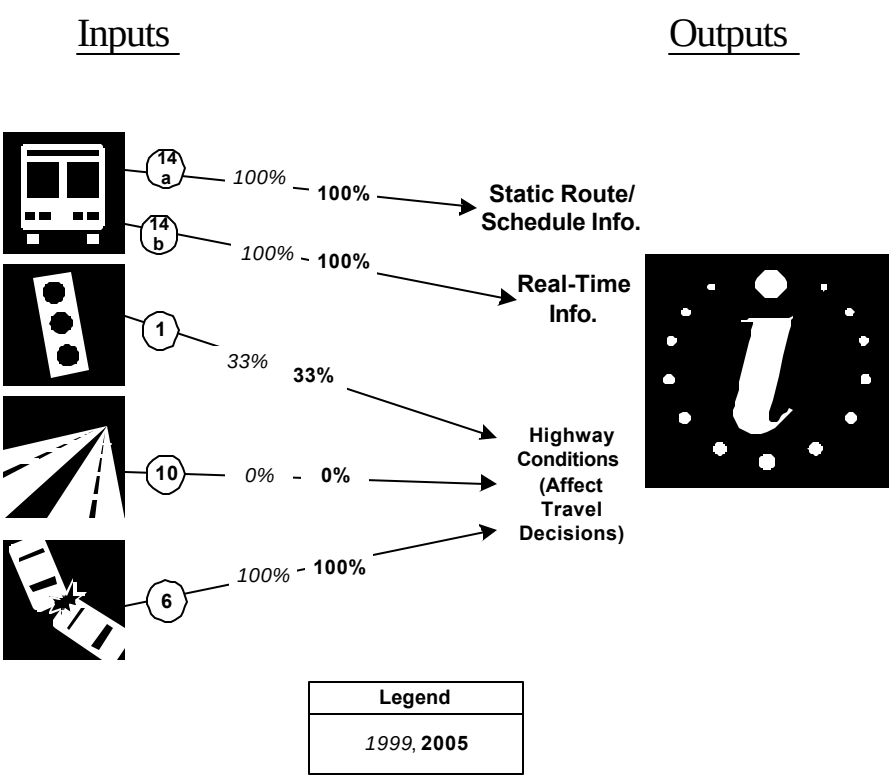


* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity.
** Deployment opportunity reflects potential totals that do not necessarily reflect actual need.

	1997			1999			2005		
Description	Num	Den	%	Num	Den	%	Num	Den	%
Freeway conditions disseminated to travelers	32	462	7%	180	462	39%	300	462	65%
Possible RMTI media types are used to display information to travelers	4	8	50%	5	8	63%	7	8	88%
Possible RMTI media are used to display information on *two or more modes* to travelers	1	8	13%	3	8	38%	6	8	75%

Regional Multimodal Traveler Information Integration Indicators

Detroit, Ann Arbor
Regional Multimodal Traveler Information Integration*

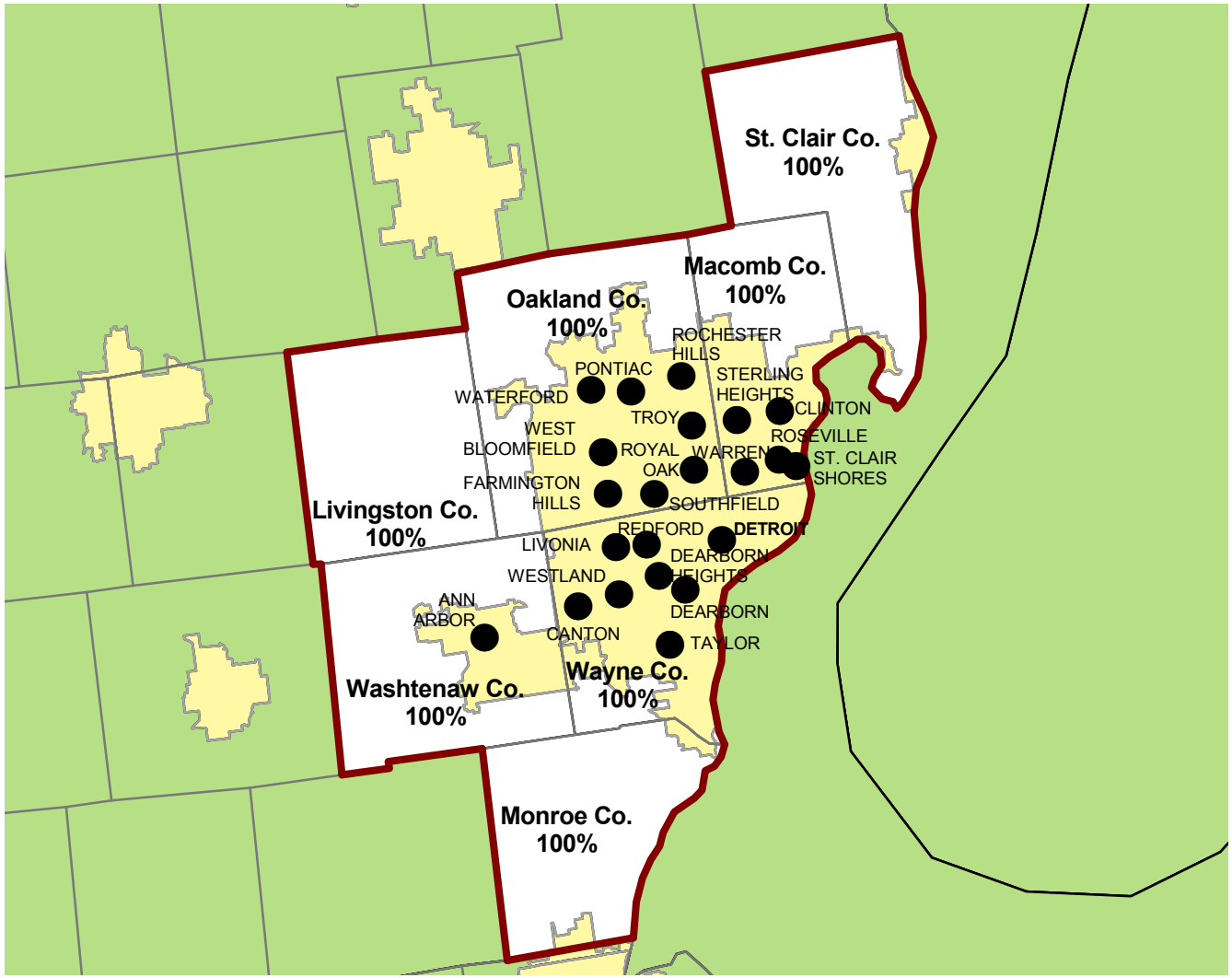


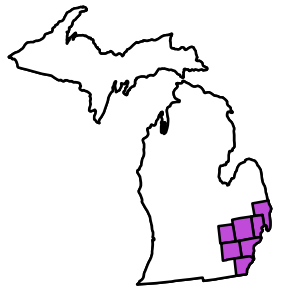
* Indicators are single surrogates that do not necessarily reflect the full breadth of ITS deployment activity

Link Description	1999	2005
14a. Transit Management agencies that disseminate information describing transit routes, schedules, and fares to travelers	(1/ 1) 100%	(1/ 1) 100%
14b. Transit Management agencies that disseminate information describing schedule/route adherence to travelers	(1/ 1) 100%	(1/ 1) 100%
1. Arterial Management agencies that disseminate arterial travel times, speeds, and conditions to the public	(3/ 9) 33%	(3/ 9) 33%
10. Freeway Management agencies that disseminate freeway travel times, speeds, and conditions to travelers	(0/ 1) 0%	(0/ 1) 0%
6. Incident Management agencies that disseminate information describing incident severity, location, and type to the public	(1/ 1) 100%	(1/ 1) 100%

Appendix A
Survey Coverage Area

SOUTHEAST MICHIGAN COUNCIL OF GOVERNMENTS, MI





City Included in Surveys

Metropolitan Planning Area Boundary

County Boundary

Urbanlized Area

Outside Survey Area

Percentage on the Map Represents Percentage of County Population Included within MPO Boundary

Appendix B
Surveyed Agencies

Surveyed Agencies

Agency Name	Phone	Fax	1999		1997	
			Out	In	Out	In
DETROIT, ANN ARBOR						
Arterial Management						
Ann Arbor City	(734) 996-3286	(734) 994-1765	7/29/1999	9/30/1999	08/04/1997	10/31/1997
Dearborn City	(313) 943-2445	(313) 943-3340	7/29/1999	10/27/1999	08/06/1997	10/24/1997
Detroit City	313.833.7290	313.224.1464	7/29/1999		08/06/1997	08/14/1997
Livingston County	(517) 546-4250	(517) 546-9628	7/29/1999	9/17/1999	08/04/1997	08/15/1997
Macomb County	(810) 463-8671	(810) 469-6130	7/29/1999	9/21/1999	08/06/1997	06/26/1998
Monroe County	(734) 243-7325	(734) 243-7008	7/29/1999	8/9/1999	08/04/1997	
Oakland County Road Commission (RCOC)	(248) 645-2000	(248) 645-1349	7/29/1999	8/16/1999	08/04/1997	08/15/1997
Pontiac City	(248) 857-7870	(248) 857-5615	7/29/1999		08/06/1997	
Royal Oak City	(248) 544-6636	(248) 546-1546	7/29/1999		08/06/1997	08/11/1997
St. Clair County	(810) 364-5720	(810) 364-9050	7/29/1999	10/15/1999	08/04/1997	
Washtenaw County	(734) 327-6687	(734) 761-3239	7/29/1999	9/7/1999	08/04/1997	08/18/1997
Wayne County	(734) 955-2158	(734) 955-2338	7/29/1999	10/13/1999	08/06/1997	07/02/1998
Electronic Toll Collection						
Detroit and Canada Tunnel Corporation	(519) 258-7424	(313) 567-2565	6/30/1999	7/1/1999	08/04/1997	08/04/1997
Emergency Management						
Ann Arbor City Fire Department	734-994-4171	734-994-8814	6/28/1999	7/2/1999	07/15/1998	07/15/1998
Ann Arbor City Police Department	734- 994-2815	734-994-2701	6/28/1999	8/24/1999	06/23/1998	06/23/1998
Canton Township Fire Department	734- 397-6448	734-398-5250	6/28/1999	8/26/1999	06/25/1998	06/25/1998
Canton Township Police Department	734-397-5336	734-397-5465	6/28/1999	7/6/1999	06/24/1998	06/24/1998
Clinton Township Fire Department	(810) 263-8437	(810) 263-8004	6/28/1999	7/1/1999	06/23/1998	06/23/1998
Clinton Township Police Department	(810) 791-2020	(810) 790-2388	6/28/1999	7/12/1999	06/30/1998	06/30/1998
Dearborn City Fire Department	(313) 943-3034	(313) 943-2495	6/28/1999	8/26/1999	06/23/1998	06/23/1998
Dearborn City Police Department	(313) 943-2424	(313) 943-4092	6/28/1999		06/23/1998	06/23/1998
Dearborn Heights Fire Department	(313) 277-7736	(313) 277-7727	6/28/1999		06/23/1998	06/23/1998
Dearborn Heights Police Department	(313) 277-7495	(313) 274-8456	6/28/1999	8/25/1999	07/15/1998	07/15/1998
Detroit City Fire Department	(313) 237-3150	(313) 237-3148	6/28/1999		06/30/1998	06/30/1998
Detroit City Police Department	(313) 596-1800	(313) 596-1579	6/28/1999		06/24/1998	06/24/1998
Farmington City Fire Department	(248) 474-4700	(248) 473-7261	6/28/1999	8/13/1999	06/23/1998	06/23/1998
Farmington City Police Department	(248) 474-4700	(248) 473-7261	6/28/1999	8/13/1999	06/23/1998	06/23/1998
Livingston County Sheriff Department	(517) 546-2440	517-546-1744	6/28/1999		08/04/1997	08/05/1997
Livonia City Fire & EMS Department	734-466-2444	734-466-2188	6/28/1999	8/26/1999	08/04/1997	08/05/1997
Livonia City Police Department	734-466-2308	734-427-8044	6/28/1999	7/15/1999	06/25/1998	06/25/1998

Agency Name	Phone	Fax	1999		1997	
			Out	In	Out	In
Macomb County Sheriff	(810) 307-9337	(810) 307-9621	6/28/1999	7/2/1999	06/24/1998	06/24/1998
Michigan State Police	(313) 256-2990	(313) 256-2930	6/28/1999	9/9/1999	08/04/1997	08/14/1997
Monroe County Sheriffs Department	734-243-7497	734-240-7480	6/28/1999	8/16/1999	08/04/1997	08/18/1997
Oakland County Sheriff Department	(248) 858-5045	(248) 858-1012	6/28/1999	7/8/1999	07/16/1998	07/16/1998
Pontiac City Fire Department	(248) 857-7665	(248) 857-5659	6/28/1999	6/29/1999	07/15/1998	07/15/1998
Redford Township Fire Department	(313) 387-2649	(313) 387-2727	6/28/1999	6/30/1999	06/24/1998	06/24/1998
Redford Township Police Department	(313) 387-2585	(313) 387-2620	6/28/1999	7/7/1999	06/24/1998	06/24/1998
Rochester Hills City Fire Department	(248) 656-4717	(248) 656-4726	6/28/1999	8/26/1999	06/24/1998	06/24/1998
Roseville City Fire Department	(810) 445-5444	(810) 445-4019	6/28/1999	8/26/1999	06/23/1998	06/23/1998
Roseville City Police Department	(810) 775-2100	(810) 445-5066	6/28/1999	8/9/1999	06/23/1998	06/23/1998
Royal Oak City Fire Department	(248) 546-6310	(248) 546-6316	6/28/1999	8/11/1999	06/23/1998	06/23/1998
Royal Oak City Fire Department (Emergency	(248) 546-6310	(248) 546-6316	6/28/1999	8/11/1999	06/23/1998	06/23/1998
Royal Oak City Police Department	(248) 546-1500	(248) 546-1220	6/28/1999	8/26/1999	06/23/1998	06/23/1998
Shelby Township Fire Department	(810) 731-3476	(810) 726-7225	6/28/1999	6/29/1999	06/23/1998	06/23/1998
Shelby Township Fire Department (Emergency	(810) 731-3476	(810) 726-7225	6/28/1999	6/29/1999	06/23/1998	06/23/1998
Shelby Township Police	(810) 731-2121	(810) 726-7218	6/28/1999	7/2/1999	06/23/1998	06/23/1998
Southfield City Emergency Medical Services	248-354-4727	248-354-9512	6/28/1999	7/6/1999	08/04/1997	08/12/1997
Southfield City Fire Department	248-354-4727	248-354-9512	6/28/1999	7/6/1999	08/04/1997	08/12/1997
Southfield City Police Department	248-354-4727	248-354-9512	6/28/1999	7/6/1999	08/04/1997	08/12/1997
St. Clair County Sheriff Department	(810) 987-1712	(810) 985-3219	6/28/1999	8/10/1999	06/23/1998	06/23/1998
St. Clair Shores Fire Department	(810) 445-5380	(810) 445-4031	6/28/1999	8/12/1999	06/23/1998	06/23/1998
St. Clair Shores Fire Department (Emergency	(810) 445-5380	(810) 445-4031	6/28/1999	8/12/1999	06/23/1998	06/23/1998
St. Clair Shores Police Department	(810) 445-5314	(810) 776-7914	6/28/1999	8/18/1999	06/23/1998	06/23/1998
Sterling Heights City Fire Department	(810) 446-2951	(810) 726-7007	6/28/1999	6/30/1999	06/24/1998	06/24/1998
Sterling Heights City Police Department	(810) 446-2800	(810) 276-4068	6/28/1999	7/15/1999	06/25/1998	06/25/1998
Taylor City Fire Department	(734) 374-1395	(734) 374-2742	6/28/1999	8/10/1999	06/24/1998	06/24/1998
Taylor City Police Department	734-374-1390	734-374-1340	6/28/1999	8/26/1999	06/23/1998	06/23/1998
Troy City Police Department	(248) 524-3389	(248) 524-9023	6/28/1999	7/1/1999	06/24/1998	06/24/1998
Troy City Fire Department	(248) 524-3419	(248) 689-7520	6/28/1999	6/30/1999	08/04/1997	08/05/1997
Troy City Fire Department (Emergency Medical)	(248) 524-3419	(248) 689-7520	6/28/1999	6/30/1999	08/04/1997	08/05/1997
Warren City Fire Department	(810) 756-2800	(810) 774-2120	6/28/1999	7/15/1999	06/24/1998	06/24/1998
Washtenaw County Sheriff Department	734-971-4978	734-971-9248	6/28/1999	7/2/1999	08/04/1997	08/05/1997
Waterford Township Fire Department	(248) 673-0405	(248) 674-4095	6/28/1999	6/30/1999	06/30/1998	06/30/1998
Waterford Township Police Department	(248) 674-0351	(248) 673-5190	6/28/1999	8/24/1999	06/24/1998	06/24/1998
Wayne Sheriffs Department	(313) 224-2222	(313) 224-2367	6/28/1999	7/1/1999	08/05/1997	08/06/1997
West Bloomfield Fire Department	(248) 626-5391	(248) 661-7519	6/28/1999	7/5/1999	06/24/1998	06/24/1998

Agency Name	Phone	Fax	1999		1997	
			Out	In	Out	In
West Bloomfield Police Department	(248) 682-1555	(248) 682-1811	6/28/1999	6/29/1999	06/24/1998	06/24/1998
Westland City Fire Department	734 467-3201	734 467-7909	6/28/1999	7/8/1999	06/24/1998	06/24/1998
Westland City Police Department	734-722-9600	734- 722-3220	6/28/1999	8/27/1999	06/30/1998	06/30/1998
Freeway Management						
Michigan Department of Transportation	(313) 256-9800	(313) 256-9036	7/29/1999	9/20/1999	08/04/1997	09/02/1997
MPO						
Southeast Michigan Council of Governments	(313) 961-4266	(313) 961-4869	7/15/1999	8/2/1999		
Transit Management						
Detroit Transportation Corporation	(313) 833-7670	(313) 833-5523	8/9/1999		07/15/1997	
Ann Arbor Transportation Authority	(734) 677-3944	(734) 973-6338	8/9/1999	9/24/1999	07/16/1997	07/22/1997
SMART	(248) 362-4633	(248) 362-0889	8/9/1999		07/16/1997	08/14/1997

Appendix C
Freeway Management Components

Freeway Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Michigan Department of Transportation	
	1999	**2005**
Agency Returned Survey?	Yes	
FREEWAY MANAGEMENT SECTION		
Number of freeway centerline miles that agency owns or maintains	555	
Number of freeway centerline miles that is used for planning	555	
Number of freeway entrance ramps that agency owns, operates or maintains	343	
Number of freeway entrance ramps that is used for planning	343	
Type of facilities used to conduct freeway/incident management activities		
Activities housed in a free-standing dedicated building?	No	
Activities housed in a building shared with other activities?	Yes	
Activities conducted in a dedicated control room?	Yes	
Control room contains operator console(s)?	Yes	
Control room contains electronic wall map?	Yes	
Control room contains CCTV display(s)?	Yes	
Activities conducted in a room containing workstations or PCs that manage traffic?	Yes	
Facilities are electronically linked to other transportation mgt facilities?	Yes	
Staffing and hours of operation of freeway/incident management activities		
Number of full-time agency staff members	7	
Number of full time contractor staff members	NR	
Number of part-time agency staff members	1	
Number of part-time contractor staff members	8	
Staffed 24 hours day by agency staff or by others	others	
Staffed during peak hours only by agency staff or by others	agency	
Staffed by others during off-peak hours	Yes	
Agency staff perform transportation management as an ancillary duty	No	
Agency staff dedicated to transportation management duty	No	
Types of operations conducted for freeway/incident management		
Incident detection and management?	Yes	
This metropolitan area?	Yes	
Other metropolitan area?	No	
Statewide?	No	
Monitoring and troubleshooting status of system components?	Yes	
Manual override of ramp metering rates at freeway on-ramps?	Yes	
Operating transportation management roadside devices?	Yes	
Radio communications with other agencies?	No	
Exchange of electronic data with other agencies such as computer aided dispatch?	Yes	

	Michigan Department of Transportation	
	1999	**2005**
Real-Time Traffic Data Collection Technologies		
Total number of miles under surveillance with real-time data collection tech.	180	300
Number of Stations with data collection technologies		
Loop detectors	2,260	3,470
Video imaging detectors	NR	10
Probe readers (elec. toll tags, transit vehicles, other technology)	0	0
Microwave radar	NR	5
Other (e.g., acoustic detectors)	72	6,072
Number of Miles covered with data collection technologies		
Loop detectors	180	200
Video imaging detectors	NR	7
Probe readers (elec. toll tags, transit vehicles, other technology)	0	0
Microwave radar	NR	3
Other (e.g., acoustic detectors)	4	100
Variable Message Signs (VMS) on Freeways		
Candidate locations for deployment of VMS where VMS has been deployed	57	100
Candidate locations for deployment of VMS	112	180
Roadside Technologies used to Distribute Traveler Information		
Total number of miles where information is distributed	148	300
Number deployed		
Highway advisory radio	12	22
In-vehicle signing	0	0
Portable variable message signs	0	0
Other	0	0
Miles covered		
Highway advisory radio	148	300
In-vehicle signing	0	0
Portable variable message signs	0	0
Other	0	0
Ramp Meters on Freeways		
Number of entrance ramp meters operated under isolated control	0	0
Number of entrance ramp meters operated under central control	60	111
Number of entrance ramp meters that provide preemption for emergency vehicles	0	0
Number of entrance ramp meters that provide priority for transit vehicles	0	0
Total number of metered ramps	60	111
Freeway centerline miles under lane control	NR	30
Communication Links		
Freeway centerline miles covered by the following type of communication		
Twisted pair cable	32	32
Coaxial cable	32	32
Fiber-optic cable	10	152
Microwave radio	138	138

	Michigan Department of Transportation	
	1999	**2005**
Other	148	148
ITS Standards Used Related to Freeway Management		
ATMS Data Dictionary Sections 1 and 2 (ITE TM 1.01)	No	
ATMS Data Dictionary Sections 3 and 4 (ITE TM 1.02)	No	
Message Set for External TMC Communication (ITE-9604-1)	No	
NTCIP Class B Profile (AASHTO TS 3.3)	No	
NTCIP Data Collection and Monitoring Devices (AASHTO TS 3.DCM)	No	
NTCIP Object Definitions for Environmental Sensor Stations (AASHTO TS 3.7)	No	
NTICP Object Definitions for Dynamic Message Signs (AASHTO TS 3.6)	No	
NTICP Object Definitions for Highway Advisory Radio (AASHTO TS 3.HAR)	No	
NTICP Object Definitions for Ramp Meter Control (AASHTO TS 3.RMC)	No	
NTICP Object Definitions for Transportation Sensor Systems (AASHTO TS 3.TSS)	No	
NTICP Object Definitions for Video Camera Control (AASHTO TS 3.VCC)	No	
Would agency be willing to participate in testing of ITS Standards?	Yes	
Have agreements in place with other agencies to use similar hardware		
and software to aid maintenance and interoperability?	No	
INCIDENT MANAGEMENT SECTION		
Use of Service Patrols to Assist in Detection and Response to Incidents		
Publicly operated service patrol vehicles	No	
Privately operated service patrol vehicles operated under public contract	Yes	
Total number of freeway miles patrolled by these services	60	150
Miles Covered by Methods to Detect and Verify Incidents		
Free cellular phone call to a dedicated phone number other than 911	NR	555
Police patrols	180	300
Computer algorithms linked to traffic surveillance equipment	180	300
CCTV	180	300
Private sector sources (e.g., Shadow Traffic, SmartRoutes)	0	0
Other (e.g., free cell phone call to an area radio system, etc.)	615	705
Procedures in place for Freeway Incident Response?		
Working agreement(s)/arrangement(s) with other agencies	No	
Inter-agency incident management admin. team that meets regularly	No	
Major incident response team that responds to major incidents	No	
Set of goals/objectives for incident mgt that has been adopted by agencies in region	Yes	
Central focal point for facilitating the two-way flow of information		
among agencies responding to an incident?		
The central focal point is a Freeway or Traffic Management Center	No	
The central focal point is a Police, Fire or joint dispatch center	No	
The central focal point is another center	Yes	
Methods of Communication Used On-Site at an Incident		

Freeway Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Michigan Department of Transportation	
	1999	**2005**
Police		
Two-way radio	Yes	
800 MHz trunked radio	Yes	
Cellular telephone	No	
Hand-held (i.e., walkie-talkie)	No	
Automated data systems (i.e., CAD)	Yes	
Fire		
Two-way radio	Yes	
800 MHz trunked radio	No	
Cellular telephone	No	
Hand-held (i.e., walkie-talkie)	No	
Automated data systems (i.e., CAD)	No	
DOT		
Two-way radio	Yes	
800 MHz trunked radio	Yes	
Cellular telephone	No	
Hand-held (i.e., walkie-talkie)	No	
Automated data systems (i.e., CAD)	No	
Towing		
Two-way radio	Yes	
800 MHz trunked radio	No	
Cellular telephone	Yes	
Hand-held (i.e., walkie-talkie)	No	
Automated data systems (i.e., CAD)	No	
Which police agencies typically respond to incidents on freeways?		
State Police	Yes	
County Police or Sheriff	No	
City Police	No	
Who provides on-site emergency medical response?		
Fire	Yes	
Emergency Management Service Agency	No	
Private hospital	No	
Has a multi-agency contact list been developed in area containing the		
names, phone numbers, etc. for the appropriate response personnel?	Yes	
Is the Incident Command System used to manage incident scenes?	DK	
Is there a legal specification by state law or formal agreement as to who		
is "in charge" at the incident scene?		
Specified by state law?	Yes	

Freeway Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Michigan Department of Transportation	
	1999	**2005**
Formal agreement?	No	
Not specified or don't know?	No	
On-scene command post used to manage activities of responding agencies?	DK	
Are there communication linkages to a communications traffic/freeway mgt center?	NR	
Plan developed and adopted by responding agencies for staging and parking		
response vehicles and equip. at incident site that minimizes lane blockage		
and facilitates the re-opening of lanes?	No	
Respondents protected through law or court opinion for liability claims		
for damages to vehicles or cargoes during clearance activities?	DK	
Are overturned tank trucks, which are intact and not leaking, uprighted		
without first off-loading?	No	
Does your state or local jurisdiction have a law that requires drivers		
involved in property-damage-only accidents to move the vehicles		
from travel lanes to a safe location to exchange info and wait for police?	No	
Have laws or policies regarding the removal of stalled/abandoned vehicles		
from freeway shoulders?	Yes	
Hours abandoned vehicles are allowed to remain on a freeway shoulder?	>36	
Have policies or procedures for quick removal of vehicles?	No	
Is Total Station equipment used to investigate major incidents?	DK	
Handling of Towing Responses to Incidents		
Formal contract based on qualifications?	No	
Rotation with companies under contract?	Yes	
Separate lists kept for light and heavy response and for specialty recovery?	Yes	
Rotation list with minimal qualifications?	No	
In towing qualifications, do you require towers to be certified under the		
Towing and Recovery Ass. of America's National Drivers Cert. Program?	DK	
_____		
DK: Don't know		
NR: No Response		
Leg: Legislation or action being planned		

Appendix D
Freeway Management Integration

Agency Name	Michigan Department of Transportation	
	1999	**2005**
Agency Returned Survey?	Yes	
Freeway Management Section		
Agencies your agency provides freeway travel times, speeds, and		
conditions information, share infrastructure or coordinates operation		
Freeway Management Agencies		
Provide Information	Michigan State Police	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Incident Management Agencies		
Provide Information	Michigan State Police	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Arterial Management Agencies		
Provide Information	RCOC	Macomb County, Wayne County, Washtenaw County Road Commission, Livingston County, Detroit City, St. Clair County
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Public Transit Operators		
Provide Information	None listed	Detroit Transportation Corporation, SMART
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Receiving real-time information via electronic means from others		
Incident Management agencies from which your agency receives		
incident severity, location, and type information	Michigan State Police, Michigan Emergency Patrol	None listed
Arterial Management agencies from which your agency receives		
arterial travel times, speeds, and conditions	RCOC	None listed
Public Transit operators from which your agency receives		
freeway travel times derived from vehicle probes	None listed	None listed
Toll Collection agencies from which your agency receives freeway travel		
times derived from vehicles probes	Ambassador Bridge, Blue Water Bridge	Detroit and Canada Tunnel Corporation

Agency Name	Michigan Department of Transportation	
	1999	**2005**
Freeway Incident Management Section		
Agencies your agency provides incident severity, location, and type info.		
and/or shares infrastructure and/or coordinates operation		
Arterial Management Agencies		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Emergency Management Agencies		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Freeway Management Agencies		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Public Transit Operators		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Receiving real-time information via electronic means from others		
Emergency Management agencies from which your agency receives		
incident clearance and/or incident severity and type		
Receive Arterial Incident Clearance Information	None listed	None listed
Receive Arterial Incident Severity Information	None listed	None listed
Arterial Management agencies from which your agency receives		
arterial travel times, speeds, and conditions	RCOC	Macomb County, Wayne County, Detroit City
Freeway Management agencies from which your agency receives		
freeway travel times, speeds, and conditions	Michigan State Police	Michigan State Police

*short survey: Agency responded using a short survey. The survey did not include names of individual agencies, but only identified whether integration exists.

Appendix E
Freeway Management Information Collection and Dissemination

Data Collection and Dissemination: Freeway Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Michigan Department of Transportation	
	1999	**2005**
Agency Returned Survey?	Yes	
Freeway Management Section		
Data collected, archived, and/or transferred to another agency		
Collected by your agency	Traffic speeds, Lane occupancy, Traffic volumes, Incidents, Current work zones, Scheduled work zones	Ramp queues, Metering rate, Travel Time
Archived by your agency	Traffic speeds, Lane occupancy, Traffic volumes	Ramp queues, Metering rate, Incidents, Travel Time
Transferred to another agency by your agency	Traffic speeds, Lane occupancy, Traffic volumes, Incidents, Current work zones, Scheduled work zones	Travel Time
Importance of making information available to the public		
Ranked High	Lane occupancy, Metering rate, Incidents, Current work zones, Scheduled work zones, Travel Time	
Ranked Medium	Traffic speeds, Ramp queues, Road conditions, Route designations (snow emergency, etc.), Weather conditions, Intermodal (air, rail, water) connections	
Ranked Low	Traffic volumes, Vehicle classification, Probe vehicles, Emergency/evacuation routes and procedures, Highway operations coordination information	
Groups that make requests for the data	Universities, State DOT personnel, Federal DOT personnel, Media (I.e., TV stations, radio stations), MPOs, Consultants	
What is the data used for?	Traffic analysis, Construction impact determination, Planning, Incident detection algorithm development, Roadway impact analysis, Dissemination to the public	
Methods used to disseminate freeway information to the public		

Data Collection and Dissemination: Freeway Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Michigan Department of Transportation	
	1999	**2005**
Technologies your agency uses to disseminate:	NR	NR
Technologies your agency (through another agency or org.) uses to disseminate:	Telephone system, Internet Web sites, Pagers or personal data assistants, Facsimile	In-vehicle navigation systems
Internet web site reporting freeway conditions	NR	
Telephone system for reporting freeway information to the public	313-964-6841	
Organizations your agency sends information for dissemination to the public	Smart Route Systems 313-964-8490	
Freeway Incident Management Section		
Methods used to distribute incident location and severity information		
to the public		
Technologies your agency uses to disseminate:	Telephone system, Internet Web sites, Pagers or personal data assistants, Facsimile	NR
Technologies your agency (through another agency or org.) uses to disseminate:	Telephone system, Internet Web sites, Pagers or personal data assistants, Facsimile	E-mail or other direct PC communication, Cell phone/voice, Cell phone/data
Internet web site reporting incident information	NR	
Telephone system for reporting incident information to the public	313-964-6841	
Organizations your agency sends information for dissemination to the public	SmartRoute Systems	

Appendix F
Arterial Management Components

Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Ann Arbor City		Dearborn City		Livingston County		Macomb County	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Agency Returned Survey?	Yes		Yes		Yes		Yes	
ARTERIAL MANAGEMENT SECTION								
Number of arterial miles that agency owns or maintains	52		NR		28		324	
Number of arterial miles that is used for planning	52		NR		0		235	
Number of highway-rail intersections that agency maintains	16		3		50		41	
Number of highway-rail intersections that is used for planning	10		1		0		41	
Type of facilities used to conduct arterial management activities								
Activities housed in a free-standing dedicated building?	No		No		No		No	
Activities housed in a building shared with other activities?	Yes		No		Yes		No	
Activities conducted in a dedicated control room?	No		No		No		No	
Control room contains operator console(s)?	No		No		No		No	
Control room contains electronic wall map?	No		No		No		No	
Control room contains CCTV display(s)?	No		No		No		No	
Activities conducted in a room containing workstations or PCs that manage traffic?	Yes		No		No		No	
Facilities are electronically linked to other transportation mgt facilities?	Yes		Yes		No		No	
Staffing and hours of operation of arterial management activities								
Number of full-time agency staff members	NR		5		NR		NR	
Number of full time contractor staff members	NR		NR		NR		NR	
Number of part-time agency staff members	NR		1		NR		NR	
Number of part-time contractor staff members	NR		NR		NR		NR	
Staffed 24 hours day by agency staff or by others	NR		agency		NR		NR	
Staffed during peak hours only by agency staff or by others	NR		NR		NR		NR	
Staffed by others during off-peak hours	No		No		No		No	
Agency staff perform transportation management as an ancillary duty	Yes		No		Yes		No	
Agency staff dedicated to transportation management duty	No		No		No		No	
Types of operations conducted for arterial management								
Incident detection and management?	No		Yes		No		No	
This metropolitan area?	No		Yes		No		No	
Other metropolitan area?	No		No		No		No	
Monitoring and troubleshooting status of system components?	Yes		Yes		Yes		No	
Radio communications with other agencies?	No		No		No		No	
Exchange of electronic data with other agencies such as computer aided dispatch?	No		No		No		No	
Manual override of traffic signal timing plans	Yes		No		No		Yes	
Operating transportation mgt roadside devices (e.g., VMS, CCTV, etc.)	No		No		No		No	

Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Ann Arbor City		Dearborn City		Livingston County		Macomb County	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Describe agency's role in traffic signal control	All roads in incorporated area		All roads in incorporated area		County routes only		All roads in county	
Traffic Signals Operated by Agency								
Number of signalized intersections operated and owned by agency	111	117	31	NR	15	25	300	NR
Number of signalized intersections operated by agency but owned by another	32	33	58	NR	0	0	500	NR
Total number of signalized intersections operated by agency	143	150	89	NR	15	25	800	NR
Characteristics of signalized intersections that agency operates								
Under closed loop or central system control	86	140	4	NR	8	15	3	NR
Under real-time traffic adaptive control using advanced software	0	20	0	NR	0	0	0	NR
Using SCOOT	No		No		No		No	
Using SCATS	No		No		No		No	
Name of software	NR		NR		NR		NR	
Allow signal preemption for emergency vehicles	3	NR	10	NR	0	0	10	NR
Allow signal priority for transit vehicles	0	NR	0	NR	0	0	0	NR
Within 200 feet of a highway-rail intersection	5	NR	1	NR	0	0	8	NR
Within 200 feet of a highway-rail intersection that adjust signal timing	5	NR	1	NR	0	0	8	NR
Software used to control the signals agency operates								
Date of last upgrade to traffic signal control system software?	1999		10-13-99 Y2K chips		NR		N/A	
How often do you update signal timing?	twice per year		As needed		NR		as needed	
Software used and number of signalized intersections under control (1999, 2005)	MARC PC, 26, NR MONARC, 60, NR		NR		NR		NR	
Controllers used to control signals								
NEMA	143	NR	61	77	15	25	349	NR
170/179	0	0	0	0	0	0	197	NR
2070 controller	0	0	17	NR	0	0	0	0
Other	0	0	0	0	0	0	0	0
Technologies Associated with Highway-Rail Intersections								
Total number of highway-rail intersections under electronic surveillance	5	NR	1	3	NR	NR	NR	NR
Highway-Rail intersection capapbilities								
Video surveillance	0	0	NR	3	0	0	0	0
Electronic surveillance other than video	0	0	0	0	0	0	0	0
Ability to predict train arrival electronically	5	NR	1	NR	0	0	0	0
Equipped with electronic traffic violator devices	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0
Real-Time Electronic Traffic Data Collection Technologies								
Total number of signalized intersections covered by electronic surveillance	28	NR	NR	NR	NR	NR	NR	NR

	Ann Arbor City		Dearborn City		Livingston County		Macomb County	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Number of signalized intersections with data collection technologies								
Loop detectors	27	NR	0	0	0	0	0	0
Video detection cameras	1	NR	0	0	0	0	0	0
Probe readers reading toll tags	0	0	0	0	0	0	0	0
Probe readers reading license plates	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0
Roadside Technologies used to Distribute Traveler Information								
Number deployed								
Highway Advisory Radio	NR	NR	NR	NR	NR	NR	NR	NR
In-Vehicle Signing (IVS)	NR	NR	NR	NR	NR	NR	NR	NR
VMS controlling parking access	NR	NR	NR	NR	NR	NR	NR	NR
Miles covered								
Highway Advisory Radio	NR	NR	NR	NR	NR	NR	NR	NR
In-Vehicle Signing (IVS)	NR	NR	NR	NR	NR	NR	NR	NR
VMS controlling parking access								
Variable Message Signs (VMS) on Arterials								
Candidate locations for deployment of VMS where VMS has been deployed	NR	NR	NR	NR	NR	NR	NR	NR
Candidate locations for deployment of VMS	NR	NR	NR	NR	NR	NR	NR	NR
Communication Technologies								
Signalized intersections communicated with by each type of communication								
Twisted pair cable	6	0	0	0	0	0	0	0
Coaxial cable	0	0	0	0	0	0	0	0
Fiber-optic cable	60	135	0	0	0	0	0	0
Other (e.g., wireless, dial-up modems, leased lines, etc.)	15	5	0	25	0	0	0	0
Does agency convey information on highway-rail intersection crossing								
status to travelers via roadside media such as VMS or HAR?	No		No		No		No	
ITS Standards Used Related to Traffic Signal Control								
Advanced Transportation Controller (ATC) Software Application Interface (ITE 9603-1)	No		No		No		No	
ATC Physical Cabinet Functional Design (ITE-9603-2)	No		No		No		No	
ATC Functionality and Interface Definitions (ITE-9603-3)	No		No		No		No	
Natl. Trans. Communications for ITS Protocol (NTCIP) Class B Profile (AASHTO TS 3.3)	No		No		No		No	
NTCIP Data Collection and Monitoring Devices (AASHTO TS 3.DCM)	No		No		No		No	
NTCIP Object Definitions for Video Camera Control (AASHTO TS 3.VCC)	No		No		No		No	
NTCIP Object Definitions for Actuated Traffic Signal Controller Units (AASHTO TS 3.5)	No		No		No		No	
Would agency be willing to participate in testing of ITS Standards?	Yes		Yes		No		NR	
Have agreements in place with other agencies to use similar hardware								
and software to aid maintenance and interoperability?	No		No		No		No	
INCIDENT MANAGEMENT ON ARTERIAL STREETS								
Receive information on highway-rail intersection crossing blockages for								
the purpose of managing incident response?	No		No		No		No	
Use of Service Patrols to Assist in Detection and Response to Incidents								

	Ann Arbor City		Dearborn City		Livingston County		Macomb County	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Publicly operated service patrol vehicles	No		No		No		No	
Privately operated service patrol vehicles operated under public contract	No		No		No		No	
Total number of arterial miles patrolled by these services	NR	NR	NR	NR	NR	NR	NR	NR
Miles Covered by Methods to Detect and Verify Incidents								
Free cellular phone call to a dedicated phone number other than 911	0	0	0	0	0	0	0	0
Free cellular phone call to an area radio station	0	0	0	0	0	0	0	0
Police patrols	0	0	NR	NR	0	0	0	0
Computer algorithms linked to traffic surveillance equipment	0	0	0	0	0	0	0	0
CCTV	0	0	0	0	0	0	0	0
Private sector sources (e.g., Shadow Traffic, Smart Routes)	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0
Procedures in place for Arterial Incident Response?								
Working agreement(s)/arrangement(s) with other agencies	No		No		No		No	
Inter-agency incident management admin. team that meets regularly	No		No		No		No	
Major incident response team that responds to major incidents	No		No		No		No	
Set of goals/objectives for incident mgt that has been adopted by agencies in region	No		No		No		No	
Methods of Communication Used On-Site at an Incident								
Police								
Two-way radio	No		Yes		No		No	
800 MHz trunked radio	No		No		No		No	
Cellular telephone	No		Yes		No		No	
Hand-held (i.e., walkie-talkie)	No		Yes		No		No	
Automated data systems (i.e., CAD)	No		Yes		No		No	
Other	No		No		No		No	
Fire								
Two-way radio	No		Yes		No		No	
800 MHz trunked radio	No		No		No		No	
Cellular telephone	No		Yes		No		No	
Hand-held (i.e., walkie-talkie)	No		Yes		No		No	
Automated data systems (i.e., CAD)	No		Yes		No		No	
Other	No		No		No		No	
DOT								
Two-way radio	No		No		No		No	
800 MHz trunked radio	No		No		No		No	
Cellular telephone	No		No		No		No	
Hand-held (i.e., walkie-talkie)	No		No		No		No	
Automated data systems (i.e., CAD)	No		No		No		No	
Other	No		No		No		No	

	Ann Arbor City		Dearborn City		Livingston County		Macomb County	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Towing								
Two-way radio	No		No		No		No	
800 MHz trunked radio	No		No		No		No	
Cellular telephone	No		No		No		No	
Hand-held (i.e., walkie-talkie)	No		No		No		No	
Automated data systems (i.e., CAD)	No		No		No		No	
Other	No		No		No		No	
Which police agencies typically respond to incidents on arterials?								
State Police	No		No		No		No	
County Police or Sheriff	No		No		No		No	
City Police	No		Yes		No		No	
Who provides on-site emergency medical response?								
Fire	No		Yes		No		No	
Emergency Management Service Agency	No		No		No		No	
Private hospital	No		No		No		No	
Has a multi-agency contact list been developed in area containing the								
names, phone numbers, etc. for the appropriate response personnel?	NR		DK		NR		NR	
Is the Incident Command System used to manage incident scenes?	NR		DK		NR		NR	
Is there a legal specification by state law or formal agreement as to who								
is "in charge" at the incident scene?								
Specified by state law?	No		No		No		No	
Formal agreement?	No		No		No		No	
Not specified or don't know?	No		Yes		No		No	
On-scene command post used to manage activities of responding agencies?	NR		DK		NR		NR	
Are there communication linkages to a communications traffic/freeway mgt center?	NR		NR		NR		NR	
Plan developed and adopted by responding agencies for staging and parking								
response vehicles and equip. at incident site that minimizes lane blockage								
and facilitates the re-opening of lanes?	NR		DK		NR		NR	
Respondents protected through law or court opinion for liability claims								
for damages to vehicles or cargoes during clearance activities?	NR		DK		NR		NR	
Are overturned tank trucks, which are intact and not leaking, uprighted								
without first off-loading?	NR		No		NR		NR	
Does your state or local jurisdiction have a law that requires drivers								
involved in property-damage-only accidents to move the vehicles								
from travel lanes to a safe location to exchange info and wait for police?	NR		Yes		NR		NR	
Have laws or policies regarding the removal of stalled/abandoned vehicles								
from freeway shoulders?	NR		NR		NR		NR	
Hours abandoned vehicles are allowed to remain on a freeway shoulder?	NR		DK		NR		NR	
Have policies or procedures for quick removal of vehicles?	NR		No		NR		NR	

Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Ann Arbor City		Dearborn City		Livingston County		Macomb County	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Is Total Station equipment used to investigate major incidents?	NR		DK		NR		NR	
Handling of Towing Responses to Incidents								
Formal contract based on qualifications?	No		No		No		No	
Rotation with companies under contract?	No		Yes		No		No	
Separate lists kept for light and heavy response and for specialty recovery?	NR		NR		NR		NR	
Rotation list with minimal qualifications?	No		No		No		No	
In towing qualifications, do you require towers to be certified under the								
Towing and Recovery Ass. of America's National Drivers Cert. Program?	NR		DK		NR		NR	
_____								
DK: Don't know								
NR: No Response								
Leg: Legislation or action being planned								

Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Monroe County		Oakland County Road Commission (RCOC)		St. Clair County		Washtenaw County	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Agency Returned Survey?	Yes		Yes		Yes		Yes	
ARTERIAL MANAGEMENT SECTION								
Number of arterial miles that agency owns or maintains	1,546		2,100		NR		1,500	
Number of arterial miles that is used for planning	1,389		550		NR		1,500	
Number of highway-rail intersections that agency maintains	200		125		54		NR	
Number of highway-rail intersections that is used for planning	200		8		NR		0	
Type of facilities used to conduct arterial management activities								
Activities housed in a free-standing dedicated building?	No		No		No		No	
Activities housed in a building shared with other activities?	No		Yes		No		Yes	
Activities conducted in a dedicated control room?	No		Yes		No		No	
Control room contains operator console(s)?	No		Yes		No		No	
Control room contains electronic wall map?	No		No		No		No	
Control room contains CCTV display(s)?	No		Yes		No		No	
Activities conducted in a room containing workstations or PCs that manage traffic?	No		No		No		No	
Facilities are electronically linked to other transportation mgt facilities?	No		Yes		No		No	
Staffing and hours of operation of arterial management activities								
Number of full-time agency staff members	NR		NR		NR		NR	
Number of full time contractor staff members	NR		1		NR		NR	
Number of part-time agency staff members	NR		NR		NR		NR	
Number of part-time contractor staff members	NR		NR		NR		NR	
Staffed 24 hours day by agency staff or by others	NR		NR		NR		NR	
Staffed during peak hours only by agency staff or by others	NR		others		NR		NR	
Staffed by others during off-peak hours	No		No		No		No	
Agency staff perform transportation management as an ancillary duty	No		No		No		Yes	
Agency staff dedicated to transportation management duty	No		No		No		No	
Types of operations conducted for arterial management								
Incident detection and management?	No		Yes		No		No	
This metropolitan area?	No		Yes		No		No	
Other metropolitan area?	No		Yes		No		No	
Monitoring and troubleshooting status of system components?	No		Yes		No		No	
Radio communications with other agencies?	No		Yes		No		No	
Exchange of electronic data with other agencies such as computer aided dispatch?	No		Yes		No		No	
Manual override of traffic signal timing plans	No		Yes		No		No	
Operating transportation mgt roadside devices (e.g., VMS, CCTV, etc.)	No		Yes		No		No	

	Monroe County		Oakland County Road Commission (RCOC)		St. Clair County		Washtenaw County	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Describe agency's role in traffic signal control	County routes only		We operate traffic signals on all roads, but those of 3 communities. This means 60 of the 63 communities in Oakland County.		NR		County routes only	
Traffic Signals Operated by Agency								
Number of signalized intersections operated and owned by agency	26	29	400	500	NR	NR	54	NR
Number of signalized intersections operated by agency but owned by another	0	0	800	900	NR	NR	38	NR
Total number of signalized intersections operated by agency	26	29	1,200	1,400	20	20	92	NR
Characteristics of signalized intersections that agency operates								
Under closed loop or central system control	0	0	400	700	0	0	3	NR
Under real-time traffic adaptive control using advanced software	0	0	400	700	0	0	0	NR
Using SCOOT	No		No		No		No	
Using SCATS	No		Yes		No		No	
Name of software	NR		NR		NR		NR	
Allow signal preemption for emergency vehicles	2	NR	110	130	0	2	0	NR
Allow signal priority for transit vehicles	0	0	0	0	0	0	0	NR
Within 200 feet of a highway-rail intersection	0	0	8	8	1	1	0	NR
Within 200 feet of a highway-rail intersection that adjust signal timing	0	0	8	8	0	0	0	NR
Software used to control the signals agency operates								
Date of last upgrade to traffic signal control system software?	N/A		1999		NR		NR	
How often do you update signal timing?	5 to 6 years or when patterns change		as needed		NR		as needed	
Software used and number of signalized intersections under control (1999, 2005)	NR		SCATS, 400, 700		NR		MARC, 3, NR	
Controllers used to control signals								
NEMA	0	0	200	200	0	0	53	NR
170/179	0	0	0	0	0	0	0	0
2070 controller	0	0	0	200	0	0	0	0
Other	0	0	600	500	0	0	0	0
Technologies Associated with Highway-Rail Intersections								
Total number of highway-rail intersections under electronic surveillance	NR	NR	NR	NR	NR	NR	NR	NR
Highway-Rail intersection capapbilities								
Video surveillance	0	0	0	0	0	0	0	0
Electronic surveillance other than video	0	0	0	0	0	0	0	0
Ability to predict train arrival electronically	0	0	0	0	0	0	0	0
Equipped with electronic traffic violator devices	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0
Real-Time Electronic Traffic Data Collection Technologies								
Total number of signalized intersections covered by electronic surveillance	NR	NR	400	700	NR	NR	12	NR

	Monroe County		Oakland County Road Commission (RCOC)		St. Clair County		Washtenaw County	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Number of signalized intersections with data collection technologies								
Loop detectors	0	0	60	100	0	0	12	NR
Video detection cameras	0	0	350	600	0	0	0	0
Probe readers reading toll tags	0	0	0	0	0	0	0	0
Probe readers reading license plates	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0
Roadside Technologies used to Distribute Traveler Information								
Number deployed								
Highway Advisory Radio	NR	NR	NR	NR	NR	NR	NR	NR
In-Vehicle Signing (IVS)	NR	NR	NR	NR	NR	NR	NR	NR
VMS controlling parking access	NR	NR	NR	NR	NR	NR	NR	NR
Miles covered								
Highway Advisory Radio	NR	NR	NR	NR	NR	NR	NR	NR
In-Vehicle Signing (IVS)	NR	NR	NR	NR	NR	NR	NR	NR
VMS controlling parking access								
Variable Message Signs (VMS) on Arterials								
Candidate locations for deployment of VMS where VMS has been deployed	NR	NR	NR	NR	NR	NR	NR	NR
Candidate locations for deployment of VMS	NR	NR	NR	NR	NR	NR	NR	NR
Communication Technologies								
Signalized intersections communicated with by each type of communication								
Twisted pair cable	0	0	200	300	0	0	1	NR
Coaxial cable	0	0	0	0	0	0	0	0
Fiber-optic cable	0	0	0	0	0	0	0	0
Other (e.g., wireless, dial-up modems, leased lines, etc.)	0	0	362	700	0	0	0	0
Does agency convey information on highway-rail intersection crossing								
status to travelers via roadside media such as VMS or HAR?	No		No		No		No	
ITS Standards Used Related to Traffic Signal Control								
Advanced Transportation Controller (ATC) Software Application Interface (ITE 9603-1)	No		No		No		No	
ATC Physical Cabinet Functional Design (ITE-9603-2)	No		No		No		No	
ATC Functionality and Interface Definitions (ITE-9603-3)	No		No		No		No	
Natl. Trans. Communications for ITS Protocol (NTCIP) Class B Profile (AASHTO TS 3.3)	No		No		No		No	
NTCIP Data Collection and Monitoring Devices (AASHTO TS 3.DCM)	No		No		No		No	
NTCIP Object Definitions for Video Camera Control (AASHTO TS 3.VCC)	No		No		No		No	
NTCIP Object Definitions for Actuated Traffic Signal Controller Units (AASHTO TS 3.5)	No		No		No		No	
Would agency be willing to participate in testing of ITS Standards?	No		Yes		NR		No	
Have agreements in place with other agencies to use similar hardware								
and software to aid maintenance and interoperability?	No		No		NR		No	
INCIDENT MANAGEMENT ON ARTERIAL STREETS								
Receive information on highway-rail intersection crossing blockages for								
the purpose of managing incident response?	No		No		No		No	
Use of Service Patrols to Assist in Detection and Response to Incidents								

Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Monroe County		Oakland County Road Commission (RCOC)		St. Clair County		Washtenaw County	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Publicly operated service patrol vehicles	No		No		No		No	
Privately operated service patrol vehicles operated under public contract	No		No		No		No	
Total number of arterial miles patrolled by these services	NR	NR	NR	NR	NR	NR	NR	NR
Miles Covered by Methods to Detect and Verify Incidents								
Free cellular phone call to a dedicated phone number other than 911	0	0	0	0	0	0	0	0
Free cellular phone call to an area radio station	0	0	0	0	0	0	0	0
Police patrols	0	0	0	0	0	0	0	0
Computer algorithms linked to traffic surveillance equipment	0	0	0	0	0	0	0	0
CCTV	0	0	6	12	0	0	0	0
Private sector sources (e.g., Shadow Traffic, Smart Routes)	0	0	1	4	0	0	0	0
Other	0	0	0	0	0	0	0	0
Procedures in place for Arterial Incident Response?								
Working agreement(s)/arrangement(s) with other agencies	No		No		No		Yes	
Inter-agency incident management admin. team that meets regularly	No		No		No		No	
Major incident response team that responds to major incidents	Yes		No		No		No	
Set of goals/objectives for incident mgt that has been adopted by agencies in region	No		No		No		No	
Methods of Communication Used On-Site at an Incident								
Police								
Two-way radio	No		No		No		No	
800 MHz trunked radio	No		No		No		No	
Cellular telephone	Yes		No		No		Yes	
Hand-held (i.e., walkie-talkie)	Yes		No		No		No	
Automated data systems (i.e., CAD)	No		No		No		No	
Other	No		No		No		Yes	
Fire								
Two-way radio	No		No		No		No	
800 MHz trunked radio	No		No		No		No	
Cellular telephone	Yes		No		No		Yes	
Hand-held (i.e., walkie-talkie)	Yes		No		No		No	
Automated data systems (i.e., CAD)	No		No		No		No	
Other	No		No		No		Yes	
DOT								
Two-way radio	No		No		No		No	
800 MHz trunked radio	No		No		No		No	
Cellular telephone	Yes		No		No		Yes	
Hand-held (i.e., walkie-talkie)	No		No		No		No	
Automated data systems (i.e., CAD)	No		No		No		No	
Other	No		No		No		Yes	

	Monroe County		Oakland County Road Commission (RCOC)		St. Clair County		Washtenaw County	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Towing								
Two-way radio	No		No		No		No	
800 MHz trunked radio	No		No		No		No	
Cellular telephone	Yes		No		No		No	
Hand-held (i.e., walkie-talkie)	No		No		No		No	
Automated data systems (i.e., CAD)	No		No		No		No	
Other	No		No		No		No	
Which police agencies typically respond to incidents on arterials?								
State Police	Yes		No		No		Yes	
County Police or Sheriff	Yes		Yes		No		Yes	
City Police	No		Yes		No		No	
Who provides on-site emergency medical response?								
Fire	Yes		Yes		No		Yes	
Emergency Management Service Agency	No		No		No		Yes	
Private hospital	No		Yes		No		No	
Has a multi-agency contact list been developed in area containing the								
names, phone numbers, etc. for the appropriate response personnel?	Yes		No		NR		DK	
Is the Incident Command System used to manage incident scenes?	Yes		No		NR		DK	
Is there a legal specification by state law or formal agreement as to who								
is "in charge" at the incident scene?								
Specified by state law?	No		Yes		No		No	
Formal agreement?	Yes		No		No		No	
Not specified or don't know?	No		No		No		Yes	
On-scene command post used to manage activities of responding agencies?	No		DK		NR		No	
Are there communication linkages to a communications traffic/freeway mgt center?	NR		NR		NR		NR	
Plan developed and adopted by responding agencies for staging and parking								
response vehicles and equip. at incident site that minimizes lane blockage								
and facilitates the re-opening of lanes?	No		No		NR		DK	
Respondents protected through law or court opinion for liability claims								
for damages to vehicles or cargoes during clearance activities?	DK		DK		NR		DK	
Are overturned tank trucks, which are intact and not leaking, uprighted								
without first off-loading?	Yes		NR		NR		No	
Does your state or local jurisdiction have a law that requires drivers								
involved in property-damage-only accidents to move the vehicles								
from travel lanes to a safe location to exchange info and wait for police?	No		No		NR		No	
Have laws or policies regarding the removal of stalled/abandoned vehicles								
from freeway shoulders?	No		Yes		NR		Yes	
Hours abandoned vehicles are allowed to remain on a freeway shoulder?	>36		>36		NR		DK	
Have policies or procedures for quick removal of vehicles?	No		No		NR		No	

Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Monroe County		Oakland County Road Commission (RCOC)		St. Clair County		Washtenaw County	
	1999	**2005**	**1999**	**2005**	**1999**	**2005**	**1999**	**2005**
Is Total Station equipment used to investigate major incidents?	No		DK		NR		DK	
Handling of Towing Responses to Incidents								
Formal contract based on qualifications?	No		No		No		No	
Rotation with companies under contract?	Yes		No		No		No	
Separate lists kept for light and heavy response and for specialty recovery?	Yes		NR		NR		NR	
Rotation list with minimal qualifications?	No		No		No		No	
In towing qualifications, do you require towers to be certified under the								
Towing and Recovery Ass. of America's National Drivers Cert. Program?	DK		DK		NR		DK	
_____								
DK: Don't know								
NR: No Response								
Leg: Legislation or action being planned								

Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Wayne County		Totals	
	1999	**2005**	**1999**	**2005**
Agency Returned Survey?	Yes		9	
ARTERIAL MANAGEMENT SECTION				
Number of arterial miles that agency owns or maintains	NR		5,550	
Number of arterial miles that is used for planning	NR		3,726	
Number of highway-rail intersections that agency maintains	225		714	
Number of highway-rail intersections that is used for planning	NR		260	
Type of facilities used to conduct arterial management activities				
Activities housed in a free-standing dedicated building?	No		0	
Activities housed in a building shared with other activities?	No		4	
Activities conducted in a dedicated control room?	No		1	
Control room contains operator console(s)?	No		1	
Control room contains electronic wall map?	No		0	
Control room contains CCTV display(s)?	No		1	
Activities conducted in a room containing workstations or PCs that manage traffic?	No		1	
Facilities are electronically linked to other transportation mgt facilities?	No		3	
Staffing and hours of operation of arterial management activities				
Number of full-time agency staff members	NR		5	
Number of full time contractor staff members	NR		1	
Number of part-time agency staff members	NR		1	
Number of part-time contractor staff members	NR		0	
Staffed 24 hours day by agency staff or by others	NR			
Staffed during peak hours only by agency staff or by others	NR			
Staffed by others during off-peak hours	No		0	
Agency staff perform transportation management as an ancillary duty	No		3	
Agency staff dedicated to transportation management duty	No		0	
Types of operations conducted for arterial management				
Incident detection and management?	No		2	
This metropolitan area?	No		2	
Other metropolitan area?	No		1	
Monitoring and troubleshooting status of system components?	No		4	
Radio communications with other agencies?	No		1	
Exchange of electronic data with other agencies such as computer aided dispatch?	No		1	
Manual override of traffic signal timing plans	No		3	
Operating transportation mgt roadside devices (e.g., VMS, CCTV, etc.)	No		1	

Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Wayne County		Totals	
	1999	**2005**	**1999**	**2005**
Describe agency's role in traffic signal control	NR			
Traffic Signals Operated by Agency				
Number of signalized intersections operated and owned by agency	NR	NR	937	671
Number of signalized intersections operated by agency but owned by another	NR	NR	1,428	933
Total number of signalized intersections operated by agency	1,407	1,450	3,792	3,074
Characteristics of signalized intersections that agency operates				
Under closed loop or central system control	0	10	504	865
Under real-time traffic adaptive control using advanced software	0	0	400	720
Using SCOOT	No		0	
Using SCATS	No		1	
Name of software	NR			
Allow signal preemption for emergency vehicles	40	45	175	177
Allow signal priority for transit vehicles	0	0	0	0
Within 200 feet of a highway-rail intersection	8	10	31	19
Within 200 feet of a highway-rail intersection that adjust signal timing	8	10	30	18
Software used to control the signals agency operates				
Date of last upgrade to traffic signal control system software?	NR			
How often do you update signal timing?	NR			
Software used and number of signalized intersections under control (1999, 2005)	NR			
Controllers used to control signals				
NEMA	0	0	821	302
170/179	0	0	197	0
2070 controller	0	0	17	200
Other	0	0	600	500
Technologies Associated with Highway-Rail Intersections				
Total number of highway-rail intersections under electronic surveillance	NR	NR	6	3
Highway-Rail intersection capapbilities				
Video surveillance	0	0	0	3
Electronic surveillance other than video	0	0	0	0
Ability to predict train arrival electronically	0	0	6	0
Equipped with electronic traffic violator devices	0	0	0	0
Other	0	0	0	0
Real-Time Electronic Traffic Data Collection Technologies				
Total number of signalized intersections covered by electronic surveillance	NR	NR	440	700

Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Wayne County		Totals	
	1999	**2005**	**1999**	**2005**
Number of signalized intersections with data collection technologies				
Loop detectors	0	0	99	100
Video detection cameras	0	0	351	600
Probe readers reading toll tags	0	0	0	0
Probe readers reading license plates	0	0	0	0
Other	0	0	0	0
Roadside Technologies used to Distribute Traveler Information				
Number deployed				
Highway Advisory Radio	NR	NR	0	0
In-Vehicle Signing (IVS)	NR	NR	0	0
VMS controlling parking access	NR	NR	0	0
Miles covered				
Highway Advisory Radio	15	20	15	20
In-Vehicle Signing (IVS)	0	0	0	0
VMS controlling parking access				
Variable Message Signs (VMS) on Arterials				
Candidate locations for deployment of VMS where VMS has been deployed	1	4	1	4
Candidate locations for deployment of VMS	1	4	1	4
Communication Technologies				
Signalized intersections communicated with by each type of communication				
Twisted pair cable	0	0	207	300
Coaxial cable	0	0	0	0
Fiber-optic cable	0	0	60	135
Other (e.g., wireless, dial-up modems, leased lines, etc.)	0	0	377	730
Does agency convey information on highway-rail intersection crossing				
status to travelers via roadside media such as VMS or HAR?	No		0	
ITS Standards Used Related to Traffic Signal Control				
Advanced Transportation Controller (ATC) Software Application Interface (ITE 9603-1)	No		0	
ATC Physical Cabinet Functional Design (ITE-9603-2)	No		0	
ATC Functionality and Interface Definitions (ITE-9603-3)	No		0	
Natl. Trans. Communications for ITS Protocol (NTCIP) Class B Profile (AASHTO TS 3.3)	No		0	
NTCIP Data Collection and Monitoring Devices (AASHTO TS 3.DCM)	No		0	
NTCIP Object Definitions for Video Camera Control (AASHTO TS 3.VCC)	No		0	
NTCIP Object Definitions for Actuated Traffic Signal Controller Units (AASHTO TS 3.5)	No		0	
Would agency be willing to participate in testing of ITS Standards?	NR		3	
Have agreements in place with other agencies to use similar hardware				
and software to aid maintenance and interoperability?	NR		0	
INCIDENT MANAGEMENT ON ARTERIAL STREETS				
Receive information on highway-rail intersection crossing blockages for				
the purpose of managing incident response?	No		0	
Use of Service Patrols to Assist in Detection and Response to Incidents				

Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Wayne County		Totals	
	1999	**2005**	**1999**	**2005**
Publicly operated service patrol vehicles	Yes		1	
Privately operated service patrol vehicles operated under public contract	No		0	
Total number of arterial miles patrolled by these services	718	718	718	718
Miles Covered by Methods to Detect and Verify Incidents				
Free cellular phone call to a dedicated phone number other than 911	0	0	0	0
Free cellular phone call to an area radio station	0	0	0	0
Police patrols	0	0	0	0
Computer algorithms linked to traffic surveillance equipment	0	0	0	0
CCTV	0	0	6	12
Private sector sources (e.g., Shadow Traffic, Smart Routes)	0	0	1	4
Other	0	0	0	0
Procedures in place for Arterial Incident Response?				
Working agreement(s)/arrangement(s) with other agencies	No		1	
Inter-agency incident management admin. team that meets regularly	No		0	
Major incident response team that responds to major incidents	No		1	
Set of goals/objectives for incident mgt that has been adopted by agencies in region	No		0	
Methods of Communication Used On-Site at an Incident				
Police				
Two-way radio	No		1	
800 MHz trunked radio	No		0	
Cellular telephone	No		3	
Hand-held (i.e., walkie-talkie)	No		2	
Automated data systems (i.e., CAD)	No		1	
Other	No		1	
Fire				
Two-way radio	No		1	
800 MHz trunked radio	No		0	
Cellular telephone	No		3	
Hand-held (i.e., walkie-talkie)	No		2	
Automated data systems (i.e., CAD)	No		1	
Other	No		1	
DOT				
Two-way radio	No		0	
800 MHz trunked radio	No		0	
Cellular telephone	No		2	
Hand-held (i.e., walkie-talkie)	No		0	
Automated data systems (i.e., CAD)	No		0	
Other	No		1	

	Wayne County		Totals	
	1999	**2005**	**1999**	**2005**
Towing				
Two-way radio	No		0	
800 MHz trunked radio	No		0	
Cellular telephone	No		1	
Hand-held (i.e., walkie-talkie)	No		0	
Automated data systems (i.e., CAD)	No		0	
Other	No		0	
Which police agencies typically respond to incidents on arterials?				
State Police	No		2	
County Police or Sheriff	No		3	
City Police	No		2	
Who provides on-site emergency medical response?				
Fire	No		4	
Emergency Management Service Agency	No		1	
Private hospital	No		1	
Has a multi-agency contact list been developed in area containing the				
names, phone numbers, etc. for the appropriate response personnel?	NR		1	
Is the Incident Command System used to manage incident scenes?	NR		1	
Is there a legal specification by state law or formal agreement as to who				
is "in charge" at the incident scene?				
Specified by state law?	No		1	
Formal agreement?	No		1	
Not specified or don't know?	No		2	
On-scene command post used to manage activities of responding agencies?	NR		0	
Are there communication linkages to a communications traffic/freeway mgt center?	NR		0	
Plan developed and adopted by responding agencies for staging and parking				
response vehicles and equip. at incident site that minimizes lane blockage				
and facilitates the re-opening of lanes?	NR		0	
Respondents protected through law or court opinion for liability claims				
for damages to vehicles or cargoes during clearance activities?	NR		0	
Are overturned tank trucks, which are intact and not leaking, uprighted				
without first off-loading?	NR		1	
Does your state or local jurisdiction have a law that requires drivers				
involved in property-damage-only accidents to move the vehicles				
from travel lanes to a safe location to exchange info and wait for police?	NR		1	
Have laws or policies regarding the removal of stalled/abandoned vehicles				
from freeway shoulders?	NR		2	
Hours abandoned vehicles are allowed to remain on a freeway shoulder?	NR			
Have policies or procedures for quick removal of vehicles?	NR		0	

	Wayne County		Totals	
	1999	**2005**	**1999**	**2005**
Is Total Station equipment used to investigate major incidents?	NR		0	
Handling of Towing Responses to Incidents				
Formal contract based on qualifications?	No		0	
Rotation with companies under contract?	No		2	
Separate lists kept for light and heavy response and for specialty recovery?	NR		1	
Rotation list with minimal qualifications?	No		0	
In towing qualifications, do you require towers to be certified under the				
Towing and Recovery Ass. of America's National Drivers Cert. Program?	NR		0	
_____				
DK: Don't know				
NR: No Response				
Leg: Legislation or action being planned				

Appendix G
Arterial Management Integration

Arterial Management Integration
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Ann Arbor City		Dearborn City	
	1999	**2005**	**1999**	**2005**
Agency Returned Survey?	Yes		Yes	
Arterial Management Section				
Arterial Mgt. agencies in metropolitan area with which you share info.				
Share Timing Plans Information	Washtenaw County Road Commission	None listed	Wayne County	None listed
Coordinate Changes to Timing Plans	None listed	None listed	Wayne County	None listed
Turn over Control of Signals	None listed	None listed	Wayne County	None listed
Agencies your agency provides arterial travel times, speeds, and				
conditions information, share infrastructure or coordinates operation				
Freeway Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
Incident Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed

Agency Name	Ann Arbor City		Dearborn City	
	1999	**2005**	**1999**	**2005**
Coordinate Operation	None listed	None listed	None listed	None listed
Public Transit Operators Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
Arterial Management Agencies				
Provide Information	None listed	None listed	Wayne County	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	Wayne County	None listed
Receiving real-time information via electronic means from others				
Freeway Management agencies from which your agency receives				
freeway travel times, speeds, and conditions	None listed	None listed	None listed	None listed
Public Transit operators from which your agency receives				
arterial travel times derived from vehicle probes	None listed	None listed	None listed	None listed
Incident Management agencies from which your agency receives				
incident clearance and/or incident severity, location, and type information				
Receive information on Incident Clearance	None listed	None listed	None listed	None listed
Receive information on Incident Severity, Location, and Type	None listed	None listed	None listed	None listed
Toll Collection agencies from which your agency receives arterial travel				
times derived from vehicles probes	None listed	None listed	None listed	None listed
Arterial Incident Management Section				
Agencies your agency provides incident severity, location, and type info.				
and/or shares infrastructure and/or coordinates operation				
Emergency Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed

Arterial Management Integration
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Ann Arbor City		Dearborn City	
	1999	**2005**	**1999**	**2005**
Coordinate Operation	None listed	None listed	None listed	None listed
Freeway Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
Public Transit Operators				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
Receiving real-time information via electronic means from others				
Emergency Management agencies from which your agency receives				
arterial incident clearance and/or arterial incident severity				
Receive Arterial Incident Clearance Information	None listed	None listed	None listed	None listed
Receive Arterial Incident Severity Information	None listed	None listed	None listed	None listed
Arterial Management agencies from which your agency receives				
arterial travel times, speeds, and conditions	None listed	None listed	None listed	None listed
Freeway Management agencies from which your agency receives				
freeway travel times, speeds, and conditions	None listed	None listed	None listed	None listed

*short survey: Agency responded using a short survey. The survey did not include names of individual agencies, but only identified whether integration exists.

Agency Name	Livingston County		Macomb County	
	1999	**2005**	**1999**	**2005**
Agency Returned Survey?	Yes		Yes	
Arterial Management Section				
Arterial Mgt. agencies in metropolitan area with which you share info.				
Share Timing Plans Information	None listed	None listed	Oakland County Road Commission (RCOC)	Oakland County Road Commission (RCOC)
Coordinate Changes to Timing Plans	None listed	None listed	Oakland County Road Commission (RCOC)	Oakland County Road Commission (RCOC)
Turn over Control of Signals	None listed	None listed	None listed	None listed
Agencies your agency provides arterial travel times, speeds, and				
conditions information, share infrastructure or coordinates operation				
Freeway Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
Incident Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed

Agency Name	Livingston County		Macomb County	
	1999	**2005**	**1999**	**2005**
Coordinate Operation	None listed	None listed	None listed	None listed
Public Transit Operators Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
Arterial Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
Receiving real-time information via electronic means from others				
Freeway Management agencies from which your agency receives				
freeway travel times, speeds, and conditions	None listed	None listed	None listed	None listed
Public Transit operators from which your agency receives				
arterial travel times derived from vehicle probes	None listed	None listed	None listed	SMART
Incident Management agencies from which your agency receives				
incident clearance and/or incident severity, location, and type information				
Receive information on Incident Clearance	None listed	None listed	None listed	None listed
Receive information on Incident Severity, Location, and Type	None listed	None listed	None listed	None listed
Toll Collection agencies from which your agency receives arterial travel				
times derived from vehicles probes	None listed	None listed	None listed	None listed
Arterial Incident Management Section				
Agencies your agency provides incident severity, location, and type info.				
and/or shares infrastructure and/or coordinates operation				
Emergency Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed

Arterial Management Integration
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Livingston County		Macomb County	
	1999	**2005**	**1999**	**2005**
Coordinate Operation	None listed	None listed	None listed	None listed
Freeway Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
Public Transit Operators				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
Receiving real-time information via electronic means from others				
Emergency Management agencies from which your agency receives				
arterial incident clearance and/or arterial incident severity				
Receive Arterial Incident Clearance Information	None listed	None listed	None listed	None listed
Receive Arterial Incident Severity Information	None listed	None listed	None listed	None listed
Arterial Management agencies from which your agency receives				
arterial travel times, speeds, and conditions	None listed	None listed	None listed	None listed
Freeway Management agencies from which your agency receives				
freeway travel times, speeds, and conditions	None listed	None listed	None listed	None listed

*short survey: Agency responded using a short survey. The survey did not include names of individual agencies, but only identified whether integration exists.

Agency Name	Monroe County		Oakland County Road Commission (RCOC)	
	1999	**2005**	**1999**	**2005**
Agency Returned Survey?	Yes		Yes	
Arterial Management Section				
Arterial Mgt. agencies in metropolitan area with which you share info.				
Share Timing Plans Information	None listed	None listed	Pontiac City, Royal Oak City, Auburn Hills, Michigan Department of Transportation	Michigan Department of Transportation
Coordinate Changes to Timing Plans	None listed	None listed	Pontiac City, Royal Oak City, Auburn Hills, Michigan Department of Transportation	Pontiac City, Royal Oak City, Auburn Hills, Michigan Department of Transportation
Turn over Control of Signals	None listed	None listed	Pontiac City, Royal Oak City, Auburn Hills, Michigan Department of Transportation	Pontiac City, Royal Oak City, Auburn Hills, Michigan Department of Transportation
Agencies your agency provides arterial travel times, speeds, and				
conditions information, share infrastructure or coordinates operation				
Freeway Management Agencies				
Provide Information	None listed	None listed	Michigan Department of Transportation	Michigan Department of Transportation
Share Infrastructure	None listed	None listed	Michigan Department of Transportation	Michigan Department of Transportation
Coordinate Operation	None listed	None listed	Michigan Department of Transportation	Michigan Department of Transportation
Incident Management Agencies				
Provide Information	None listed	None listed	Michigan Department of Transportation	Michigan Department of Transportation
Share Infrastructure	None listed	None listed	Michigan Department of Transportation	Michigan Department of Transportation

Agency Name	Monroe County		Oakland County Road Commission (RCOC)	
	1999	**2005**	**1999**	**2005**
Coordinate Operation	None listed	None listed	Michigan Department of Transportation	Michigan Department of Transportation
Public Transit Operators Agencies				
Provide Information	None listed	None listed	SMART	SMART
Share Infrastructure	None listed	None listed	SMART	SMART
Coordinate Operation	None listed	None listed	None listed	None listed
Arterial Management Agencies				
Provide Information	None listed	None listed	Pontiac City, Royal Oak City	Pontiac City, Royal Oak City
Share Infrastructure	None listed	None listed	Pontiac City, Royal Oak City	Pontiac City, Royal Oak City
Coordinate Operation	None listed	None listed	Pontiac City, Detroit City, Macomb County, Royal Oak City, Wayne County	Pontiac City, Detroit City, Macomb County, Royal Oak City, Wayne County
Receiving real-time information via electronic means from others				
Freeway Management agencies from which your agency receives				
freeway travel times, speeds, and conditions	None listed	None listed	Michigan Department of Transportation	Michigan Department of Transportation
Public Transit operators from which your agency receives				
arterial travel times derived from vehicle probes	None listed	None listed	None listed	SMART
Incident Management agencies from which your agency receives				
incident clearance and/or incident severity, location, and type information				
Receive information on Incident Clearance	None listed	None listed	None listed	Michigan Department of Transportation
Receive information on Incident Severity, Location, and Type	None listed	None listed	Michigan Department of Transportation	Michigan Department of Transportation
Toll Collection agencies from which your agency receives arterial travel				
times derived from vehicles probes	None listed	None listed	None listed	None listed
Arterial Incident Management Section				
Agencies your agency provides incident severity, location, and type info.				
and/or shares infrastructure and/or coordinates operation				
Emergency Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed

Agency Name	Monroe County		Oakland County Road Commission (RCOC)	
	1999	**2005**	**1999**	**2005**
Coordinate Operation	None listed	None listed	None listed	None listed
Freeway Management Agencies				
Provide Information	None listed	None listed	Michigan Department of Transportation	Michigan Department of Transportation
Share Infrastructure	None listed	None listed	Michigan Department of Transportation	Michigan Department of Transportation
Coordinate Operation	None listed	None listed	Michigan Department of Transportation	Michigan Department of Transportation
Public Transit Operators				
Provide Information	None listed	None listed	SMART	SMART
Share Infrastructure	None listed	None listed	SMART	SMART
Coordinate Operation	None listed	None listed	None listed	None listed
Receiving real-time information via electronic means from others				
Emergency Management agencies from which your agency receives				
arterial incident clearance and/or arterial incident severity				
Receive Arterial Incident Clearance Information	None listed	None listed	None listed	None listed
Receive Arterial Incident Severity Information	None listed	None listed	None listed	None listed
Arterial Management agencies from which your agency receives				
arterial travel times, speeds, and conditions	None listed	None listed	None listed	None listed
Freeway Management agencies from which your agency receives				
freeway travel times, speeds, and conditions	None listed	None listed	Michigan Department of Transportation	Michigan Department of Transportation

*short survey: Agency responded using a short survey. The survey did not include names of individual agencies, but only identified whether integration exists.

Arterial Management Integration
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	St. Clair County		Washtenaw County	
	1999	**2005**	**1999**	**2005**
Agency Returned Survey?	Yes		Yes	
Arterial Management Section				
Arterial Mgt. agencies in metropolitan area with which you share info.				
Share Timing Plans Information	None listed	None listed	Ann Arbor City, Wayne County	None listed
Coordinate Changes to Timing Plans	None listed	None listed	None listed	None listed
Turn over Control of Signals	None listed	None listed	None listed	None listed
Agencies your agency provides arterial travel times, speeds, and				
conditions information, share infrastructure or coordinates operation				
Freeway Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	Michigan Department of Transportation
Incident Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed

Agency Name	St. Clair County		Washtenaw County	
	1999	**2005**	**1999**	**2005**
Coordinate Operation	None listed	None listed	None listed	Michigan Department of Transportation
Public Transit Operators Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
Arterial Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	Ann Arbor City, Wayne County, Michigan Department of Transportation
Receiving real-time information via electronic means from others				
Freeway Management agencies from which your agency receives				
freeway travel times, speeds, and conditions	None listed	None listed	None listed	None listed
Public Transit operators from which your agency receives				
arterial travel times derived from vehicle probes	None listed	None listed	None listed	None listed
Incident Management agencies from which your agency receives				
incident clearance and/or incident severity, location, and type information				
Receive information on Incident Clearance	None listed	None listed	None listed	None listed
Receive information on Incident Severity, Location, and Type	None listed	None listed	Michigan State Police, Washtenaw County Sheriff Department	None listed
Toll Collection agencies from which your agency receives arterial travel				
times derived from vehicles probes	None listed	None listed	None listed	None listed
Arterial Incident Management Section				
Agencies your agency provides incident severity, location, and type info.				
and/or shares infrastructure and/or coordinates operation				
Emergency Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed

Arterial Management Integration
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	St. Clair County		Washtenaw County	
	1999	**2005**	**1999**	**2005**
Coordinate Operation	None listed	None listed	Michigan State Police, Washtenaw County Sheriff Department	Ann Arbor City Police Department
Freeway Management Agencies				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
Public Transit Operators				
Provide Information	None listed	None listed	None listed	None listed
Share Infrastructure	None listed	None listed	None listed	None listed
Coordinate Operation	None listed	None listed	None listed	None listed
Receiving real-time information via electronic means from others				
Emergency Management agencies from which your agency receives				
arterial incident clearance and/or arterial incident severity				
Receive Arterial Incident Clearance Information	None listed	None listed	None listed	None listed
Receive Arterial Incident Severity Information	None listed	None listed	None listed	None listed
Arterial Management agencies from which your agency receives				
arterial travel times, speeds, and conditions	None listed	None listed	None listed	None listed
Freeway Management agencies from which your agency receives				
freeway travel times, speeds, and conditions	None listed	None listed	None listed	None listed

*short survey: Agency responded using a short survey. The survey did not include names of individual agencies, but only identified whether integration exists.

Agency Name	Wayne County	
	1999	**2005**
Agency Returned Survey?	Yes	
Arterial Management Section		
Arterial Mgt. agencies in metropolitan area with which you share info.		
Share Timing Plans Information	short survey	None listed
Coordinate Changes to Timing Plans	short survey	None listed
Turn over Control of Signals	None listed	None listed
Agencies your agency provides arterial travel times, speeds, and		
conditions information, share infrastructure or coordinates operation		
Freeway Management Agencies		
Provide Information	short survey	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Incident Management Agencies		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed

Agency Name	Wayne County	
	1999	**2005**
Coordinate Operation	None listed	None listed
Public Transit Operators Agencies		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Arterial Management Agencies		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Receiving real-time information via electronic means from others		
Freeway Management agencies from which your agency receives		
freeway travel times, speeds, and conditions	None listed	None listed
Public Transit operators from which your agency receives		
arterial travel times derived from vehicle probes	None listed	None listed
Incident Management agencies from which your agency receives		
incident clearance and/or incident severity, location, and type information		
Receive information on Incident Clearance	None listed	None listed
Receive information on Incident Severity, Location, and Type	None listed	None listed
Toll Collection agencies from which your agency receives arterial travel		
times derived from vehicles probes	None listed	None listed
Arterial Incident Management Section		
Agencies your agency provides incident severity, location, and type info.		
and/or shares infrastructure and/or coordinates operation		
Emergency Management Agencies		
Provide Information	short survey	None listed
Share Infrastructure	None listed	None listed

Agency Name	Wayne County	
	1999	**2005**
Coordinate Operation	None listed	None listed
Freeway Management Agencies		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Public Transit Operators		
Provide Information	None listed	None listed
Share Infrastructure	None listed	None listed
Coordinate Operation	None listed	None listed
Receiving real-time information via electronic means from others		
Emergency Management agencies from which your agency receives		
arterial incident clearance and/or arterial incident severity		
Receive Arterial Incident Clearance Information	None listed	None listed
Receive Arterial Incident Severity Information	None listed	None listed
Arterial Management agencies from which your agency receives		
arterial travel times, speeds, and conditions	None listed	None listed
Freeway Management agencies from which your agency receives		
freeway travel times, speeds, and conditions	None listed	None listed

*short survey: Agency responded using a short survey. The survey did not include names of individual agencies, but only identified whether integration exists.

Appendix H
Arterial Management Information Collection and Dissemination

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Ann Arbor City		Dearborn City	
	1999	**2005**	**1999**	**2005**
Agency Returned Survey?	Yes		Yes	
Arterial Management Section				
Data collected, archived, and/or transferred to another agency				
Collected by your agency	Traffic volumes, Traffic speeds, Vehicle classification, Turning movements, Phasing/cycle lengths, Emergency vehicle signal preemption	NR	NR	NR
Archived by your agency	Traffic volumes, Traffic speeds, Vehicle classification, Turning movements, Phasing/cycle lengths, Emergency vehicle signal preemption	NR	NR	NR
Transferred to another agency by your agency	Traffic volumes, Traffic speeds	NR	NR	NR
Importance of making information available to the public				
Ranked High	NR		NR	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Ann Arbor City		Dearborn City	
	1999	**2005**	**1999**	**2005**
Ranked Medium	Traffic volumes, Traffic speeds		NR	
Ranked Low	Vehicle classification, Turning movements, Phasing/cycle lengths, Emergency vehicle signal preemption		NR	
Groups that make requests for the data	MPOs, Consultants		State DOT personnel, Consultants	
What is the data used for?	Traffic analysis, Planning, Dissemination to the public		Traffic analysis, Planning	
Methods used to disseminate arterial information to the public				
Technologies your agency uses to disseminate:	NR	NR	Dedicated cable TV, Telephone system, Internet Web sites	NR
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR	NR	NR
Internet web site reporting arterial conditions	NR		web site is not yet up, but will be soon.	
Telephone system for reporting arterial information to the public	NR		NR	
Organizations your agency sends information for dissemination to the public	NR		Cable TV (Media One) City Channel	
Arterial Incident Management Section				
Methods used to distribute incident location and severity information				
to the public				
Technologies your agency uses to disseminate:	NR	NR	Dedicated cable TV, Internet Web sites	NR
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR	NR	NR
Internet web site reporting incident information	NR		NR	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Ann Arbor City		Dearborn City	
	1999	**2005**	**1999**	**2005**
Telephone system for reporting incident information to the public	NR		NR	
Organizations your agency sends information for dissemination to the public	NR		NR	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Livingston County		Macomb County	
	1999	**2005**	**1999**	**2005**
Agency Returned Survey?	Yes		Yes	
Arterial Management Section				
Data collected, archived, and/or transferred to another agency				
Collected by your agency	Traffic volumes, Traffic speeds, Vehicle classification, Turning movements, Phasing/cycle lengths, Current work zones, Scheduled work zones	NR	NR	NR
Archived by your agency	Traffic volumes, Traffic speeds, Vehicle classification, Turning movements, Phasing/cycle lengths	NR	NR	NR
Transferred to another agency by your agency	Traffic volumes, Current work zones, Scheduled work zones	NR	NR	NR
Importance of making information available to the public				
Ranked High	Traffic volumes, Current work zones, Scheduled work zones		NR	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Livingston County		Macomb County	
	1999	**2005**	**1999**	**2005**
Ranked Medium	Traffic speeds		NR	
Ranked Low	Vehicle classification, Turning movements, Phasing/cycle lengths		NR	
Groups that make requests for the data	Media (I.e., TV stations, radio stations), Local government, citizens		NR	
What is the data used for?	Construction impact determination, Planning		NR	
Methods used to disseminate arterial information to the public				
Technologies your agency uses to disseminate:	NR	NR	NR	NR
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR	NR	NR
Internet web site reporting arterial conditions	NR		NR	
Telephone system for reporting arterial information to the public	NR		NR	
Organizations your agency sends information for dissemination to the public	NR		NR	
Arterial Incident Management Section				
Methods used to distribute incident location and severity information				
to the public				
Technologies your agency uses to disseminate:	NR	NR	NR	NR
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR	NR	NR
Internet web site reporting incident information	NR		NR	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Livingston County		Macomb County	
	1999	**2005**	**1999**	**2005**
Telephone system for reporting incident information to the public	NR		NR	
Organizations your agency sends information for dissemination to the public	NR		NR	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Monroe County	
	1999	**2005**
Agency Returned Survey?	Yes	
Arterial Management Section		
Data collected, archived, and/or transferred to another agency		
Collected by your agency	NR	NR
Archived by your agency	NR	NR
Transferred to another agency by your agency	NR	NR
Importance of making information available to the public		
Ranked High	NR	

Agency Name	Monroe County	
	1999	**2005**
Ranked Medium	NR	
Ranked Low	NR	
Groups that make requests for the data	NR	
What is the data used for?	NR	
Methods used to disseminate arterial information to the public		
Technologies your agency uses to disseminate:	NR	NR
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR
Internet web site reporting arterial conditions	NR	
Telephone system for reporting arterial information to the public	NR	
Organizations your agency sends information for dissemination to the public	NR	
Arterial Incident Management Section		
Methods used to distribute incident location and severity information		
to the public		
Technologies your agency uses to disseminate:	NR	Telephone system, Internet Web sites
Technologies your agency (through another agency or org.) uses to disseminate:	NR	NR
Internet web site reporting incident information	NR	

Data Collection and Dissemination: Arterial Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Monroe County	
	1999	**2005**
Telephone system for reporting incident information to the public	not in place at this time	
Organizations your agency sends information for dissemination to the public	NR	

Appendix I
Transit Management Components

Transit Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Ann Arbor Transportation Authority	
	1999	**2005**
Agency Returned Survey?	Yes	
Number of vehicles used in revenue service		
Fixed Route Bus	76	NR
Heavy or Rapid Rail	NR	NR
Light Rail	NR	NR
Demand Responsive	9	NR
Commuter Rail	NR	NR
Ferry Boat	NR	NR
Have of plan to have an Automated Vehicle Location System?	Yes	
Primary and Secondary Location Technologies Used		
Primary Technologies		
GPS	No	No
Sign/Odometer	No	No
Dead-Reckoning	No	No
LORAN C	No	No
Other	No	No
Backup Technologies		
GPS	No	No
Sign/Odometer	No	No
Dead-Reckoning	No	No
LORAN C	No	No
Other	No	No
Number of Vehicles Equipped with AVL		
Fixed Route Bus	76	NR
Heavy or Rapid Rail	NR	NR
Light Rail	NR	NR
Demand Responsive	9	NR
Commuter Rail	NR	NR
Ferry Boat	NR	NR
Motor Buses Operated as Vehicle Probes		
Number of Motor Buses equipped as probes on freeways?	NR	
Number of Motor Buses equipped as probes on arterials?	NR	
Have Organized Regional Incident Management Program?	No	
Have Automated Traveler Information System?	Yes	

Services Automated Traveler Info. System Applies:		
Fixed Route	Yes	
Heavy Rail	No	
Light Rail	No	
Demand Responsive	No	
Commuter Rail	No	
Ferry	No	
Locations where traveler information is displayed to public		
Number of bus stops on fixed transit routes	NR	NR
Bus stops on fixed transit routes that display traveler info to the public	NR	NR
Number of rail stations	NR	NR
Number of rail stations that display traveler information	NR	NR
Number of other locations that display traveler information to public	NR	NR
Number of vehicles the traveler information system has available		
Fixed Route Bus	76	NR
Heavy or Rapid Rail	NR	NR
Light Rail	NR	NR
Demand Responsive	NR	NR
Commuter Rail	NR	NR
Ferry Boat	NR	NR
Deployment of Communications Technology		
Attributes of Radio System:		
Digital?	No	
Analog?	Yes	
Trunked?	No	
Regular?	Yes	
Services that use a Digital or Trunked Radio System		
Digital Only		
Fixed Route Bus	No	No
Heavy or Rapid Rail	No	No
Light Rail	No	No
Demand Responsive	No	No
Commuter Rail	No	No
Ferry Boat	No	No
Trunked Only		
Fixed Route Bus	No	No
Heavy or Rapid Rail	No	No
Light Rail	No	No
Demand Responsive	No	No
Commuter Rail	No	No
Ferry Boat	No	No

Have of plan to have Automatic Passenger Counters (APCs)?	Yes	
Methods used to count passengers		
Treadle Mats	No	
Infrared Beams	Yes	
Primary and Secondary Location Technologies Used		
Primary Technologies		
GPS	No	No
Differential GPS	Yes	No
Signpost/Odometer	No	No
Dead_Reckoning	No	No
LORAN C	No	No
Other	No	No
Backup Technologies		
GPS	No	No
Differential GPS	No	No
Signpost/Odometer	Yes	No
Dead_Reckoning	No	No
LORAN C	No	No
Other	No	No
Number of Vehicles with APCs		
Fixed Route Bus	9	11
Heavy or Rapid Rail	NR	NR
Light Rail	NR	NR
Demand Responsive	NR	NR
Commuter Rail	NR	NR
Ferry Boat	NR	NR
Remote Real-Time Monitoring and Computer Assisted Dispatching		
Remote Real-Time Monitoring		
Fixed Route Bus	70	76
Heavy or Rapid Rail	NR	NR
Light Rail	NR	NR
Demand Responsive	NR	NR
Commuter Rail	NR	NR
Ferry Boat	NR	NR
Automated Dispatching or Control Software		
Fixed Route Bus	76	NR
Heavy or Rapid Rail	NR	NR
Light Rail	NR	NR
Demand Responsive	9	NR
Commuter Rail	NR	NR

Ferry Boat	NR	NR
Priority at Traffic Signals and Ramp Meter Priority		
Priority at Traffic Signals		
Fixed Route Bus	NR	NR
Light Rail	NR	NR
Demand Responsive	NR	NR
Ramp Meter Priority		
Fixed Route Bus	NR	NR
Demand Responsive	NR	NR
Number of Vehicles Equipped with Navigation Aids		
Fixed Route Bus	NR	NR
Heavy or Rapid Rail	NR	NR
Light Rail	NR	NR
Demand Responsive	NR	NR
Commuter Rail	NR	NR
Ferry Boat	NR	NR
Electronic Fare Payment		
Have full operational Electronic Fare Payment System?	Yes	N/A
Methods of Fare Payment		
Stored value card with fare deducted for each trip		
Magnetic Stripe	Yes	N/A
Smart Card	No	N/A
Debit Card	No	N/A
Billed by the month for trips taken		
Magnetic Stripe	No	N/A
Smart Card	No	N/A
Credit Card	No	N/A
Monthly Pass		
Magnetic Stripe	Yes	N/A
Smart Card	No	N/A
Vehicles/Stations Equipped with Automated Payment Mechanism		
Magnetic Stripe Readers		
Fixed Route Bus Vehicles	1,030	1,030
Heavy or Rapid Rail Stations	29	29
Light Rail Stations	11	11
Demand Responsive Vehicles	NR	NR
Commuter Rail Stations	NR	NR
Ferry Boat Landings	NR	NR
Smart Card Readers		
Fixed Route Bus Vehicles	NR	NR
Heavy or Rapid Rail Stations	NR	NR
Light Rail Stations	NR	NR

Demand Responsive Vehicles	NR	NR
Commuter Rail Stations	NR	NR
Ferry Boat Landings	NR	NR
Credit Card		
Fixed Route Bus Vehicles	NR	NR
Heavy or Rapid Rail Stations	NR	NR
Light Rail Stations	NR	NR
Demand Responsive Vehicles	NR	NR
Commuter Rail Stations	3	3
Ferry Boat Landings	3	3
Debit Card		
Fixed Route Bus Vehicles	NR	NR
Heavy or Rapid Rail Stations	NR	NR
Light Rail Stations	NR	NR
Demand Responsive Vehicles	NR	NR
Commuter Rail Stations	3	3
Ferry Boat Landings	3	3
NR: No Response		

Appendix J
Transit Management Integration

Transit Management Integration
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Ann Arbor Transportation Authority	
	1999	**2005**
Agency Returned Survey?	Yes	
Transit operators in the region that use the same electronic payment system	None listed	
Toll operators from whom you accept electronic payment of transit		
fare through the use of ETC media	None listed	
Receiving real-time information via electronic means from others		
Freeway Management agencies from which your agency receives		
freeway travel times, speeds, and conditions		
Receive Information	None listed	None listed
Share Infrastructure	Michigan Department of Transportation	None listed
Arterial Management agencies from which your agency receives		
arterial travel times, speeds, and conditions		
Receive Information	None listed	Washtenaw County Road Commission, Ann Arbor City, HHS Transportation Provider
Share Infrastructure	None listed	Ann Arbor City, HHS Transportation Provider
Incident Management agencies from which your agency receives		
incident severity, location, and type		
Receive Information	None listed	None listed
Share Infrastructure	None listed	None listed

Appendix K
Transit Management Information Collection and Dissemination

Data Collection and Dissemination: Transit Management
Agencies for Metropolitan Area: Detroit, Ann Arbor

Agency Name	Ann Arbor Transportation Authority	
	1999	**2005**
Agency Returned Survey?	Yes	
Methods used to disseminate transit information to the public		
Technologies your agency uses to disseminate:		
Transit routes, schedules and fares	Facsimile, Audible Enunciators, Monitors/VMS (not in vehicle), Variable Message Signs (in vehicle), Internet Web Sites, Telephone System	Kiosks, Interactive TV, Dedicated cable TV
Real-time transit schedule adherence or arrival and departure times	Audible Enunciators, Monitors/VMS (not in vehicle), Variable Message Signs (in vehicle), E-mail or other direct PC communication, Internet Web Sites	Kiosks, Interactive TV, Telephone System, Dedicated cable TV
Technologies employed by other organization receiving your data		
Transit routes, schedules and fares	NR	NR
Real-time transit schedule adherence or arrival and departure times	NR	NR
Internet web site reporting transit routes, schedules and fare, etc.	www.theride.org	
Telephone system for reporting transit information to the public	NR	
Organizations your agency sends information for dissemination to the public	NR	
Data collected, archived, and/or transferred to another agency		
Collected by your agency	Passenger count, Passenger information (e.g., surveys, O/D), Vehicle monitoring status, Vehicle time and location, Incidents, Current roadway work zones for transit, Scheduled roadway work zones for transit, Emergency/evacuation routes and procedures	Trip itinerary planning records, Route designations (snow emergency, etc), Transit vehicle signal priority
Archived by your agency	Passenger count, Passenger information (e.g., surveys, O/D), Vehicle monitoring status, Vehicle time and location, Incidents	NR
Transferred to another agency by your agency	NR	NR
Importance of making information available to the public		
Ranked High	Road conditions, Vehicle time and location, Route designations (snow emergency, etc), Current roadway work zones for transit, Emergency/evacuation routes and procedures	
Ranked Medium	Weather conditions, Transit operations coordination information, Scheduled roadway work zones for transit, Intermodal (air, rail, water) conditions, Highway operations coordination information	
Ranked Low	Passenger count, Trip itinerary planning records, Passenger information (e.g., surveys, O/D), Vehicle monitoring status, Emergency vehicle signal preemption, Incidents, Transit vehicle signal priority	
Groups that make requests for the data	MPOs, State DOT personnel, Universities	
What is the data used for?	Roadway impact analysis, Planning, Traffic analysis	

Appendix L
Emergency Management

Appendix M
Electronic Toll Collection

Emergency Management Agencies for Metropolitan Area: Detroit, Ann Arbor

	Total Vehicles		Navigation Capabilities		AVL		CAD		CAD Equipped with Mobile Data Terminal		Vehicles Equipped with Preemption		Participate in Formal Incident Mgt Program	Send Incident Info to other agencies	
Agency Name	1999	2005	1999	2005	1999	2005	1999	2005	1999	2005	1999	2005			List of agencies receiving data
Ann Arbor City Fire Department	24	26	0	NR	0	NR	0	NR	0	NR	0	NR	Yes	Yes	Ann Arbor Police Department, Ann Arbor Emergency Management Division, Washtenaw County Emergency Management
Ann Arbor City Police Department	36	40	0	0	0	0	36	40	0	40	0	0	Yes	Yes	Michigan State Police, Washtenaw County Emergency Management
Canton Township Fire Department	21	21	0	0	0	0	0	0	0	0	0	0	Yes	Yes	NFIRS
Canton Township Police Department	34	45	0	45	0	45	34	45	20	30	0	NR	No	Yes	Michigan State Records
Clinton Township Fire Department	14	14	0	0	0	0	14	14	0	0	0	0	Yes	Yes	Clinton Township Police Department, Clinton Township Emergency Management, Building Department, Assessing Department
Clinton Township Police Department	61	61	0	NR	0	NR	29	33	10	33	0	0	No	No	None listed
Dearborn City Fire Department	13	13	0	13	0	13	0	13	0	13	13	13	Yes	Yes	State of Michigan
Dearborn Heights Police Department	61	61	0	0	0	0	18	22	18	22	0	0	Yes	No	None listed
Farmington City Fire Department	15	15	0	0	0	0	3	3	0	0	0	0	Yes	Yes	CLEMIS
Farmington City Police Department	7	7	0	0	0	0	6	6	6	6	0	0	Yes	Yes	CLEMIS
Livonia City Fire & EMS Department	13	NR	0	NR	0	NR	12	NR	0	NR	0	NR	No	Yes	None listed
Livonia City Police Department	35	35	0	0	0	0	35	35	35	35	0	0	Yes	Yes	Michigan State Police
Macomb County Sheriff	51	60	0	30	0	30	51	60	27	30	0	0	No	No	None listed
Michigan State Police	46	50	0	50	0	0	0	0	8	50	0	0	Yes	Yes	Michigan State Police-All Divisions
Monroe County Sheriff's Department	24	NR	0	NR	24	NR	24	NR	24	NR	0	NR	No	No	None listed
Oakland County Sheriff Department	221	NR	0	NR	0	NR	95	NR	95	NR	0	NR	No	No	None listed
Pontiac City Fire Department	25	NR	0	NR	0	NR	0	NR	0	NR	0	NR	Yes	No	None listed
Redford Township Fire Department	8	NR	0	NR	0	NR	7	NR	NR	NR	0	NR	No	No	None listed
Redford Township Police Department	20	NR	20	NR	NR	NR	20	NR	20	NR	0	NR	No	No	None listed
Rochester Hills City Fire Department	28	33	0	0	0	0	28	33	0	33	0	0	Yes	No	None listed
Roseville City Fire Department	10	11	0	0	0	0	0	0	0	0	0	0	Yes	Yes	Macomb County Emergency Management Agency
Roseville City Police Department	41	41	0	0	0	0	41	41	0	15	0	0	Yes	Yes	Roseville Fire Department
Royal Oak City Fire Department	8	NR	0	NR	0	NR	8	NR	8	NR	0	NR	Yes	No	None listed

	Total Vehicles		Navigation Capabilities		AVL		CAD		CAD Equipped with Mobile Data Terminal		Vehicles Equipped with Preemption		Participate in Formal Incident Mgt Program	Send Incident Info to other agencies	
Agency Name	1999	2005	1999	2005	1999	2005	1999	2005	1999	2005	1999	2005			List of agencies receiving data
Royal Oak City Fire Department (Emergency Medical)	3	NR	0	NR	0	NR	3	NR	3	NR	0	NR	Yes	Yes	Oakland County Medical Control
Royal Oak City Police Department	26	26	0	22	0	22	26	26	22	22	0	0	No	Yes	Oakland County Information Technology Department
Shelby Township Fire Department	6	6	0	0	0	0	0	0	0	0	0	0	No	No	None listed
Shelby Township Fire Department (Emergency Medica	5	5	0	0	0	0	0	0	0	0	0	0	No	No	None listed
Shelby Township Police	27	NR	0	NR	0	NR	0	NR	0	NR	0	NR	No	No	None listed
Southfield City Emergency Medical Services (Life Sup	6	NR	0	NR	0	NR	6	NR	0	NR	0	NR	Yes	No	None listed
Southfield City Fire Department	19	NR	0	NR	0	NR	19	NR	0	NR	0	NR	Yes	No	None listed
Southfield City Police Department	45	NR	0	NR	0	NR	45	NR	45	NR	0	NR	Yes	Yes	Michigan State Emergency Response Agency (MIERA), LEIN, Oakland County Emergency Management Services
St. Clair County Sheriff Department	25	25	0	0	0	0	0	0	0	0	0	0	No	No	None listed
St. Clair Shores Fire Department	5	NR	0	NR	0	NR	0	NR	0	NR	0	NR	Yes	Yes	NFIRS
St. Clair Shores Fire Department (Emergency Medical	3	NR	0	NR	0	NR	0	NR	0	NR	0	NR	No	Yes	None listed
St. Clair Shores Police Department	20	NR	0	NR	0	NR	20	NR	18	NR	0	NR	No	No	None listed
Sterling Heights City Fire Department	19	19	0	0	0	8	0	8	0	NR	0	8	Yes	Yes	Macomb County Emergency Management
Sterling Heights City Police Department	44	50	0	50	0	50	44	50	44	50	0	50	Yes	Yes	Michigan State Police
Taylor City Fire Department	9	NR	0	NR	0	NR	0	NR	0	NR	0	NR	No	No	None listed
Taylor City Police Department	46	52	0	0	0	0	0	52	28	NR	0	0	Yes	No	None listed
Troy City Police Department	127	135	1	1	0	135	127	135	43	50	28	35	Yes	Yes	Michigan State Police
Troy City Fire Department	33	40	1	15	NR	15	33	40	NR	40	32	40	Yes	Yes	Michigan State Fire Marshal
Troy City Fire Department (Emergency Medical)	6	10	0	5	5	10	5	10	NR	10	5	10	No	No	None listed
Warren City Fire Department	23	NR	0	NR	0	NR	16	NR	16	NR	0	NR	Yes	No	None listed
Washtenaw County Sheriff Department	60	60	0	0	0	0	60	60	0	0	0	0	Yes	No	None listed
Waterford Township Fire Department	14	15	0	0	0	0	0	15	0	5	0	0	No	NR	None listed
Waterford Township Police Department	29	30	0	30	0	30	29	30	12	30	0	0	No	No	None listed
Wayne Sheriffs Department	80	100	0	0	8	12	120	130	NR	NR	80	80	Yes	Yes	None listed
West Bloomfield Fire Department	22	26	0	20	0	20	0	26	0	26	0	23	Yes	No	None listed
West Bloomfield Police Department	20	22	0	0	0	NR	20	22	2	22	0	0	No	No	None listed
Westland City Fire Department	10	12	0	NR	0	NR	10	12	0	12	0	NR	Yes	No	None listed
Westland City Police Department	28	29	0	0	0	0	25	29	25	29	0	0	No	Yes	None listed

Electronic Toll Collection
Agencies for Metropolitan Area: Detroit, Ann Arbor

	Detroit and Canada Tunnel Corporation	
	1999	**2005**
Agency Returned Survey?	Yes	
Number of toll Collection Plazas operated	2	2
Number of toll collection plazas with dedicated ETC	0	0
Number of toll collection plazas with both manual and ETC	0	2
Number of toll collection lanes operated	11	11
Number of toll collection lanes with dedicated ETC	0	2
Number of toll collection lanes with both manual and ETC	0	4
Number of toll collection tags issued	0	3,500
Antennae Location Technologies		
In-Pavement?	No	
Focused Beam?	No	
Distributed Overhead?	No	
In-Vehicle Equipment Technologies		
Tag-based?	No	
Integrated circuit card-based?	No	
Are toll tags used by other toll operations in metro area?	NR	
List of toll operators that use tags	None	
Are toll tags used by operators of public transit to pay transit fares		
in metro area?	NR	
List of transit operators that use tags	None	
_____		
NR: No Response		